

Electronic Supplementary Information for

Solving the Schrödinger Equation of Hydrogen Molecule with the Free-Complement Variational Theory:
Essentially Exact Potential Curves and Vibrational Levels of the Ground and Excited States of Σ symmetry

Yusaku I. Kurokawa*, Hiroyuki Nakashima, and Hiroshi Nakatsuji*

*Quantum Chemistry Research Institute, The Kyoto Technoscience Center 16, 14 Yoshida Kawara-machi, Sakyo-Ku, Kyoto
606-8305, Japan*

* Electronic mail: y.kurokawa@qcri.or.jp and h.nakatsuji@qcri.or.jp

210, 1/2, 1/4, 1/2, -1/4, -1, 2, 0, 1, 0
211, 1/6, 1/2, -1/6, 1/2, -1, 2, 1, 0, 0
212, 1/2, 1/2, -1/2, 1/2, 0, 1, 0, 0, 0
213, 1/2, 1/6, 1/2, -1/6, -2, 1, 4, 1, 0
214, 1/2, 1/6, 1/2, -1/6, -1, 1, 1, 2, 0
215, 1/2, 1/6, 1/2, -1/6, -1, -1, 2, 5, 0
216, 1/2, 1/6, 1/2, -1/6, -2, 2, 3, 0, 0
217, 1/2, 1/2, -1/2, 1/2, 0, 0, 0, 2, 0
218, 1/2, 1/6, 1/2, -1/6, -1, 2, 0, 1, 0
219, 1/2, 1/6, 1/2, -1/6, -2, 0, 4, 3, 0
220, 1/2, 1/6, 1/2, -1/6, -1, 0, 1, 4, 0
221, 1/2, 1/2, -1/2, 1/2, -1, 1, 2, 0, 0
222, 1/2, 1/6, 1/2, -1/6, -3, 1, 6, 1, 0
223, 1/2, 1/6, 1/2, -1/6, -1, 1, 0, 3, 0
224, 1/2, 1/4, 1/2, -1/4, -1, 0, 4, 0, 0
225, 1/2, 1/4, 1/2, -1/4, 0, 0, 1, 1, 0
226, 1/2, 1/6, 1/2, -1/6, -3, 2, 5, 0, 0
227, 1/2, 1/2, -1/2, 1/2, -1, 0, 2, 2, 0
228, 1/2, 1/6, 1/2, -1/6, -2, 2, 2, 1, 0
229, 1/4, 1/2, -1/4, 1/2, -1, 0, 4, 0, 0
230, 1/2, 1/4, 1/2, -1/4, 0, 1, 0, 0, 0
231, 1/2, 1/2, -1/2, 1/2, -2, 1, 4, 0, 0
232, 1/2, 1/2, -1/2, 1/2, -1, 1, 1, 1, 0
233, 1/2, 1/6, 1/2, -1/6, -2, 3, 1, 0, 0
234, 1/2, 1/6, 1/2, -1/6, -1, 0, 4, 0, 0
235, 1/4, 1/2, -1/4, 1/2, 0, 1, 0, 0, 0
236, 1/2, 1/6, 1/2, -1/6, 0, 0, 1, 1, 0
237, 1/2, 1/4, 1/2, -1/4, -1, 0, 3, 1, 0
238, 1/6, 1/2, -1/6, 1/2, -1, 0, 4, 0, 0
239, 1/2, 1/4, 1/2, -1/4, 0, 0, 0, 2, 0
240, 1/2, 1/2, -1/2, 1/2, -1, 2, 0, 0, 0
241, 1/4, 1/2, -1/4, 1/2, -2, 0, 6, 0, 0
242, 1/4, 1/2, -1/4, 1/2, -1, 0, 3, 1, 0
243, 1/2, 1/6, 1/2, -1/6, 0, 1, 0, 0, 0
244, 1/4, 1/2, -1/4, 1/2, 0, 0, 0, 2, 0
245, 1/2, 1/4, 1/2, -1/4, -1, 1, 2, 0, 0
246, 1/6, 1/2, -1/6, 1/2, 0, 1, 0, 0, 0
247, 1/2, 1/6, 1/2, -1/6, -2, 3, 0, 1, 0
248, 1/4, 1/2, -1/4, 1/2, -1, 1, 2, 0, 0
249, 1/2, 1/6, 1/2, -1/6, -1, 0, 3, 1, 0
250, 1/2, 1/6, 1/2, -1/6, 0, 0, 0, 2, 0
251, 1/6, 1/2, -1/6, 1/2, -2, 0, 6, 0, 0
252, 1/2, 1/4, 1/2, -1/4, -1, 0, 2, 2, 0
253, 1/6, 1/2, -1/6, 1/2, -1, 0, 3, 1, 0
254, 1/6, 1/2, -1/6, 1/2, 0, 0, 0, 2, 0
255, 1/2, 1/6, 1/2, -1/6, -1, 1, 2, 0, 0
256, 1/4, 1/2, -1/4, 1/2, -1, 0, 2, 2, 0
257, 1/2, 1/4, 1/2, -1/4, -2, 1, 4, 0, 0
258, 1/2, 1/4, 1/2, -1/4, -1, 1, 1, 1, 0
259, 1/6, 1/2, -1/6, 1/2, -1, 1, 2, 0, 0
260, 1/6, 1/2, -1/6, 1/2, -2, -1, 6, 2, 0
261, 1/2, 1/4, 1/2, -1/4, -1, -1, 2, 4, 0
262, 1/4, 1/2, -1/4, 1/2, -2, 1, 4, 0, 0
263, 1/4, 1/2, -1/4, 1/2, -1, 1, 1, 1, 0
264, 1/2, 1/6, 1/2, -1/6, -1, 0, 2, 2, 0
265, 1/6, 1/2, -1/6, 1/2, -3, 0, 8, 0, 0
266, 1/2, 1/4, 1/2, -1/4, -1, 2, 0, 0, 0
267, 1/2, 1/4, 1/2, -1/4, -2, 0, 4, 2, 0
268, 1/2, 1/4, 1/2, -1/4, -1, 0, 1, 3, 0
269, 1/6, 1/2, -1/6, 1/2, -1, 0, 2, 2, 0
270, 1/2, 1/6, 1/2, -1/6, -2, 1, 4, 0, 0
271, 1/4, 1/2, -1/4, 1/2, -1, 2, 0, 0, 0
272, 1/2, 1/4, 1/2, -1/4, -3, 1, 6, 0, 0
273, 1/2, 1/6, 1/2, -1/6, -1, 1, 1, 1, 0
274, 1/2, 1/4, 1/2, -1/4, -2, 1, 3, 1, 0
275, 1/2, 1/6, 1/2, -1/6, -1, -1, 2, 4, 0
276, 1/6, 1/2, -1/6, 1/2, -2, 1, 4, 0, 0
277, 1/2, 1/4, 1/2, -1/4, -1, 1, 0, 2, 0
278, 1/6, 1/2, -1/6, 1/2, -1, 1, 1, 1, 0
279, 1/2, 1/2, -1/2, 1/2, -1, 0, 3, 0, 0
280, 1/2, 1/2, -1/2, 1/2, 0, 0, 0, 1, 0
281, 1/2, 1/6, 1/2, -1/6, -1, 2, 0, 0, 0
282, 1/2, 1/6, 1/2, -1/6, -2, 0, 4, 2, 0
283, 1/2, 1/4, 1/2, -1/4, -2, 2, 2, 0, 0
284, 1/2, 1/6, 1/2, -1/6, -1, 0, 1, 3, 0

285, 1/6, 1/2, -1/6, 1/2, -1, 2, 0, 0, 0
286, 1/2, 1/6, 1/2, -1/6, -3, 1, 6, 0, 0
287, 1/2, 1/6, 1/2, -1/6, -2, 1, 3, 1, 0
288, 1/2, 1/6, 1/2, -1/6, -1, 1, 0, 2, 0
289, 1/2, 1/6, 1/2, -1/6, -2, -1, 4, 4, 0
290, 1/2, 1/6, 1/2, -1/6, -1, -1, 1, 5, 0
291, 1/2, 1/2, -1/2, 1/2, -2, 0, 2, 1, 0
292, 1/2, 1/6, 1/2, -1/6, -2, 2, 2, 0, 0
293, 1/2, 1/6, 1/2, -1/6, -3, 0, 6, 2, 0
294, 1/2, 1/6, 1/2, -1/6, -2, 0, 3, 3, 0
295, 1/2, 1/6, 1/2, -1/6, -1, 0, 0, 4, 0
296, 1/6, 1/2, -1/6, 1/2, -2, 2, 2, 0, 0
297, 1/2, 1/2, -1/2, 1/2, -1, 1, 1, 0, 0
298, 1/2, 1/6, 1/2, -1/6, -3, 1, 5, 1, 0
299, 1/2, 1/4, 1/2, -1/4, -2, 0, 3, 0, 0
300, 1/2, 1/4, 1/2, -1/4, -1, 0, 3, 0, 0
301, 1/2, 1/4, 1/2, -1/4, 0, 0, 0, 1, 0
302, 1/2, 1/6, 1/2, -1/6, -3, 2, 4, 0, 0
303, 1/2, 1/2, -1/2, 1/2, -1, 0, 2, 1, 0
304, 1/2, 1/6, 1/2, -1/6, -2, 2, 1, 1, 0
305, 1/4, 1/2, -1/4, 1/2, -1, 0, 3, 0, 0
306, 1/4, 1/2, -1/4, 1/2, 0, 0, 0, 1, 0
307, 1/2, 1/2, -1/2, 1/2, -2, 0, 3, 0, 0
308, 1/2, 1/2, -1/2, 1/2, -1, 1, 0, 1, 0
309, 1/2, 1/6, 1/2, -1/6, -2, 3, 0, 0, 0
310, 1/2, 1/6, 1/2, -1/6, -1, 0, 3, 0, 0
311, 1/2, 1/6, 1/2, -1/6, 0, 0, 1, 1, 0
312, 1/2, 1/4, 1/2, -1/4, -1, 0, 2, 1, 0
313, 1/6, 1/2, -1/6, 1/2, -1, 0, 3, 0, 0
314, 1/6, 1/2, -1/6, 1/2, 0, 0, 0, 1, 0
315, 1/2, 1/6, 1/2, -1/6, -2, 2, 0, 2, 0
316, 1/4, 1/2, -1/4, 1/2, -2, 0, 5, 0, 0
317, 1/4, 1/2, -1/4, 1/2, -1, 0, 2, 1, 0
318, 1/2, 1/4, 1/2, -1/4, -1, 1, 1, 0, 0
319, 1/6, 1/2, -1/6, 1/2, -2, -1, 6, 1, 0
320, 1/2, 1/4, 1/2, -1/4, -1, -1, 2, 3, 0
321, 1/2, 1/6, 1/2, -1/6, -3, 3, 2, 0, 0
322, 1/4, 1/2, -1/4, 1/2, -1, 1, 1, 0, 0
323, 1/4, 1/2, -1/4, 1/2, -2, -1, 5, 2, 0
324, 1/2, 1/6, 1/2, -1/6, -1, 0, 2, 1, 0
325, 1/2, 1/4, 1/2, -1/4, -2, 0, 4, 1, 0
326, 1/6, 1/2, -1/6, 1/2, -2, 0, 5, 0, 0
327, 1/2, 1/4, 1/2, -1/4, -1, 0, 1, 2, 0
328, 1/6, 1/2, -1/6, 1/2, -1, 0, 2, 1, 0
329, 1/4, 1/2, -1/4, 1/2, -3, 0, 7, 0, 0
330, 1/2, 1/6, 1/2, -1/6, -1, 1, 1, 0, 0
331, 1/4, 1/2, -1/4, 1/2, -2, -1, 5, 2, 0
332, 1/2, 1/4, 1/2, -1/4, -2, 1, 3, 0, 0
333, 1/2, 1/6, 1/2, -1/6, -1, -1, 2, 3, 0
334, 1/2, 1/4, 1/2, -1/4, -1, 1, 0, 1, 0
335, 1/2, 1/4, 1/2, -1/4, -2, -1, 4, 3, 0
336, 1/6, 1/2, -1/6, 1/2, -1, 1, 1, 0, 0
337, 1/6, 1/2, -1/6, 1/2, -2, -1, 5, 2, 0
338, 1/2, 1/4, 1/2, -1/4, -1, -1, 1, 4, 0
339, 1/4, 1/2, -1/4, 1/2, -2, 1, 3, 0, 0
340, 1/2, 1/2, -1/2, 1/2, 0, 0, 0, 0, 0
341, 1/2, 1/6, 1/2, -1/6, -2, 0, 4, 1, 0
342, 1/4, 1/2, -1/4, 1/2, -1, 1, 0, 1, 0
343, 1/2, 1/4, 1/2, -1/4, -3, 0, 6, 1, 0
344, 1/2, 1/6, 1/2, -1/6, -1, 0, 1, 2, 0
345, 1/6, 1/2, -1/6, 1/2, -3, 0, 7, 0, 0
346, 1/2, 1/4, 1/2, -1/4, -2, 0, 3, 2, 0
347, 1/2, 1/4, 1/2, -1/4, -1, 0, 0, 3, 0
348, 1/2, 1/6, 1/2, -1/6, -3, 4, 0, 0, 0
349, 1/6, 1/2, -1/6, 1/2, -1, 0, 1, 2, 0
350, 1/2, 1/6, 1/2, -1/6, -2, 1, 3, 0, 0
351, 1/2, 1/4, 1/2, -1/4, -3, 1, 5, 0, 0
352, 1/2, 1/6, 1/2, -1/6, -1, 1, 0, 1, 0
353, 1/2, 1/6, 1/2, -1/6, -2, -1, 4, 3, 0
354, 1/2, 1/4, 1/2, -1/4, -2, 1, 2, 1, 0
355, 1/2, 1/6, 1/2, -1/6, -1, -1, 1, 4, 0
356, 1/6, 1/2, -1/6, 1/2, -2, 1, 3, 0, 0
357, 1/6, 1/2, -1/6, 1/2, -1, 1, 0, 1, 0
358, 1/2, 1/6, 1/2, -1/6, -1, 0, 2, 0, 0
359, 1/2, 1/6, 1/2, -1/6, -3, 0, 6, 1, 0

360, 1/2, 1/6, 1/2, -1/6, -2, 0, 3, 2, 0
361, 1/2, 1/4, 1/2, -1/4, -2, 2, 1, 0, 0
362, 1/2, 1/6, 1/2, -1/6, -2, 0, 0, 3, 0
363, 1/2, 1/6, 1/2, -1/6, -3, 1, 5, 0, 0
364, 1/4, 1/2, -1/4, 1/2, -2, 2, 1, 0, 0
365, 1/2, 1/2, -1/2, 1/2, -1, -1, 2, 2, 0
366, 1/2, 1/6, 1/2, -1/6, -2, 1, 2, 1, 0
367, 1/2, 1/6, 1/2, -1/6, -2, -1, 3, 4, 0
368, 1/2, 1/6, 1/2, -1/6, -1, -1, 0, 5, 0
369, 1/6, 1/2, -1/6, 1/2, -2, 1, 2, 1, 0
370, 1/2, 1/4, 1/2, -1/4, 0, 0, 0, 0, 0
371, 1/2, 1/2, -1/2, 1/2, -2, 0, 4, 0, 0
372, 1/2, 1/2, -1/2, 1/2, -1, 0, 1, 1, 0
373, 1/2, 1/6, 1/2, -1/6, -2, 2, 1, 0, 0
374, 1/2, 1/6, 1/2, -1/6, -2, 0, 5, 2, 0
375, 1/2, 1/6, 1/2, -1/6, -2, 0, 2, 3, 0
376, 1/2, 1/4, 1/2, -1/4, -2, 2, 0, 1, 0
377, 1/6, 1/2, -1/6, 1/2, -2, 2, 1, 0, 0
378, 1/2, 1/2, -1/2, 1/2, -1, 0, 0, 0, 0
379, 1/2, 1/2, -1/2, 1/2, -2, -1, 4, 2, 0
380, 1/2, 1/6, 1/2, -1/6, -3, 1, 4, 1, 0
381, 1/2, 1/6, 1/2, -1/6, -2, 1, 1, 2, 0
382, 1/2, 1/6, 1/2, -1/6, 0, 0, 0, 0, 0
383, 1/2, 1/4, 1/2, -1/4, -1, 0, 2, 0, 0
384, 1/2, 1/2, -1/2, 1/2, -3, 0, 6, 0, 0
385, 1/2, 1/6, 1/2, -1/6, -3, 2, 3, 0, 0
386, 1/2, 1/2, -1/2, 1/2, -1, 0, 0, 2, 0
387, 1/2, 1/6, 1/2, -1/6, -2, 2, 0, 1, 0
388, 1/4, 1/2, -1/4, 1/2, -1, 0, 2, 0, 0
389, 1/6, 1/2, -1/6, 1/2, -2, -1, 6, 0, 0
390, 1/2, 1/4, 1/2, -1/4, -1, -1, 2, 2, 0
391, 1/2, 1/2, -1/2, 1/2, -2, 1, 2, 0, 0
392, 1/2, 1/6, 1/2, -1/6, -2, 1, 0, 3, 0
393, 1/4, 1/2, -1/4, 1/2, -2, -1, 5, 1, 0
394, 1/2, 1/6, 1/2, -1/6, -1, 0, 2, 0, 0
395, 1/2, 1/4, 1/2, -1/4, -2, 0, 4, 0, 0
396, 1/2, 1/4, 1/2, -1/4, -1, 0, 1, 1, 0
397, 1/6, 1/2, -1/6, 1/2, -1, 0, 2, 0, 0
398, 1/2, 1/6, 1/2, -1/6, -3, 2, 1, 1, 0
399, 1/4, 1/2, -1/4, 1/2, -2, 0, 4, 0, 0
400, 1/4, 1/2, -1/4, 1/2, -1, 0, 1, 1, 0
401, 1/2, 1/6, 1/2, -1/6, -1, -1, 2, 2, 0
402, 1/2, 1/4, 1/2, -1/4, -1, 1, 0, 0, 0
403, 1/2, 1/4, 1/2, -1/4, -2, -1, 4, 2, 0
404, 1/6, 1/2, -1/6, 1/2, -2, -1, 5, 1, 0
405, 1/2, 1/4, 1/2, -1/4, -1, -1, 1, 3, 0
406, 1/2, 1/2, -1/2, 1/2, -2, 1, 1, 1, 0
407, 1/2, 1/6, 1/2, -1/6, -3, 3, 1, 0, 0
408, 1/2, 1/6, 1/2, -1/6, -2, 0, 4, 0, 0
409, 1/4, 1/2, -1/4, 1/2, -1, 1, 0, 0, 0
410, 1/4, 1/2, -1/4, 1/2, -2, -1, 4, 2, 0
411, 1/2, 1/4, 1/2, -1/4, -3, 0, 6, 0, 0
412, 1/2, 1/6, 1/2, -1/6, -1, 0, 1, 1, 0
413, 1/2, 1/4, 1/2, -1/4, -2, 0, 3, 1, 0
414, 1/6, 1/2, -1/6, 1/2, -2, 0, 4, 0, 0
415, 1/2, 1/4, 1/2, -1/4, -1, 0, 0, 2, 0
416, 1/2, 1/2, -1/2, 1/2, -2, 2, 0, 0, 0
417, 1/6, 1/2, -1/6, 1/2, -1, 0, 1, 1, 0
418, 1/4, 1/2, -1/4, 1/2, -3, 0, 6, 0, 0
419, 1/2, 1/6, 1/2, -1/6, -1, 1, 0, 0, 0
420, 1/2, 1/6, 1/2, -1/6, -2, -1, 4, 2, 0
421, 1/4, 1/2, -1/4, 1/2, -1, 0, 2, 0, 0
422, 1/2, 1/4, 1/2, -1/4, -2, 1, 2, 0, 0
423, 1/2, 1/6, 1/2, -1/6, -1, -1, 1, 3, 0
424, 1/2, 1/4, 1/2, -1/4, -2, -1, 3, 3, 0
425, 1/6, 1/2, -1/6, 1/2, -1, 1, 0, 0, 0
426, 1/6, 1/2, -1/6, 1/2, -2, -1, 4, 2, 0
427, 1/2, 1/4, 1/2, -1/4, -1, -1, 0, 4, 0
428, 1/2, 1/6, 1/2, -1/6, -3, 3, 0, 1, 0
429, 1/2, 1/6, 1/2, -1/6, -3, 0, 6, 0, 0
430, 1/4, 1/2, -1/4, 1/2, -2, 1, 2, 0, 0
431, 1/2, 1/6, 1/2, -1/6, -2, 0, 3, 1, 0
432, 1/2, 1/4, 1/2, -1/4, -3, 0, 5, 1, 0
433, 1/2, 1/6, 1/2, -1/6, -1, 0, 0, 2, 0
434, 1/6, 1/2, -1/6, 1/2, -3, 0, 6, 0, 0

435, 1/2, 1/4, 1/2, -1/4, -2, 0, 2, 2, 0
436, 1/6, 1/2, -1/6, 1/2, -1, 0, 0, 2, 0
437, 1/2, 1/6, 1/2, -1/6, -2, 1, 2, 0, 0
438, 1/2, 1/4, 1/2, -1/4, -3, 1, 4, 0, 0
439, 1/2, 1/6, 1/2, -1/6, -2, -1, 3, 3, 0
440, 1/2, 1/4, 1/2, -1/4, -2, 1, 1, 1, 0
441, 1/2, 1/6, 1/2, -1/6, -1, -1, 0, 4, 0
442, 1/6, 1/2, -1/6, 1/2, -2, 1, 2, 0, 0
443, 1/2, 1/2, -1/2, 1/2, -1, 0, 1, 0, 0
444, 1/2, 1/6, 1/2, -1/6, -3, 0, 5, 1, 0
445, 1/4, 1/2, -1/4, 1/2, -2, 1, 1, 1, 0
446, 1/2, 1/6, 1/2, -1/6, -2, 0, 2, 2, 0
447, 1/2, 1/4, 1/2, -1/4, -2, 2, 0, 0, 0
448, 1/6, 1/2, -1/6, 1/2, -2, 0, 2, 2, 0
449, 1/2, 1/2, -1/2, 1/2, -2, -1, 4, 1, 0
450, 1/2, 1/6, 1/2, -1/6, -3, 1, 4, 0, 0
451, 1/4, 1/2, -1/4, 1/2, -2, 2, 0, 0, 0
452, 1/2, 1/2, -1/2, 1/2, -1, -1, 1, 2, 0
453, 1/2, 1/6, 1/2, -1/6, -2, 1, 1, 1, 0
454, 1/2, 1/6, 1/2, -1/6, -2, -1, 2, 4, 0
455, 1/6, 1/2, -1/6, 1/2, -3, 1, 4, 0, 0
456, 1/2, 1/4, 1/2, -1/4, -2, 1, 0, 2, 0
457, 1/6, 1/2, -1/6, 1/2, -2, 1, 1, 1, 0
458, 1/2, 1/2, -1/2, 1/2, -2, 0, 3, 0, 0
459, 1/2, 1/2, -1/2, 1/2, -1, 0, 0, 1, 0
460, 1/2, 1/6, 1/2, -1/6, -2, 2, 0, 0, 0
461, 1/2, 1/6, 1/2, -1/6, -3, 0, 4, 2, 0
462, 1/2, 1/4, 1/2, -1/4, -3, 2, 2, 0, 0
463, 1/2, 1/6, 1/2, -1/6, -2, 0, 1, 3, 0
464, 1/6, 1/2, -1/6, 1/2, -2, 2, 0, 0, 0
465, 1/2, 1/2, -1/2, 1/2, -2, -1, 3, 2, 0
466, 1/2, 1/6, 1/2, -1/6, -3, 1, 3, 1, 0
467, 1/2, 1/6, 1/2, -1/6, -2, 1, 0, 2, 0
468, 1/4, 1/2, -1/4, 1/2, -2, -1, 5, 0, 0
469, 1/2, 1/4, 1/2, -1/4, -1, 0, 1, 0, 0
470, 1/2, 1/2, -1/2, 1/2, -3, 0, 5, 0, 0
471, 1/2, 1/6, 1/2, -1/6, -3, 2, 2, 0, 0
472, 1/2, 1/6, 1/2, -1/6, -2, 0, 0, 4, 0
473, 1/6, 1/2, -1/6, 1/2, -3, 2, 2, 0, 0
474, 1/4, 1/2, -1/4, 1/2, -1, 0, 1, 0, 0
475, 1/2, 1/4, 1/2, -1/4, -2, -1, 4, 1, 0
476, 1/6, 1/2, -1/6, 1/2, -2, -1, 5, 0, 0
477, 1/2, 1/4, 1/2, -1/4, -1, -1, 1, 2, 0
478, 1/2, 1/2, -1/2, 1/2, -2, 1, 1, 0, 0
479, 1/2, 1/4, 1/2, -1/4, -3, 3, 0, 0, 0
480, 1/4, 1/2, -1/4, 1/2, -2, -1, 4, 1, 0
481, 1/2, 1/6, 1/2, -1/6, -1, 0, 1, 0, 0
482, 1/4, 1/2, -1/4, 1/2, -1, -1, 1, 2, 0
483, 1/2, 1/4, 1/2, -1/4, -2, 0, 3, 0, 0
484, 1/2, 1/4, 1/2, -1/4, -1, 0, 0, 1, 0
485, 1/2, 1/6, 1/2, -1/6, -4, 2, 4, 0, 0
486, 1/6, 1/2, -1/6, 1/2, -1, 0, 1, 0, 0
487, 1/2, 1/6, 1/2, -1/6, -3, 2, 1, 1, 0
488, 1/4, 1/2, -1/4, 1/2, -2, 0, 3, 0, 0
489, 1/2, 1/6, 1/2, -1/6, -2, -1, 4, 1, 0
490, 1/4, 1/2, -1/4, 1/2, -1, 0, 0, 1, 0
491, 1/2, 1/6, 1/2, -1/6, -1, -1, 1, 2, 0
492, 1/2, 1/4, 1/2, -1/4, -2, -1, 3, 2, 0
493, 1/6, 1/2, -1/6, 1/2, -2, -1, 4, 1, 0
494, 1/2, 1/4, 1/2, -1/4, -1, -1, 0, 3, 0
495, 1/2, 1/2, -1/2, 1/2, -2, 1, 0, 1, 0
496, 1/2, 1/6, 1/2, -1/6, -3, 3, 0, 0, 0
497, 1/6, 1/2, -1/6, 1/2, -1, -1, 1, 2, 0
498, 1/2, 1/6, 1/2, -1/6, -2, 0, 3, 0, 0
499, 1/4, 1/2, -1/4, 1/2, -2, -1, 3, 2, 0
500, 1/2, 1/4, 1/2, -1/4, -3, 0, 5, 0, 0
501, 1/2, 1/6, 1/2, -1/6, -1, 0, 0, 1, 0
502, 1/2, 1/4, 1/2, -1/4, -2, 0, 2, 1, 0
503, 1/6, 1/2, -1/6, 1/2, -2, 0, 3, 0, 0
504, 1/6, 1/2, -1/6, 1/2, -1, 0, 0, 1, 0
505, 1/2, 1/6, 1/2, -1/6, -3, 2, 0, 2, 0
506, 1/4, 1/2, -1/4, 1/2, -3, 0, 5, 0, 0
507, 1/2, 1/6, 1/2, -1/6, -2, -1, 3, 2, 0
508, 1/2, 1/4, 1/2, -1/4, -2, 1, 1, 0, 0
509, 1/2, 1/6, 1/2, -1/6, -1, -1, 0, 3, 0

510, 1/2, 1/4, 1/2, -1/4, -2, -1, 2, 3, 0
511, 1/2, 1/6, 1/2, -1/6, -4, 3, 2, 0, 0
512, 1/6, 1/2, -1/6, 1/2, -2, -1, 3, 2, 0
513, 1/2, 1/6, 1/2, -1/6, -3, 0, 5, 0, 0
514, 1/4, 1/2, -1/4, 1/2, -2, 1, 1, 0, 0
515, 1/2, 1/6, 1/2, -1/6, -2, 0, 2, 1, 0
516, 1/2, 1/4, 1/2, -1/4, -3, 0, 4, 1, 0
517, 1/6, 1/2, -1/6, 1/2, -3, 0, 5, 0, 0
518, 1/2, 1/4, 1/2, -1/4, -2, 0, 1, 2, 0
519, 1/6, 1/2, -1/6, 1/2, -2, 0, 2, 1, 0
520, 1/2, 1/2, -1/2, 1/2, -2, -1, 4, 0, 0
521, 1/2, 1/2, -1/2, 1/2, -1, -1, 1, 1, 0
522, 1/2, 1/6, 1/2, -1/6, -2, 1, 1, 0, 0
523, 1/4, 1/2, -1/4, 1/2, -2, 0, 1, 2, 0
524, 1/2, 1/4, 1/2, -1/4, -3, 1, 3, 0, 0
525, 1/2, 1/6, 1/2, -1/6, -2, -1, 2, 3, 0
526, 1/2, 1/4, 1/2, -1/4, -2, 1, 0, 1, 0
527, 1/6, 1/2, -1/6, 1/2, -2, 1, 1, 0, 0
528, 1/4, 1/2, -1/4, 1/2, -3, 1, 3, 0, 0
529, 1/2, 1/2, -1/2, 1/2, -1, 0, 0, 0, 0
530, 1/2, 1/6, 1/2, -1/6, -3, 0, 4, 1, 0
531, 1/4, 1/2, -1/4, 1/2, -2, 1, 0, 1, 0
532, 1/2, 1/6, 1/2, -1/6, -2, -1, 1, 2, 0
533, 1/2, 1/4, 1/2, -1/4, -2, 0, 0, 3, 0
534, 1/6, 1/2, -1/6, 1/2, -2, 0, 1, 2, 0
535, 1/2, 1/2, -1/2, 1/2, -2, -1, 3, 1, 0
536, 1/2, 1/6, 1/2, -1/6, -3, 1, 3, 0, 0
537, 1/2, 1/2, -1/2, 1/2, -1, -1, 0, 2, 0
538, 1/2, 1/6, 1/2, -1/6, -2, 1, 0, 1, 0
539, 1/2, 1/4, 1/2, -1/4, -3, 1, 2, 1, 0
540, 1/2, 1/6, 1/2, -1/6, -2, -1, 1, 4, 0
541, 1/6, 1/2, -1/6, 1/2, -3, 1, 3, 0, 0
542, 1/6, 1/2, -1/6, 1/2, -2, 1, 0, 1, 0
543, 1/2, 1/2, -1/2, 1/2, -2, 0, 2, 0, 0
544, 1/2, 1/6, 1/2, -1/6, -3, 0, 3, 2, 0
545, 1/2, 1/4, 1/2, -1/4, -3, 2, 1, 0, 0
546, 1/2, 1/6, 1/2, -1/6, -2, 0, 0, 3, 0
547, 1/2, 1/4, 1/2, -1/4, -2, -1, 4, 0, 0
548, 1/2, 1/4, 1/2, -1/4, -2, -1, 1, 1, 0
549, 1/4, 1/2, -1/4, 1/2, -3, 2, 1, 0, 0
550, 1/2, 1/2, -1/2, 1/2, -2, -1, 2, 2, 0
551, 1/2, 1/6, 1/2, -1/6, -3, 1, 2, 1, 0
552, 1/4, 1/2, -1/4, 1/2, -2, -1, 4, 0, 0
553, 1/2, 1/6, 1/2, -1/6, -2, -1, 0, 5, 0
554, 1/2, 1/4, 1/2, -1/4, -1, 0, 0, 0, 0
555, 1/2, 1/2, -1/2, 1/2, -3, 0, 4, 0, 0
556, 1/2, 1/6, 1/2, -1/6, -3, 2, 1, 0, 0
557, 1/2, 1/6, 1/2, -1/6, -3, 0, 2, 3, 0
558, 1/2, 1/4, 1/2, -1/4, -3, 2, 0, 1, 0
559, 1/2, 1/6, 1/2, -1/6, -2, -1, 4, 0, 0
560, 1/6, 1/2, -1/6, 1/2, -3, 1, 1, 0, 0
561, 1/4, 1/2, -1/4, 1/2, -1, 0, 0, 0, 0
562, 1/2, 1/6, 1/2, -1/6, -1, -1, 1, 1, 0
563, 1/2, 1/4, 1/2, -1/4, -2, -1, 3, 1, 0
564, 1/6, 1/2, -1/6, 1/2, -2, -1, 4, 0, 0
565, 1/2, 1/4, 1/2, -1/4, -1, -1, 0, 2, 0
566, 1/2, 1/2, -1/2, 1/2, -2, 1, 0, 0, 0
567, 1/2, 1/6, 1/2, -1/6, -4, 1, 4, 1, 0
568, 1/4, 1/2, -1/4, 1/2, -2, -1, 3, 1, 0
569, 1/2, 1/6, 1/2, -1/6, -1, 0, 0, 0, 0
570, 1/4, 1/2, -1/4, 1/2, -1, -1, 0, 2, 0
571, 1/2, 1/4, 1/2, -1/4, -2, 0, 2, 0, 0
572, 1/2, 1/6, 1/2, -1/6, -4, 2, 3, 0, 0
573, 1/6, 1/2, -1/6, 1/2, -1, 0, 0, 0, 0
574, 1/2, 1/2, -1/2, 1/2, -2, 0, 0, 2, 0
575, 1/2, 1/6, 1/2, -1/6, -3, 2, 0, 1, 0
576, 1/4, 1/2, -1/4, 1/2, -2, 0, 2, 0, 0
577, 1/2, 1/6, 1/2, -1/6, -2, -1, 3, 1, 0
578, 1/2, 1/6, 1/2, -1/6, -1, -1, 0, 2, 0
579, 1/2, 1/4, 1/2, -1/4, -2, -1, 2, 2, 0
580, 1/2, 1/2, -1/2, 1/2, -3, 1, 2, 0, 0
581, 1/6, 1/2, -1/6, 1/2, -2, -1, 3, 1, 0
582, 1/6, 1/2, -1/6, 1/2, -1, -1, 0, 2, 0
583, 1/2, 1/6, 1/2, -1/6, -3, 1, 0, 3, 0
584, 1/2, 1/6, 1/2, -1/6, -2, 0, 2, 0, 0

585, 1/4, 1/2, -1/4, 1/2, -2, -1, 2, 2, 0
586, 1/2, 1/4, 1/2, -1/4, -3, 0, 4, 0, 0
587, 1/2, 1/6, 1/2, -1/6, -2, 0, 1, 1, 0
588, 1/6, 1/2, -1/6, 1/2, -2, 0, 2, 0, 0
589, 1/2, 1/6, 1/2, -1/6, -4, 2, 2, 1, 0
590, 1/4, 1/2, -1/4, 1/2, -3, 0, 4, 0, 0
591, 1/2, 1/6, 1/2, -1/6, -2, -1, 2, 2, 0
592, 1/2, 1/4, 1/2, -1/4, -2, 1, 0, 0, 0
593, 1/2, 1/4, 1/2, -1/4, -2, -1, 1, 3, 0
594, 1/2, 1/6, 1/2, -1/6, -4, 3, 1, 0, 0
595, 1/6, 1/2, -1/6, 1/2, -2, -1, 2, 2, 0
596, 1/2, 1/6, 1/2, -1/6, -3, 0, 4, 0, 0
597, 1/4, 1/2, -1/4, 1/2, -2, 1, 0, 0, 0
598, 1/2, 1/6, 1/2, -1/6, -2, 0, 1, 1, 0
599, 1/2, 1/4, 1/2, -1/4, -2, 0, 3, 1, 0
600, 1/6, 1/2, -1/6, 1/2, -3, 0, 4, 0, 0
601, 1/2, 1/4, 1/2, -1/4, -2, 0, 0, 2, 0
602, 1/2, 1/2, -1/2, 1/2, -3, 2, 0, 0, 0
603, 1/6, 1/2, -1/6, 1/2, -2, 0, 1, 1, 0
604, 1/6, 1/2, -1/6, 1/2, -2, -2, 2, 4, 0
605, 1/2, 1/2, -1/2, 1/2, -2, -1, 3, 0, 0
606, 1/2, 1/2, -1/2, 1/2, -1, -1, 0, 1, 0
607, 1/2, 1/6, 1/2, -1/6, -2, 1, 0, 0, 0
608, 1/4, 1/2, -1/4, 1/2, -2, 0, 0, 2, 0
609, 1/2, 1/4, 1/2, -1/4, -3, 1, 2, 0, 0
610, 1/2, 1/6, 1/2, -1/6, -2, -1, 1, 3, 0
611, 1/6, 1/2, -1/6, 1/2, -2, 1, 0, 0, 0
612, 1/6, 1/2, -1/6, 1/2, -3, -1, 4, 2, 0
613, 1/2, 1/4, 1/2, -1/4, -2, -1, 0, 4, 0
614, 1/4, 1/2, -1/4, 1/2, -3, 1, 2, 0, 0
615, 1/2, 1/6, 1/2, -1/6, -2, 0, 3, 1, 0
616, 1/2, 1/6, 1/2, -1/6, -2, 0, 0, 2, 0
617, 1/6, 1/2, -1/6, 1/2, -4, 0, 6, 0, 0
618, 1/2, 1/4, 1/2, -1/4, -3, 0, 2, 2, 0
619, 1/6, 1/2, -1/6, 1/2, -3, 0, 0, 2, 0
620, 1/2, 1/2, -1/2, 1/2, -2, -1, 2, 1, 0
621, 1/2, 1/6, 1/2, -1/6, -3, 1, 2, 0, 0
622, 1/2, 1/4, 1/2, -1/4, -4, 1, 4, 0, 0
623, 1/2, 1/4, 1/2, -1/4, -3, 1, 1, 1, 0
624, 1/2, 1/6, 1/2, -1/6, -2, -1, 0, 4, 0
625, 1/6, 1/2, -1/6, 1/2, -3, 1, 2, 0, 0
626, 1/2, 1/2, -1/2, 1/2, -2, 0, 1, 0, 0
627, 1/2, 1/6, 1/2, -1/6, -2, 0, 2, 2, 0
628, 1/2, 1/4, 1/2, -1/4, -3, 2, 0, 0, 0
629, 1/2, 1/6, 1/2, -1/6, -2, -2, 0, 6, 0
630, 1/6, 1/2, -1/6, 1/2, -3, 0, 2, 2, 0
631, 1/2, 1/4, 1/2, -1/4, -3, 1, 3, 0, 0
632, 1/2, 1/4, 1/2, -1/4, -1, -1, 0, 1, 0
633, 1/2, 1/6, 1/2, -1/6, -4, 1, 4, 0, 0
634, 1/4, 1/2, -1/4, 1/2, -3, 2, 0, 0, 0
635, 1/2, 1/2, -1/2, 1/2, -3, 0, 1, 2, 0
636, 1/2, 1/6, 1/2, -1/6, -3, 1, 1, 1, 0
637, 1/2, 1/6, 1/2, -1/6, -3, -1, 2, 4, 0
638, 1/6, 1/2, -1/6, 1/2, -4, 1, 4, 0, 0
639, 1/4, 1/2, -1/4, 1/2, -2, -1, 3, 0, 0
640, 1/2, 1/4, 1/2, -1/4, -3, 1, 0, 2, 0
641, 1/6, 1/2, -1/6, 1/2, -3, 1, 1, 1, 0
642, 1/4, 1/2, -1/4, 1/2, -1, -1, 0, 1, 0
643, 1/2, 1/2, -1/2, 1/2, -3, 0, 3, 0, 0
644, 1/2, 1/2, -1/2, 1/2, -2, 0, 0, 1, 0
645, 1/2, 1/6, 1/2, -1/6, -3, 2, 0, 0, 0
646, 1/2, 1/6, 1/2, -1/6, -4, 0, 4, 2, 0
647, 1/2, 1/4, 1/2, -1/4, -4, 2, 2, 0, 0
648, 1/2, 1/6, 1/2, -1/6, -3, 0, 1, 3, 0
649, 1/2, 1/6, 1/2, -1/6, -2, -1, 3, 0, 0
650, 1/6, 1/2, -1/6, 1/2, -3, 2, 0, 0, 0
651, 1/2, 1/6, 1/2, -1/6, -1, -1, 0, 1, 0
652, 1/2, 1/4, 1/2, -1/4, -2, -1, 2, 1, 0
653, 1/6, 1/2, -1/6, 1/2, -2, -1, 3, 0, 0
654, 1/2, 1/6, 1/2, -1/6, -4, 1, 3, 1, 0
655, 1/6, 1/2, -1/6, 1/2, -1, 1, 0, 1, 0
656, 1/2, 1/6, 1/2, -1/6, -3, 1, 0, 2, 0
657, 1/4, 1/2, -1/4, 1/2, -2, -1, 2, 1, 0
658, 1/2, 1/4, 1/2, -1/4, -2, 0, 1, 0, 0
659, 1/2, 1/6, 1/2, -1/6, -4, 2, 2, 0, 0

660, 1/2, 1/6, 1/2, -1/6, -3, 0, 0, 4, 0
661, 1/4, 1/2, -1/4, 1/2, -2, 0, 1, 0, 0
662, 1/2, 1/6, 1/2, -1/6, -2, -1, 2, 1, 0
663, 1/2, 1/4, 1/2, -1/4, -2, -1, 1, 2, 0
664, 1/2, 1/2, -1/2, 1/2, -3, 1, 1, 0, 0
665, 1/6, 1/2, -1/6, 1/2, -2, -1, 2, 1, 0
666, 1/2, 1/6, 1/2, -1/6, -3, 0, 1, 0, 0
667, 1/4, 1/2, -1/4, 1/2, -2, -1, 1, 2, 0
668, 1/2, 1/4, 1/2, -1/4, -3, 0, 3, 0, 0
669, 1/2, 1/4, 1/2, -1/4, -2, 0, 0, 1, 0
670, 1/2, 1/6, 1/2, -1/6, -5, 2, 4, 0, 0
671, 1/6, 1/2, -1/6, 1/2, -2, 0, 1, 0, 0
672, 1/2, 1/6, 1/2, -1/6, -4, 2, 1, 1, 0
673, 1/6, 1/2, -1/6, 1/2, -2, -2, 2, 3, 0
674, 1/4, 1/2, -1/4, 1/2, -2, 3, 0, 0, 0
675, 1/2, 1/2, -1/2, 1/2, -1, -1, 0, 0, 0
676, 1/2, 1/6, 1/2, -1/6, -2, -1, 1, 2, 0
677, 1/4, 1/2, -1/4, 1/2, -2, -2, 1, 4, 0
678, 1/6, 1/2, -1/6, 1/2, -3, -1, 4, 1, 0
679, 1/2, 1/4, 1/2, -1/4, -2, -1, 0, 3, 0
680, 1/2, 1/6, 1/2, -1/6, -4, 3, 0, 0, 0
681, 1/6, 1/2, -1/6, 1/2, -2, -1, 1, 2, 0
682, 1/2, 1/6, 1/2, -1/6, -3, 0, 3, 0, 0
683, 1/4, 1/2, -1/4, 1/2, -3, -1, 3, 2, 0
684, 1/2, 1/6, 1/2, -1/6, -2, 0, 0, 1, 0
685, 1/2, 1/4, 1/2, -1/4, -3, 0, 2, 1, 0
686, 1/6, 1/2, -1/6, 1/2, -3, 0, 3, 0, 0
687, 1/6, 1/2, -1/6, 1/2, -2, 0, 0, 1, 0
688, 1/2, 1/4, 1/2, -1/4, -2, -2, 0, 5, 0
689, 1/6, 1/2, -1/6, 1/2, -2, -2, 1, 4, 0
690, 1/4, 1/2, -1/4, 1/2, -3, -1, 0, 3, 0
691, 1/2, 1/2, -1/2, 1/2, -2, -1, 2, 0, 0
692, 1/2, 1/4, 1/2, -1/4, -3, 1, 1, 0, 0
693, 1/2, 1/6, 1/2, -1/6, -2, -1, 0, 3, 0
694, 1/2, 1/4, 1/2, -1/4, -3, 0, 1, 2, 3, 0
695, 1/6, 1/2, -1/6, 1/2, -3, -1, 3, 2, 0
696, 1/4, 1/2, -1/4, 1/2, -3, 1, 1, 0, 0
697, 1/2, 1/6, 1/2, -1/6, -3, 0, 2, 1, 0
698, 1/2, 1/4, 1/2, -1/4, -3, 0, 4, 1, 0
699, 1/6, 1/2, -1/6, 1/2, -4, 0, 5, 0, 0
700, 1/2, 1/4, 1/2, -1/4, -3, 0, 1, 2, 0
701, 1/2, 1/6, 1/2, -1/6, -2, -2, 0, 5, 0
702, 1/6, 1/2, -1/6, 1/2, -3, 0, 2, 1, 0
703, 1/2, 1/4, 1/2, -1/4, -1, -1, 0, 0, 0
704, 1/2, 1/2, -1/2, 1/2, -2, -1, 1, 1, 0
705, 1/2, 1/6, 1/2, -1/6, -3, 1, 1, 0, 0
706, 1/4, 1/2, -1/4, 1/2, -3, 0, 1, 2, 0
707, 1/2, 1/4, 1/2, -1/4, -4, 1, 3, 0, 0
708, 1/2, 1/6, 1/2, -1/6, -3, -1, 2, 3, 0
709, 1/2, 1/4, 1/2, -1/4, -3, 1, 0, 1, 0
710, 1/6, 1/2, -1/6, 1/2, -3, 1, 1, 0, 0
711, 1/4, 1/2, -1/4, 1/2, -4, 1, 3, 0, 0
712, 1/2, 1/2, -1/2, 1/2, -2, 0, 0, 0, 0
713, 1/2, 1/6, 1/2, -1/6, -4, 0, 4, 1, 0
714, 1/4, 1/2, -1/4, 1/2, -3, 1, 0, 1, 0
715, 1/2, 1/6, 1/2, -1/6, -3, 0, 1, 2, 0
716, 1/2, 1/4, 1/2, -1/4, -3, 0, 0, 3, 0
717, 1/2, 1/6, 1/2, -1/6, -1, -1, 0, 0, 0
718, 1/6, 1/2, -1/6, 1/2, -3, 0, 1, 2, 0
719, 1/2, 1/4, 1/2, -1/4, -2, -1, 2, 0, 0
720, 1/2, 1/6, 1/2, -1/6, -4, 1, 3, 0, 0
721, 1/2, 1/2, -1/2, 1/2, -2, -1, 0, 2, 0
722, 1/2, 1/6, 1/2, -1/6, -3, 1, 0, 1, 0
723, 1/2, 1/4, 1/2, -1/4, -4, 1, 2, 1, 0
724, 1/2, 1/6, 1/2, -1/6, -3, -1, 1, 4, 0
725, 1/6, 1/2, -1/6, 1/2, -4, 1, 3, 0, 0
726, 1/4, 1/2, -1/4, 1/2, -2, -1, 2, 0, 0
727, 1/6, 1/2, -1/6, 1/2, -3, 1, 0, 1, 0
728, 1/2, 1/2, -1/2, 1/2, -3, 0, 2, 0, 0
729, 1/2, 1/6, 1/2, -1/6, -4, 0, 3, 2, 0
730, 1/2, 1/4, 1/2, -1/4, -4, 2, 1, 0, 0
731, 1/2, 1/2, -1/2, 1/2, -2, -2, 0, 4, 0
732, 1/2, 1/6, 1/2, -1/6, -3, 0, 0, 3, 0
733, 1/2, 1/6, 1/2, -1/6, -2, -1, 2, 0, 0
734, 1/2, 1/4, 1/2, -1/4, -2, -1, 1, 1, 0

735, 1/6, 1/2, -1/6, 1/2, -2, -1, 2, 0, 0
736, 1/2, 1/2, -1/2, 1/2, -3, -1, 2, 2, 0
737, 1/2, 1/6, 1/2, -1/6, -4, 1, 2, 1, 0
738, 1/2, 1/6, 1/2, -1/6, -3, -1, 0, 5, 0
739, 1/4, 1/2, -1/4, 1/2, -2, -1, 1, 1, 0
740, 1/2, 1/6, 1/2, -1/6, -2, -2, 2, 2, 0
741, 1/2, 1/4, 1/2, -1/4, -2, 0, 0, 0, 0
742, 1/2, 1/2, -1/2, 1/2, -4, 0, 4, 0, 0
743, 1/2, 1/6, 1/2, -1/6, -4, 2, 1, 0, 0
744, 1/2, 1/6, 1/2, -1/6, -4, 0, 2, 3, 0
745, 1/4, 1/2, -1/4, 1/2, -2, 0, 0, 0, 0
746, 1/2, 1/6, 1/2, -1/6, -2, -1, 1, 1, 0
747, 1/4, 1/2, -1/4, 1/2, -2, -2, 1, 3, 0
748, 1/6, 1/2, -1/6, 1/2, -3, -1, 4, 0, 0
749, 1/2, 1/4, 1/2, -1/4, -2, -1, 0, 2, 0
750, 1/2, 1/2, -1/2, 1/2, -3, 1, 0, 0, 0
751, 1/2, 1/6, 1/2, -1/6, -5, 1, 4, 1, 0
752, 1/6, 1/2, -1/6, 1/2, -2, -1, 1, 1, 0
753, 1/4, 1/2, -1/4, 1/2, -3, -1, 0, 3, 1, 0
754, 1/2, 1/6, 1/2, -1/6, -2, 0, 0, 0, 0
755, 1/4, 1/2, -1/4, 1/2, -2, -1, 0, 2, 0
756, 1/2, 1/4, 1/2, -1/4, -3, 0, 2, 0, 0
757, 1/2, 1/6, 1/2, -1/6, -5, 2, 3, 0, 0
758, 1/6, 1/2, -1/6, 1/2, -2, 0, 0, 0, 0
759, 1/2, 1/4, 1/2, -1/4, -2, -2, 0, 4, 0
760, 1/2, 1/2, -1/2, 1/2, -3, 0, 0, 2, 0
761, 1/2, 1/6, 1/2, -1/6, -4, 2, 0, 1, 0
762, 1/6, 1/2, -1/6, 1/2, -2, -2, 1, 3, 0
763, 1/4, 1/2, -1/4, 1/2, -3, 0, 2, 0, 0
764, 1/2, 1/6, 1/2, -1/6, -2, -1, 0, 2, 0
765, 1/4, 1/2, -1/4, 1/2, -2, -2, 0, 4, 0
766, 1/2, 1/4, 1/2, -1/4, -3, -1, 2, 2, 0
767, 1/2, 1/2, -1/2, 1/2, -4, 1, 2, 0, 0
768, 1/6, 1/2, -1/6, 1/2, -3, -1, 3, 1, 0
769, 1/6, 1/2, -1/6, 1/2, -2, -1, 0, 2, 0
770, 1/2, 1/6, 1/2, -1/6, -3, 0, 2, 0, 0
771, 1/4, 1/2, -1/4, 1/2, -3, -1, 2, 2, 0
772, 1/2, 1/4, 1/2, -1/4, -4, 0, 4, 0, 0
773, 1/2, 1/4, 1/2, -1/4, -3, 0, 1, 1, 0
774, 1/2, 1/6, 1/2, -1/6, -2, -2, 0, 4, 0
775, 1/6, 1/2, -1/6, 1/2, -3, 0, 2, 0, 0
776, 1/6, 1/2, -1/6, 1/2, -2, -2, 0, 4, 0
777, 1/4, 1/2, -1/4, 1/2, -4, 0, 4, 0, 0
778, 1/2, 1/2, -1/2, 1/2, -2, -1, 1, 0, 0
779, 1/4, 1/2, -1/4, 1/2, -3, 0, 1, 1, 0
780, 1/2, 1/6, 1/2, -1/6, -3, -1, 2, 2, 0
781, 1/2, 1/4, 1/2, -1/4, -3, 0, 1, 0, 0
782, 1/2, 1/4, 1/2, -1/4, -3, -1, 1, 3, 0
783, 1/6, 1/2, -1/6, 1/2, -3, -1, 2, 2, 0
784, 1/2, 1/6, 1/2, -1/6, -4, 0, 4, 0, 0
785, 1/4, 1/2, -1/4, 1/2, -3, 1, 0, 0, 0
786, 1/2, 1/6, 1/2, -1/6, -3, 0, 1, 1, 0
787, 1/2, 1/4, 1/2, -1/4, -4, 0, 3, 1, 0
788, 1/6, 1/2, -1/6, 1/2, -4, 0, 4, 0, 0
789, 1/2, 1/4, 1/2, -1/4, -3, 0, 0, 2, 0
790, 1/6, 1/2, -1/6, 1/2, -3, 0, 1, 1, 0
791, 1/6, 1/2, -1/6, 1/2, -3, -2, 2, 4, 0
792, 1/2, 1/2, -1/2, 1/2, -2, -1, 0, 1, 0
793, 1/2, 1/6, 1/2, -1/6, -3, 1, 0, 0, 0
794, 1/4, 1/2, -1/4, 1/2, -3, 0, 0, 2, 0
795, 1/2, 1/4, 1/2, -1/4, -4, 1, 2, 0, 0
796, 1/2, 1/6, 1/2, -1/6, -3, -1, 1, 3, 0
797, 1/6, 1/2, -1/6, 1/2, -3, 1, 0, 0, 0
798, 1/6, 1/2, -1/6, 1/2, -4, -1, 4, 2, 0
799, 1/2, 1/4, 1/2, -1/4, -3, -1, 0, 4, 0
800, 1/4, 1/2, -1/4, 1/2, -4, 1, 2, 0, 0
801, 1/2, 1/6, 1/2, -1/6, -4, 0, 3, 1, 0
802, 1/2, 1/2, -1/2, 1/2, -2, -2, 0, 3, 0
803, 1/2, 1/6, 1/2, -1/6, -3, 0, 0, 2, 0
804, 1/6, 1/2, -1/6, 1/2, -5, 0, 6, 0, 0
805, 1/2, 1/4, 1/2, -1/4, -4, 2, 2, 0, 0
806, 1/6, 1/2, -1/6, 1/2, -3, 0, 0, 2, 0
807, 1/2, 1/4, 1/2, -1/4, -2, -1, 1, 0, 0
808, 1/2, 1/6, 1/2, -1/6, -2, -1, 2, 1, 0
809, 1/2, 1/6, 1/2, -1/6, -4, 1, 2, 0, 0

810, 1/2, 1/4, 1/2, -1/4, -5, 1, 4, 0, 0
811, 1/2, 1/4, 1/2, -1/4, -4, 1, 1, 1, 0
812, 1/2, 1/6, 1/2, -1/6, -3, -1, 0, 4, 0
813, 1/6, 1/2, -1/6, 1/2, -4, 1, 2, 0, 0
814, 1/4, 1/2, -1/4, 1/2, -2, -1, 1, 0, 0
815, 1/2, 1/2, -1/2, 1/2, -3, 0, 1, 0, 0
816, 1/2, 1/6, 1/2, -1/6, -4, 0, 2, 2, 0
817, 1/2, 1/4, 1/2, -1/4, -4, 2, 0, 0, 0
818, 1/2, 1/6, 1/2, -1/6, -3, -2, 0, 6, 0
819, 1/2, 1/6, 1/2, -1/6, -2, -1, 1, 0, 0
820, 1/4, 1/2, -1/4, 1/2, -2, -2, 1, 2, 0
821, 1/2, 1/4, 1/2, -1/4, -2, -1, 0, 1, 0
822, 1/2, 1/6, 1/2, -1/6, -5, 1, 4, 0, 0
823, 1/6, 1/2, -1/6, 1/2, -2, -1, 1, 0, 0
824, 1/2, 1/4, 1/2, -1/4, -3, -1, 1, 2, 0
825, 1/2, 1/6, 1/2, -1/6, -4, 1, 1, 1, 0
826, 1/2, 1/6, 1/2, -1/6, -4, -1, 2, 4, 0
827, 1/4, 1/2, -1/4, 1/2, -3, -1, 3, 0, 0
828, 1/6, 1/2, -1/6, 1/2, -2, -1, 1, 1, 0
829, 1/4, 1/2, -1/4, 1/2, -2, -1, 0, 1, 0
830, 1/2, 1/6, 1/2, -1/6, -2, -2, 1, 2, 0
831, 1/2, 1/2, -1/2, 1/2, -4, 0, 3, 0, 0
832, 1/2, 1/4, 1/2, -1/4, -2, -2, 0, 3, 0
833, 1/2, 1/2, -1/2, 1/2, -3, 0, 0, 1, 0
834, 1/2, 1/6, 1/2, -1/6, -4, 2, 0, 0, 0
835, 1/2, 1/6, 1/2, -1/6, -5, 0, 4, 2, 0
836, 1/6, 1/2, -1/6, 1/2, -2, -2, 1, 2, 0
837, 1/2, 1/6, 1/2, -1/6, -4, 0, 1, 3, 0
838, 1/6, 1/2, -1/6, 1/2, -4, 2, 0, 0, 0
839, 1/2, 1/6, 1/2, -1/6, -2, -1, 0, 1, 0
840, 1/4, 1/2, -1/4, 1/2, -2, -2, 0, 3, 0
841, 1/2, 1/4, 1/2, -1/4, -3, -1, 2, 1, 0
842, 1/6, 1/2, -1/6, 1/2, -3, -1, 3, 0, 0
843, 1/2, 1/6, 1/2, -1/6, -5, 1, 3, 1, 0
844, 1/6, 1/2, -1/6, 1/2, -2, -1, 0, 1, 0
845, 1/4, 1/2, -1/4, 1/2, -3, -1, 2, 1, 0
846, 1/2, 1/4, 1/2, -1/4, -3, 0, 1, 0, 0
847, 1/2, 1/6, 1/2, -1/6, -2, -2, 0, 3, 0
848, 1/2, 1/6, 1/2, -1/6, -5, 2, 2, 0, 0
849, 1/6, 1/2, -1/6, 1/2, -2, -2, 0, 3, 0
850, 1/4, 1/2, -1/4, 1/2, -3, 0, 1, 0, 0
851, 1/2, 1/6, 1/2, -1/6, -3, -1, 2, 1, 0
852, 1/2, 1/4, 1/2, -1/4, -3, -1, 1, 2, 0
853, 1/2, 1/2, -1/2, 1/2, -4, 1, 1, 0, 0
854, 1/6, 1/2, -1/6, 1/2, -3, -1, 2, 1, 0
855, 1/2, 1/6, 1/2, -1/6, -3, 0, 1, 0, 0
856, 1/4, 1/2, -1/4, 1/2, -3, -1, 1, 2, 0
857, 1/2, 1/4, 1/2, -1/4, -4, 0, 3, 0, 0
858, 1/2, 1/4, 1/2, -1/4, -3, 0, 0, 1, 0
859, 1/6, 1/2, -1/6, 1/2, -3, 0, 1, 0, 0
860, 1/6, 1/2, -1/6, 1/2, -3, -2, 2, 3, 0
861, 1/4, 1/2, -1/4, 1/2, -4, 0, 3, 0, 0
862, 1/2, 1/2, -1/2, 1/2, -2, -1, 0, 0, 0
863, 1/4, 1/2, -1/4, 1/2, -3, 0, 0, 1, 0
864, 1/2, 1/6, 1/2, -1/6, -3, -1, 1, 2, 0
865, 1/4, 1/2, -1/4, 1/2, -3, -2, 1, 4, 0
866, 1/6, 1/2, -1/6, 1/2, -4, -1, 4, 1, 0
867, 1/2, 1/4, 1/2, -1/4, -3, -1, 0, 3, 0
868, 1/2, 1/6, 1/2, -1/6, -5, 3, 0, 0, 0
869, 1/6, 1/2, -1/6, 1/2, -3, -1, 1, 2, 0
870, 1/2, 1/6, 1/2, -1/6, -4, 0, 3, 0, 0
871, 1/4, 1/2, -1/4, 1/2, -4, -1, 3, 2, 0
872, 1/2, 1/2, -1/2, 1/2, -2, -2, 0, 2, 0
873, 1/2, 1/6, 1/2, -1/6, -3, 0, 0, 1, 0
874, 1/2, 1/4, 1/2, -1/4, -4, 0, 2, 1, 0
875, 1/6, 1/2, -1/6, 1/2, -4, 0, 3, 0, 0
876, 1/6, 1/2, -1/6, 1/2, -3, 0, 0, 1, 0
877, 1/2, 1/4, 1/2, -1/4, -3, -2, 0, 5, 0
878, 1/6, 1/2, -1/6, 1/2, -3, -2, 1, 4, 0
879, 1/4, 1/2, -1/4, 1/2, -5, 0, 5, 0, 0
880, 1/2, 1/2, -1/2, 1/2, -3, -1, 2, 0, 0
881, 1/2, 1/4, 1/2, -1/4, -4, 1, 1, 0, 0
882, 1/2, 1/6, 1/2, -1/6, -3, -1, 0, 3, 0
883, 1/2, 1/4, 1/2, -1/4, -4, -1, 2, 3, 0
884, 1/6, 1/2, -1/6, 1/2, -4, -1, 3, 2, 0

885, 1/2, 1/4, 1/2, -1/4, -2, -2, 1, 1, 0
886, 1/4, 1/2, -1/4, 1/2, -4, 1, 1, 0, 0
887, 1/2, 1/6, 1/2, -1/6, -4, 0, 2, 1, 0
888, 1/2, 1/4, 1/2, -1/4, -5, 0, 4, 1, 0
889, 1/6, 1/2, -1/6, 1/2, -5, 0, 5, 0, 0
890, 1/2, 1/4, 1/2, -1/4, -4, 0, 1, 2, 0
891, 1/2, 1/6, 1/2, -1/6, -3, -2, 0, 5, 0
892, 1/2, 1/4, 1/2, -1/4, -2, -1, 0, 0, 0
893, 1/2, 1/2, -1/2, 1/2, -3, -1, 1, 1, 0
894, 1/2, 1/6, 1/2, -1/6, -4, 1, 1, 0, 0
895, 1/2, 1/4, 1/2, -1/4, -5, 1, 3, 0, 0
896, 1/2, 1/6, 1/2, -1/6, -4, -1, 2, 3, 0
897, 1/2, 1/6, 1/2, -1/6, 2, 2, 0, 0, 1
898, 1/2, 1/4, 1/2, -1/4, -4, 1, 0, 1, 0
899, 1/6, 1/2, -1/6, 1/2, -4, 1, 1, 0, 0
900, 1/4, 1/2, -1/4, 1/2, -2, -1, 0, 0, 0
901, 1/2, 1/6, 1/2, -1/6, -2, -2, 1, 1, 0
902, 1/6, 1/2, -1/6, 1/2, -3, -2, 4, 0, 0
903, 1/2, 1/4, 1/2, -1/4, -2, -2, 0, 2, 0
904, 1/2, 1/2, -1/2, 1/2, -3, 0, 0, 0, 0
905, 1/2, 1/6, 1/2, -1/6, -5, 0, 4, 1, 0
906, 1/4, 1/2, -1/4, 1/2, -4, 1, 0, 1, 0
907, 1/2, 1/6, 1/2, -1/6, -4, 0, 1, 2, 0
908, 1/2, 1/6, 1/2, -1/6, -2, -1, 0, 0, 0
909, 1/4, 1/2, -1/4, 1/2, -2, -2, 0, 2, 0
910, 1/2, 1/4, 1/2, -1/4, -3, -1, 2, 0, 0
911, 1/2, 1/6, 1/2, -1/6, -4, 0, 3, 0, 0
912, 1/6, 1/2, -1/6, 1/2, -2, -1, 0, 0, 0
913, 1/2, 1/2, -1/2, 1/2, -3, -1, 0, 2, 0
914, 1/2, 1/6, 1/2, -1/6, -4, 1, 0, 1, 0
915, 1/2, 1/6, 1/2, -1/6, -4, -1, 1, 4, 0
916, 1/4, 1/2, -1/4, 1/2, -3, -1, 2, 0, 0
917, 1/6, 1/2, -1/6, 1/2, -4, 1, 0, 1, 0
918, 1/2, 1/6, 1/2, -1/6, -2, -2, 0, 2, 0
919, 1/2, 1/2, -1/2, 1/2, -4, 0, 2, 0, 0
920, 1/2, 1/6, 1/2, -1/6, -5, 0, 3, 2, 0
921, 1/6, 1/2, -1/6, 1/2, -2, -2, 0, 2, 0
922, 1/2, 1/2, -1/2, 1/2, -3, -2, 0, 4, 0
923, 1/2, 1/6, 1/2, -1/6, -4, 0, 0, 3, 0
924, 1/2, 1/6, 1/2, -1/6, -3, -1, 2, 0, 0
925, 1/2, 1/4, 1/2, -1/4, -3, -1, 1, 1, 0
926, 1/6, 1/2, -1/6, 1/2, -3, -1, 2, 0, 0
927, 1/2, 1/2, -1/2, 1/2, -4, -1, 2, 2, 0
928, 1/2, 1/6, 1/2, -1/6, -5, 1, 2, 1, 0
929, 1/4, 1/2, -1/4, 1/2, -3, -1, 1, 1, 0
930, 1/2, 1/6, 1/2, -1/6, -3, -2, 2, 2, 0
931, 1/2, 1/4, 1/2, -1/4, -3, 0, 0, 0, 0
932, 1/2, 1/2, -1/2, 1/2, -5, 0, 4, 0, 0
933, 1/2, 1/6, 1/2, -1/6, -5, 2, 1, 0, 0
934, 1/6, 1/2, -1/6, 1/2, -3, -2, 2, 2, 0
935, 1/2, 1/6, 1/2, -1/6, 1, 3, 0, 0, 1
936, 1/4, 1/2, -1/4, 1/2, -3, 0, 0, 0, 0
937, 1/2, 1/6, 1/2, -1/6, -3, -1, 1, 1, 0
938, 1/4, 1/2, -1/4, 1/2, -3, -2, 1, 3, 0
939, 1/6, 1/2, -1/6, 1/2, -4, -1, 4, 0, 0
940, 1/2, 1/4, 1/2, -1/4, -3, -1, 0, 2, 0
941, 1/2, 1/2, -1/2, 1/2, -4, 1, 0, 0, 0
942, 1/6, 1/2, -1/6, 1/2, -3, -1, 1, 1, 0
943, 1/4, 1/2, -1/4, 1/2, -4, -1, 3, 1, 0
944, 1/2, 1/2, -1/2, 1/2, -2, -2, 0, 1, 0
945, 1/2, 1/6, 1/2, -1/6, -3, 0, 0, 0, 0
946, 1/4, 1/2, -1/4, 1/2, -3, -1, 0, 2, 0
947, 1/2, 1/4, 1/2, -1/4, -4, 0, 2, 0, 0
948, 1/6, 1/2, -1/6, 1/2, -3, 0, 0, 0, 0
949, 1/2, 1/4, 1/2, -1/4, -3, -2, 0, 4, 0
950, 1/2, 1/6, 1/2, -1/6, -5, 2, 0, 1, 0
951, 1/6, 1/2, -1/6, 1/2, -3, -2, 1, 3, 0
952, 1/4, 1/2, -1/4, 1/2, -4, 0, 2, 0, 0
953, 1/2, 1/6, 1/2, -1/6, -3, -1, 0, 2, 0
954, 1/4, 1/2, -1/4, 1/2, -3, -2, 0, 4, 0
955, 1/2, 1/4, 1/2, -1/4, -4, -1, 2, 2, 0
956, 1/6, 1/2, -1/6, 1/2, -4, -1, 3, 1, 0
957, 1/6, 1/2, -1/6, 1/2, -3, -1, 0, 2, 0
958, 1/2, 1/6, 1/2, -1/6, -4, 0, 2, 0, 0
959, 1/4, 1/2, -1/4, 1/2, -4, -1, 2, 2, 0

960, 1/2, 1/4, 1/2, -1/4, -5, 0, 4, 0, 0
961, 1/2, 1/4, 1/2, -1/4, -4, 0, 1, 1, 0
962, 1/6, 1/2, -1/6, -3, -2, 0, 4, 0
963, 1/6, 1/2, -1/6, 1/2, -4, 0, 2, 0, 0
964, 1/6, 1/2, -1/6, 1/2, -3, -2, 0, 4, 0
965, 1/4, 1/2, -1/4, 1/2, -5, 0, 4, 0, 0
966, 1/2, 1/6, 1/2, -1/6, -4, -1, 2, 2, 0
967, 1/2, 1/4, 1/2, -1/4, -4, 1, 0, 0, 0
968, 1/2, 1/4, 1/2, -1/4, -4, -1, 1, 3, 0
969, 1/6, 1/2, -1/6, 1/2, -4, -1, 2, 2, 0
970, 1/2, 1/4, 1/2, -1/4, -2, -2, 0, 1, 0
971, 1/2, 1/6, 1/2, -1/6, 0, 4, 0, 0, 1
972, 1/2, 1/6, 1/2, -1/6, -5, 0, 4, 0, 0
973, 1/4, 1/2, -1/4, 1/2, -4, 1, 0, 0, 0
974, 1/2, 1/6, 1/2, -1/6, -4, 0, 1, 1, 0
975, 1/2, 1/4, 1/2, -1/4, -5, 0, 3, 1, 0
976, 1/6, 1/2, -1/6, 1/2, -5, 0, 4, 0, 0
977, 1/4, 1/2, -1/4, 1/2, -3, -2, 3, 0, 0
978, 1/2, 1/4, 1/2, -1/4, -4, -2, 0, 2, 0
979, 1/4, 1/2, -1/4, 1/2, -2, -2, 0, 1, 0
980, 1/2, 1/2, -1/2, 1/2, -3, -1, 0, 1, 0
981, 1/2, 1/6, 1/2, -1/6, -4, 1, 0, 0, 0
982, 1/2, 1/4, 1/2, -1/4, -5, 1, 2, 0, 0
983, 1/2, 1/6, 1/2, -1/6, -4, -1, 1, 3, 0
984, 1/6, 1/2, -1/6, 1/2, -4, 1, 0, 0, 0
985, 1/2, 1/6, 1/2, -1/6, -2, -2, 0, 1, 0
986, 1/2, 1/4, 1/2, -1/4, -3, -2, 2, 1, 0
987, 1/6, 1/2, -1/6, 1/2, -3, -2, 3, 0, 0
988, 1/2, 1/6, 1/2, -1/6, -5, 0, 3, 1, 0
989, 1/6, 1/2, -1/6, 1/2, -2, -2, 0, 1, 0
990, 1/2, 1/2, -1/2, 1/2, -3, -2, 0, 3, 0
991, 1/2, 1/6, 1/2, -1/6, -4, 0, 0, 2, 0
992, 1/2, 1/2, -1/2, 1/2, -4, -1, 2, 1, 0
993, 1/2, 1/6, 1/2, -1/6, -5, 1, 2, 0, 0
994, 1/2, 1/6, 1/2, -1/6, -4, -1, 0, 4, 0
995, 1/6, 1/2, -1/6, 1/2, -5, 1, 2, 0, 0
996, 1/4, 1/2, -1/4, 1/2, -3, -1, 1, 0, 0
997, 1/2, 1/6, 1/2, -1/6, -3, -2, 2, 1, 0
998, 1/6, 1/2, -1/6, 1/2, 1, 2, 1, 0, 1
999, 1/2, 1/2, -1/2, 1/2, -4, 0, 1, 0, 0
1000, 1/6, 1/2, -1/6, 1/2, -3, -2, 2, 1, 0
1001, 1/2, 1/6, 1/2, -1/6, -5, 0, 2, 2, 0
1002, 1/2, 1/4, 1/2, -1/4, -5, 2, 0, 0, 0
1003, 1/4, 1/2, -1/4, 1/2, -3, -2, 1, 2, 0
1004, 1/2, 1/4, 1/2, -1/4, -3, -1, 0, 1, 0
1005, 1/6, 1/2, -1/6, 1/2, -3, -1, 1, 0, 0
1006, 1/2, 1/2, -1/2, 1/2, -4, -1, 1, 2, 0
1007, 1/2, 1/6, 1/2, -1/6, -5, 1, 1, 1, 0
1008, 1/4, 1/2, -1/4, 1/2, -4, -1, 3, 0, 0
1009, 1/2, 1/6, 1/2, -1/6, 1, 2, 0, 1, 1
1010, 1/2, 1/2, -1/2, 1/2, -2, -2, 0, 0, 0
1011, 1/4, 1/2, -1/4, 1/2, -3, -1, 0, 1, 0
1012, 1/2, 1/2, -1/2, 1/2, -5, 0, 3, 0, 0
1013, 1/2, 1/4, 1/2, -1/4, -3, -2, 0, 3, 0
1014, 1/2, 1/6, 1/2, -1/6, -5, 2, 0, 0, 0
1015, 1/6, 1/2, -1/6, 1/2, -3, -2, 1, 2, 0
1016, 1/6, 1/2, -1/6, 1/2, -5, 2, 0, 0, 0
1017, 1/2, 1/6, 1/2, -1/6, -3, -1, 0, 1, 0
1018, 1/4, 1/2, -1/4, 1/2, -3, -2, 0, 3, 0
1019, 1/2, 1/4, 1/2, -1/4, -4, -1, 2, 1, 0
1020, 1/6, 1/2, -1/6, 1/2, -4, -1, 3, 0, 0
1021, 1/6, 1/2, -1/6, 1/2, -3, -1, 0, 1, 0
1022, 1/2, 1/2, -1/2, 1/2, -3, -2, 2, 0, 0
1023, 1/4, 1/2, -1/4, 1/2, -4, -1, 2, 1, 0
1024, 1/2, 1/4, 1/2, -1/4, -4, 0, 1, 0, 0
1025, 1/2, 1/6, 1/2, -1/6, -3, -2, 0, 3, 0
1026, 1/2, 1/6, 1/2, -1/6, -6, 2, 2, 0, 0
1027, 1/6, 1/2, -1/6, 1/2, -3, -2, 0, 3, 0
1028, 1/4, 1/2, -1/4, 1/2, -4, 0, 1, 0, 0
1029, 1/2, 1/6, 1/2, -1/6, -4, -1, 2, 1, 0
1030, 1/2, 1/4, 1/2, -1/4, -4, -1, 1, 2, 0
1031, 1/6, 1/2, -1/6, 1/2, -4, -1, 2, 1, 0
1032, 1/2, 1/4, 1/2, -1/4, -2, -2, 0, 0, 0
1033, 1/2, 1/6, 1/2, -1/6, -4, 0, 1, 0, 0
1034, 1/4, 1/2, -1/4, 1/2, -4, -1, 1, 2, 0

1035, 1/2, 1/4, 1/2, -1/4, -5, 0, 3, 0, 0
1036, 1/2, 1/4, 1/2, -1/4, -4, 0, 0, 1, 0
1037, 1/6, 1/2, -1/6, 1/2, -4, 0, 1, 0, 0
1038, 1/4, 1/2, -1/4, 1/2, -5, 0, 3, 0, 0
1039, 1/2, 1/6, 1/2, -1/6, 0, 3, 0, 1, 1
1040, 1/2, 1/2, -1/2, 1/2, -3, -1, 0, 0, 0
1041, 1/2, 1/6, 1/2, -1/6, -4, -1, 1, 2, 0
1042, 1/2, 1/4, 1/2, -1/4, -4, -1, 0, 3, 0
1043, 1/2, 1/6, 1/2, -1/6, -2, -2, 0, 0, 0
1044, 1/2, 1/6, 1/2, -1/6, -6, 3, 0, 0, 0
1045, 1/6, 1/2, -1/6, 1/2, -4, -1, 1, 2, 0
1046, 1/2, 1/4, 1/2, -1/4, -3, -2, 2, 0, 0
1047, 1/2, 1/6, 1/2, -1/6, -5, 0, 3, 0, 0
1048, 1/2, 1/2, -1/2, 1/2, -3, -2, 0, 2, 0
1049, 1/2, 1/6, 1/2, -1/6, -4, 0, 0, 1, 0
1050, 1/2, 1/4, 1/2, -1/4, -5, 0, 2, 1, 0
1051, 1/6, 1/2, -1/6, 1/2, -5, 0, 3, 0, 0
1052, 1/4, 1/2, -1/4, 1/2, -3, -2, 2, 0, 0
1053, 1/2, 1/2, -1/2, 1/2, -4, -1, 2, 0, 0
1054, 1/2, 1/4, 1/2, -1/4, -5, 1, 1, 0, 0
1055, 1/2, 1/6, 1/2, -1/6, -4, -1, 0, 3, 0
1056, 1/2, 1/6, 1/2, -1/6, -3, -2, 2, 0, 0
1057, 1/2, 1/4, 1/2, -1/4, 1, 2, 0, 0, 1
1058, 1/6, 1/2, -1/6, 1/2, -3, -2, 2, 0, 0
1059, 1/4, 1/2, -1/4, 1/2, -5, 1, 1, 0, 0
1060, 1/2, 1/6, 1/2, -1/6, -5, 0, 2, 1, 0
1061, 1/4, 1/2, -1/4, 1/2, 1, 2, 0, 0, 1
1062, 1/4, 1/2, -1/4, 1/2, -3, -2, 1, 1, 0
1063, 1/2, 1/6, 1/2, -1/6, -3, -3, 2, 2, 0
1064, 1/2, 1/4, 1/2, -1/4, -3, -1, 0, 0, 0
1065, 1/2, 1/2, -1/2, 1/2, -4, -1, 1, 1, 0
1066, 1/2, 1/6, 1/2, -1/6, -5, 1, 1, 0, 0
1067, 1/2, 1/6, 1/2, -1/6, 1, 2, 0, 0, 1
1068, 1/2, 1/4, 1/2, -1/4, -5, 1, 0, 1, 0
1069, 1/6, 1/2, -1/6, 1/2, -5, 1, 1, 0, 0
1070, 1/4, 1/2, -1/4, 1/2, -3, -1, 0, 0, 0
1071, 1/6, 1/2, -1/6, 1/2, 1, 2, 0, 0, 1
1072, 1/6, 1/2, -1/6, 1/2, -4, -2, 4, 0, 0
1073, 1/2, 1/4, 1/2, -1/4, -3, -2, 2, 2, 0
1074, 1/2, 1/2, -1/2, 1/2, -4, 0, 0, 0, 0
1075, 1/6, 1/2, -1/6, 1/2, -3, -2, 1, 1, 0
1076, 1/2, 1/6, 1/2, -1/6, -5, 0, 1, 2, 0
1077, 1/2, 1/6, 1/2, -1/6, -4, -1, 0, 0, 0
1078, 1/4, 1/2, -1/4, 1/2, -3, -2, 0, 2, 0
1079, 1/2, 1/4, 1/2, -1/4, -4, -1, 2, 0, 0
1080, 1/6, 1/2, -1/6, 1/2, -3, -1, 0, 0, 0
1081, 1/2, 1/2, -1/2, 1/2, -4, -1, 0, 2, 0
1082, 1/2, 1/6, 1/2, -1/6, -5, 1, 0, 1, 0
1083, 1/2, 1/6, 1/2, -1/6, 0, 2, 2, 0, 1
1084, 1/4, 1/2, -1/4, 1/2, -4, -1, 2, 0, 0
1085, 1/2, 1/6, 1/2, -1/6, -3, -1, 0, 2, 0
1086, 1/6, 1/2, -1/6, 1/2, 0, 2, 2, 0, 1
1087, 1/2, 1/2, -1/2, 1/2, -5, 0, 2, 0, 0
1088, 1/6, 1/2, -1/6, 1/2, -3, -2, 0, 2, 0
1089, 1/2, 1/6, 1/2, -1/6, -5, 0, 0, 3, 0
1090, 1/2, 1/6, 1/2, -1/6, -4, -1, 2, 0, 0
1091, 1/2, 1/4, 1/2, -1/4, 0, 3, 0, 0, 1
1092, 1/2, 1/4, 1/2, -1/4, -4, -1, 1, 1, 0
1093, 1/2, 1/6, 1/2, -1/6, -3, -3, 0, 4, 0
1094, 1/6, 1/2, -1/6, 1/2, -4, -1, 2, 0, 0
1095, 1/2, 1/6, 1/2, -1/6, -6, 1, 2, 1, 0
1096, 1/4, 1/2, -1/4, 1/2, -4, -1, 1, 1, 0
1097, 1/2, 1/6, 1/2, -1/6, -4, -2, 2, 2, 0
1098, 1/2, 1/4, 1/2, -1/4, -4, 0, 0, 0, 0
1099, 1/2, 1/6, 1/2, -1/6, -6, 2, 1, 0, 0
1100, 1/2, 1/6, 1/2, -1/6, 0, 3, 0, 0, 1
1101, 1/4, 1/2, -1/4, 1/2, -4, 0, 0, 0, 0
1102, 1/2, 1/6, 1/2, -1/6, -4, -1, 1, 1, 0
1103, 1/2, 1/4, 1/2, -1/4, -4, -1, 0, 2, 0
1104, 1/2, 1/2, -1/2, 1/2, -5, 1, 0, 0, 0
1105, 1/6, 1/2, -1/6, 1/2, -4, -1, 1, 1, 0
1106, 1/2, 1/2, -1/2, 1/2, -3, -2, 0, 1, 0
1107, 1/2, 1/6, 1/2, -1/6, -4, 0, 0, 0, 0
1108, 1/4, 1/2, -1/4, 1/2, -4, -1, 0, 2, 0
1109, 1/2, 1/4, 1/2, -1/4, -5, 0, 2, 0, 0

1110, 1/6, 1/2, -1/6, 1/2, -4, 0, 0, 0, 0
1111, 1/2, 1/6, 1/2, -1/6, -6, 2, 0, 1, 0
1112, 1/2, 1/6, 1/2, -1/6, -1, 3, 2, 0, 1
1113, 1/4, 1/2, -1/4, 1/2, -5, 0, 2, 0, 0
1114, 1/2, 1/6, 1/2, -1/6, -4, -1, 0, 2, 0
1115, 1/6, 1/2, -1/6, 1/2, -4, -1, 0, 2, 0
1116, 1/2, 1/6, 1/2, -1/6, -5, 0, 2, 0, 0
1117, 1/2, 1/4, 1/2, -1/4, -5, 0, 1, 1, 0
1118, 1/6, 1/2, -1/6, 1/2, -5, 0, 2, 0, 0
1119, 1/4, 1/2, -1/4, 1/2, -3, -2, 1, 0, 0
1120, 1/2, 1/4, 1/2, -1/4, 1, 1, 0, 1, 1
1121, 1/6, 1/2, -1/6, 1/2, -4, -2, 0, 4, 0
1122, 1/2, 1/4, 1/2, -1/4, -5, 1, 0, 0, 0
1123, 1/6, 1/2, -1/6, 1/2, -5, -1, 2, 2, 0
1124, 1/4, 1/2, -1/4, 1/2, -3, -3, 0, 1, 2, 0
1125, 1/2, 1/4, 1/2, -1/4, -3, -2, 0, 1, 0
1126, 1/6, 1/2, -1/6, 1/2, -3, -2, 1, 0, 0
1127, 1/4, 1/2, -1/4, 1/2, -5, 1, 0, 0, 0
1128, 1/2, 1/6, 1/2, -1/6, -5, 0, 1, 1, 0
1129, 1/6, 1/2, -1/6, 1/2, -6, 0, 4, 0, 0
1130, 1/4, 1/2, -1/4, 1/2, -4, -2, 3, 0, 0
1131, 1/2, 1/6, 1/2, -1/6, 1, 1, 0, 1, 1
1132, 1/2, 1/4, 1/2, -1/4, -5, 0, 2, 0, 0
1133, 1/4, 1/2, -1/4, 1/2, -3, -2, 0, 1, 0
1134, 1/6, 1/2, -1/6, 1/2, 0, 1, 3, 0, 1
1135, 1/2, 1/4, 1/2, -1/4, -3, -3, 0, 3, 0
1136, 1/2, 1/6, 1/2, -1/6, -5, 1, 0, 0, 0
1137, 1/6, 1/2, -1/6, 1/2, -3, -3, 1, 2, 0
1138, 1/2, 1/4, 1/2, -1/4, -6, 1, 2, 0, 0
1139, 1/6, 1/2, -1/6, 1/2, -5, 1, 0, 0, 0
1140, 1/2, 1/6, 1/2, -1/6, -5, 0, 2, 1, 0
1141, 1/2, 1/4, 1/2, -1/4, -4, -2, 2, 1, 0
1142, 1/6, 1/2, -1/6, 1/2, -4, -2, 3, 0, 0
1143, 1/6, 1/2, -1/6, 1/2, -3, -2, 0, 1, 0
1144, 1/2, 1/6, 1/2, -1/6, -5, 0, 2, 0, 0
1145, 1/4, 1/2, -1/4, 1/2, 0, 2, 1, 0, 1
1146, 1/2, 1/6, 1/2, -1/6, 0, 1, 2, 1, 1
1147, 1/2, 1/6, 1/2, -1/6, -3, -3, 0, 3, 0
1148, 1/2, 1/6, 1/2, -1/6, -6, 1, 2, 0, 0
1149, 1/2, 1/6, 1/2, -1/6, 0, 2, 1, 0, 1
1150, 1/2, 1/6, 1/2, -1/6, -5, -1, 0, 4, 0
1151, 1/6, 1/2, -1/6, 1/2, -6, 1, 2, 0, 0
1152, 1/2, 1/6, 1/2, -1/6, -4, -2, 2, 1, 0
1153, 1/2, 1/4, 1/2, -1/4, 0, 2, 0, 1, 1
1154, 1/6, 1/2, -1/6, 1/2, 0, 2, 1, 0, 1
1155, 1/2, 1/2, -1/2, 1/2, -5, 0, 1, 0, 0
1156, 1/2, 1/6, 1/2, -1/6, -6, 0, 2, 2, 0
1157, 1/2, 1/2, -1/2, 1/2, 1, 1, 0, 0, 1
1158, 1/2, 1/4, 1/2, -1/4, -6, 2, 0, 0, 0
1159, 1/2, 1/6, 1/2, -1/6, -6, 1, 1, 1, 0
1160, 1/2, 1/6, 1/2, -1/6, -4, -2, 0, 1, 1
1161, 1/2, 1/2, -1/2, 1/2, -3, -2, 0, 0, 0
1162, 1/2, 1/6, 1/2, -1/6, -6, 2, 0, 0, 0
1163, 1/2, 1/6, 1/2, -1/6, 0, 1, 0, 3, 1
1164, 1/2, 1/2, -1/2, 1/2, -3, -3, 0, 2, 0
1165, 1/2, 1/6, 1/2, -1/6, -1, 2, 2, 1, 1
1166, 1/2, 1/2, -1/2, 1/2, -4, -2, 2, 0, 0
1167, 1/2, 1/4, 1/2, -1/4, -5, 0, 1, 0, 0
1168, 1/2, 1/6, 1/2, -1/6, -7, 2, 2, 0, 0
1169, 1/2, 1/4, 1/2, -1/4, 1, 1, 0, 0, 1
1170, 1/2, 1/6, 1/2, -1/6, -1, 3, 1, 0, 1
1171, 1/4, 1/2, -1/4, 1/2, -5, 0, 1, 0, 0
1172, 1/2, 1/2, -1/2, 1/2, 0, 2, 0, 0, 1
1173, 1/2, 1/4, 1/2, -1/4, -3, -2, 0, 0, 0
1174, 1/2, 1/6, 1/2, -1/6, -5, 0, 1, 0, 0
1175, 1/4, 1/2, -1/4, 1/2, -5, -1, 1, 2, 0
1176, 1/2, 1/6, 1/2, -1/6, 1, 1, 0, 0, 1
1177, 1/2, 1/4, 1/2, -1/4, -5, 0, 0, 1, 0
1178, 1/6, 1/2, -1/6, 1/2, -5, 0, 1, 0, 0
1179, 1/2, 1/4, 1/2, -1/4, 0, 1, 2, 0, 1
1180, 1/4, 1/2, -1/4, 1/2, -3, -2, 0, 0, 0
1181, 1/6, 1/2, -1/6, 1/2, -4, -3, 4, 0, 0
1182, 1/2, 1/4, 1/2, -1/4, -3, -3, 0, 2, 0
1183, 1/4, 1/2, -1/4, 1/2, -6, 0, 3, 0, 0
1184, 1/4, 1/2, -1/4, 1/2, 0, 1, 2, 0, 1

1185, 1/2, 1/4, 1/2, -1/4, -5, -1, 0, 3, 0
1186, 1/2, 1/6, 1/2, -1/6, -3, -2, 0, 0, 0
1187, 1/6, 1/2, -1/6, 1/2, -5, -1, 1, 2, 0
1188, 1/4, 1/2, -1/4, 1/2, -3, -3, 0, 2, 0
1189, 1/2, 1/4, 1/2, -1/4, -4, -2, 2, 0, 0
1190, 1/6, 1/2, -1/6, 1/2, -3, -2, 0, 0, 0
1191, 1/2, 1/6, 1/2, -1/6, -5, 0, 0, 1, 0
1192, 1/2, 1/6, 1/2, -1/6, 0, 1, 2, 0, 1
1193, 1/2, 1/4, 1/2, -1/4, -6, 0, 2, 1, 0
1194, 1/6, 1/2, -1/6, 1/2, -6, 0, 3, 0, 0
1195, 1/4, 1/2, -1/4, 1/2, -4, -2, 0, 0, 0
1196, 1/2, 1/6, 1/2, -1/6, -3, -3, 0, 2, 0
1197, 1/6, 1/2, -1/6, 1/2, 0, 1, 2, 0, 1
1198, 1/6, 1/2, -1/6, 1/2, -3, -3, 0, 2, 0
1199, 1/2, 1/4, 1/2, -1/4, 0, 1, 0, 0, 0
1200, 1/2, 1/6, 1/2, -1/6, -5, -1, 0, 3, 0
1201, 1/2, 1/6, 1/2, -1/6, 0, 0, 2, 2, 1
1202, 1/2, 1/6, 1/2, -1/6, -4, -2, 2, 0, 0
1203, 1/2, 1/4, 1/2, -1/4, 0, 2, 0, 0, 1
1204, 1/6, 1/2, -1/6, 1/2, -4, -2, 2, 0, 0
1205, 1/4, 1/2, -1/4, 1/2, -6, 1, 1, 0, 0
1206, 1/2, 1/6, 1/2, -1/6, -6, 0, 2, 1, 0
1207, 1/4, 1/2, -1/4, 1/2, 0, 2, 0, 0, 1
1208, 1/2, 1/6, 1/2, -1/6, 0, 1, 1, 1, 1
1209, 1/2, 1/6, 1/2, -1/6, -4, -3, 2, 2, 0
1210, 1/6, 1/2, -1/6, 1/2, -1, 1, 4, 0, 1
1211, 1/2, 1/4, 1/2, -1/4, 0, 1, 0, 2, 1
1212, 1/6, 1/2, -1/6, 1/2, 0, 1, 1, 1, 1
1213, 1/2, 1/6, 1/2, -1/6, -6, 1, 1, 0, 0
1214, 1/2, 1/6, 1/2, -1/6, 0, 2, 0, 0, 1
1215, 1/2, 1/4, 1/2, -1/4, -6, 1, 0, 1, 0
1216, 1/6, 1/2, -1/6, 1/2, -6, 1, 1, 0, 0
1217, 1/2, 1/4, 1/2, -1/4, -1, 2, 2, 0, 1
1218, 1/6, 1/2, -1/6, 1/2, 0, 2, 0, 0, 1
1219, 1/2, 1/2, -1/2, 1/2, -5, 0, 0, 0, 0
1220, 1/2, 1/6, 1/2, -1/6, -6, 0, 1, 2, 0
1221, 1/2, 1/6, 1/2, -1/6, 0, 1, 0, 2, 1
1222, 1/2, 1/2, -1/2, 1/2, -5, -1, 0, 2, 0
1223, 1/2, 1/6, 1/2, -1/6, -6, 0, 1, 0, 1
1224, 1/2, 1/6, 1/2, -1/6, -1, 2, 2, 0, 1
1225, 1/2, 1/6, 1/2, -1/6, 0, 0, 0, 4, 1
1226, 1/2, 1/2, -1/2, 1/2, -6, 0, 2, 0, 0
1227, 1/2, 1/6, 1/2, -1/6, -6, 0, 0, 3, 0
1228, 1/2, 1/6, 1/2, -1/6, -7, 1, 2, 1, 0
1229, 1/2, 1/6, 1/2, -1/6, -2, 2, 4, 0, 1
1230, 1/2, 1/6, 1/2, -1/6, -1, 2, 1, 1, 1
1231, 1/2, 1/4, 1/2, -1/4, -5, 0, 0, 0, 0
1232, 1/2, 1/6, 1/2, -1/6, -7, 2, 1, 0, 0
1233, 1/2, 1/4, 1/2, -1/4, -3, -3, 0, 1, 0
1234, 1/2, 1/6, 1/2, -1/6, -1, 3, 0, 0, 1
1235, 1/4, 1/2, -1/4, 1/2, -5, 0, 0, 0, 0
1236, 1/4, 1/2, -1/4, 1/2, -4, -3, 3, 0, 0
1237, 1/2, 1/4, 1/2, -1/4, -5, -1, 0, 2, 0
1238, 1/2, 1/2, -1/2, 1/2, -6, 1, 0, 0, 0
1239, 1/2, 1/6, 1/2, -1/6, -5, 0, 0, 0, 0
1240, 1/4, 1/2, -1/4, 1/2, -5, -1, 0, 2, 0
1241, 1/2, 1/4, 1/2, -1/4, -6, 0, 2, 0, 0
1242, 1/6, 1/2, -1/6, 1/2, -5, 0, 0, 0, 0
1243, 1/2, 1/4, 1/2, -1/4, 0, 1, 1, 0, 1
1244, 1/2, 1/6, 1/2, -1/6, -3, -3, 0, 1, 0
1245, 1/2, 1/4, 1/2, -1/4, -4, -3, 2, 1, 0
1246, 1/6, 1/2, -1/6, 1/2, -4, -3, 3, 0, 0
1247, 1/4, 1/2, -1/4, 1/2, -6, 0, 2, 0, 0
1248, 1/2, 1/6, 1/2, -1/6, -5, -1, 0, 2, 0
1249, 1/4, 1/2, -1/4, 1/2, 0, 1, 1, 0, 1
1250, 1/6, 1/2, -1/6, 1/2, -1, 0, 5, 0, 1
1251, 1/6, 1/2, -1/6, 1/2, -5, -1, 0, 2, 0
1252, 1/2, 1/6, 1/2, -1/6, -6, 0, 2, 0, 0
1253, 1/2, 1/6, 1/2, -1/6, 0, 1, 1, 0, 1
1254, 1/2, 1/4, 1/2, -1/4, -6, 0, 1, 1, 0
1255, 1/4, 1/2, -1/4, 1/2, 0, 0, 1, 2, 1
1256, 1/6, 1/2, -1/6, 1/2, -6, 0, 2, 0, 0
1257, 1/2, 1/6, 1/2, -1/6, -4, -3, 2, 1, 0
1258, 1/2, 1/4, 1/2, -1/4, 0, 1, 0, 1, 1
1259, 1/6, 1/2, -1/6, 1/2, 0, 1, 1, 0, 1

1260, 1/6, 1/2, -1/6, 1/2, -5, -2, 0, 4, 0
1261, 1/4, 1/2, -1/4, 1/2, -1, 1, 3, 0, 1
1262, 1/2, 1/4, 1/2, -1/4, -6, 1, 0, 0, 0
1263, 1/4, 1/2, -1/4, 1/2, 0, 1, 0, 1, 1
1264, 1/2, 1/6, 1/2, -1/6, 0, 0, 1, 2, 1
1265, 1/6, 1/2, -1/6, 1/2, -6, -1, 2, 2, 0
1266, 1/2, 1/4, 1/2, -1/4, 0, 0, 0, 3, 1
1267, 1/6, 1/2, -1/6, 1/2, 0, 0, 1, 2, 1
1268, 1/4, 1/2, -1/4, 1/2, -6, 1, 0, 0, 0
1269, 1/2, 1/6, 1/2, -1/6, -6, 0, 1, 1, 0
1270, 1/6, 1/2, -1/6, 1/2, -7, 0, 4, 0, 0
1271, 1/2, 1/6, 1/2, -1/6, 0, 1, 0, 1, 1
1272, 1/2, 1/4, 1/2, -1/4, -6, 0, 0, 2, 0
1273, 1/2, 1/2, -1/2, 1/2, -3, -3, 0, 0, 0
1274, 1/2, 1/4, 1/2, -1/4, -0, 1, 2, 1, 1
1275, 1/6, 1/2, -1/6, 1/2, -1, 1, 3, 0, 1
1276, 1/6, 1/2, -1/6, 1/2, 0, 1, 0, 1, 1
1277, 1/2, 1/6, 1/2, -1/6, -6, 1, 0, 0, 0
1278, 1/2, 1/4, 1/2, -1/4, -0, 1, 2, 0, 0
1279, 1/6, 1/2, -1/6, 1/2, -6, 1, 0, 0, 0
1280, 1/2, 1/4, 1/2, -1/4, -1, 2, 1, 0, 1
1281, 1/2, 1/6, 1/2, -1/6, 0, 0, 0, 3, 1
1282, 1/2, 1/6, 1/2, -1/6, -1, 1, 2, 1, 1
1283, 1/2, 1/2, -1/2, 1/2, -4, -3, 2, 0, 0
1284, 1/2, 1/6, 1/2, -1/6, -7, 1, 2, 0, 0
1285, 1/2, 1/6, 1/2, -1/6, -2, 1, 0, 1, 1
1286, 1/2, 1/6, 1/2, -1/6, -6, -1, 0, 4, 0
1287, 1/2, 1/6, 1/2, -1/6, -1, 0, 2, 3, 1
1288, 1/2, 1/2, -1/2, 1/2, -6, 0, 1, 0, 0
1289, 1/2, 1/6, 1/2, -1/6, -7, 0, 2, 2, 0
1290, 1/2, 1/2, -1/2, 1/2, 0, 1, 0, 0, 1
1291, 1/2, 1/4, 1/2, -1/4, -3, -3, 0, 0, 0
1292, 1/2, 1/6, 1/2, -1/6, -2, 1, 4, 1, 1
1293, 1/2, 1/6, 1/2, -1/6, -7, 1, 1, 1, 0
1294, 1/2, 1/6, 1/2, -1/6, -2, 3, 0, 1, 1
1295, 1/2, 1/6, 1/2, -1/6, -1, 2, 0, 1, 1
1296, 1/2, 1/6, 1/2, -1/6, -3, -3, 0, 0, 0
1297, 1/2, 1/4, 1/2, -1/4, -4, -3, 2, 0, 0
1298, 1/4, 1/2, -1/4, 1/2, -4, -3, 2, 0, 0
1299, 1/2, 1/4, 1/2, -1/4, 0, 0, 1, 1, 1
1300, 1/4, 1/2, -1/4, 1/2, -1, 0, 4, 0, 1
1301, 1/2, 1/4, 1/2, -1/4, -6, 0, 1, 0, 0
1302, 1/2, 1/6, 1/2, -1/6, -4, -3, 2, 0, 0
1303, 1/2, 1/4, 1/2, -1/4, 0, 1, 0, 0, 1
1304, 1/6, 1/2, -1/6, 1/2, -4, -3, 2, 0, 0
1305, 1/4, 1/2, -1/4, 1/2, -6, 0, 1, 0, 0
1306, 1/4, 1/2, -1/4, 1/2, 0, 1, 0, 0, 1
1307, 1/2, 1/6, 1/2, -1/6, 0, 0, 1, 1, 1
1308, 1/6, 1/2, -1/6, 1/2, -1, 0, 4, 0, 1
1309, 1/2, 1/4, 1/2, -1/4, 0, 0, 0, 2, 1
1310, 1/2, 1/6, 1/2, -1/6, -6, 0, 1, 0, 0
1311, 1/4, 1/2, -1/4, 1/2, -6, -1, 1, 2, 0
1312, 1/2, 1/6, 1/2, -1/6, 0, 1, 0, 0, 1
1313, 1/2, 1/4, 1/2, -1/4, -6, 0, 0, 1, 0
1314, 1/4, 1/2, -1/4, 1/2, 0, 0, 0, 2, 1
1315, 1/6, 1/2, -1/6, 1/2, -6, 0, 1, 0, 0
1316, 1/2, 1/4, 1/2, -1/4, -1, 1, 2, 0, 1
1317, 1/6, 1/2, -1/6, 1/2, 0, 1, 0, 0, 1
1318, 1/4, 1/2, -1/4, 1/2, -7, 0, 3, 0, 0
1319, 1/4, 1/2, -1/4, 1/2, -1, 1, 2, 0, 1
1320, 1/2, 1/6, 1/2, -1/6, 0, 0, 0, 2, 1
1321, 1/2, 1/4, 1/2, -1/4, -6, -1, 0, 3, 0
1322, 1/6, 1/2, -1/6, 1/2, -2, 0, 6, 0, 1
1323, 1/6, 1/2, -1/6, 1/2, -6, -1, 1, 2, 0
1324, 1/2, 1/4, 1/2, -1/4, -1, 0, 2, 2, 1
1325, 1/6, 1/2, -1/6, 1/2, 0, 0, 0, 2, 1
1326, 1/2, 1/6, 1/2, -1/6, -6, 0, 0, 1, 0
1327, 1/2, 1/6, 1/2, -1/6, -1, 1, 2, 0, 1
1328, 1/2, 1/4, 1/2, -1/4, -7, 0, 2, 1, 0
1329, 1/6, 1/2, -1/6, 1/2, -7, 0, 3, 0, 0
1330, 1/2, 1/4, 1/2, -1/4, -2, 1, 4, 0, 1
1331, 1/2, 1/4, 1/2, -1/4, -1, 1, 1, 1, 1
1332, 1/6, 1/2, -1/6, 1/2, -1, 1, 2, 0, 0
1333, 1/2, 1/4, 1/2, -1/4, -7, 1, 1, 0, 0
1334, 1/2, 1/6, 1/2, -1/6, -6, -1, 0, 3, 0

1335, 1/2, 1/6, 1/2, -1/6, -1, 0, 2, 2, 1
1336, 1/2, 1/4, 1/2, -1/4, -2, 2, 0, 0, 1
1337, 1/2, 1/6, 1/2, -1/6, -7, 0, 2, 1, 0
1338, 1/2, 1/6, 1/2, -1/6, -2, 1, 4, 0, 1
1339, 1/2, 1/6, 1/2, -1/6, -1, 1, 1, 1, 1
1340, 1/2, 1/6, 1/2, -1/6, -1, -1, 2, 4, 1
1341, 1/2, 1/6, 1/2, -1/6, -7, 1, 1, 0, 0
1342, 1/2, 1/2, -1/2, 1/2, 0, 0, 0, 1, 1
1343, 1/2, 1/6, 1/2, -1/6, -1, 2, 0, 0, 1
1344, 1/2, 1/6, 1/2, -1/6, -2, 0, 4, 2, 1
1345, 1/2, 1/6, 1/2, -1/6, -1, 0, 1, 3, 1
1346, 1/2, 1/2, -1/2, 1/2, -6, 0, 0, 0, 0
1347, 1/2, 1/6, 1/2, -1/6, -7, 0, 1, 2, 0
1348, 1/2, 1/6, 1/2, -1/6, -2, 1, 3, 1, 1
1349, 1/2, 1/2, -1/2, 1/2, -6, -1, 0, 2, 0
1350, 1/2, 1/6, 1/2, -1/6, -2, 2, 2, 0, 1
1351, 1/2, 1/2, -1/2, 1/2, -7, 0, 2, 0, 0
1352, 1/2, 1/2, -1/2, 1/2, -1, 1, 1, 0, 1
1353, 1/2, 1/4, 1/2, -1/4, -2, 0, 0, 1, 1
1354, 1/4, 1/2, -1/4, 1/2, -1, 0, 3, 0, 1
1355, 1/2, 1/4, 1/2, -1/4, -6, 0, 0, 0, 0
1356, 1/4, 1/2, -1/4, 1/2, 0, 0, 0, 1, 1
1357, 1/2, 1/6, 1/2, -1/6, -2, 3, 0, 0, 1
1358, 1/4, 1/2, -1/4, 1/2, -6, 0, 0, 0, 0
1359, 1/2, 1/6, 1/2, -1/6, 0, 0, 0, 1, 1
1360, 1/2, 1/4, 1/2, -1/4, -6, -1, 0, 2, 0
1361, 1/2, 1/4, 1/2, -1/4, -1, 0, 2, 1, 1
1362, 1/6, 1/2, -1/6, 1/2, -1, 0, 3, 0, 1
1363, 1/6, 1/2, -1/6, 1/2, 0, 0, 0, 1, 1
1364, 1/2, 1/6, 1/2, -1/6, -6, 0, 0, 0, 0
1365, 1/4, 1/2, -1/4, 1/2, -2, 0, 5, 0, 1
1366, 1/4, 1/2, -1/4, 1/2, -6, -1, 0, 2, 0
1367, 1/2, 1/4, 1/2, -1/4, -7, 0, 2, 0, 0
1368, 1/6, 1/2, -1/6, 1/2, -6, 0, 0, 0, 0
1369, 1/2, 1/4, 1/2, -1/4, -1, 1, 1, 0, 1
1370, 1/2, 1/4, 1/2, -1/4, -1, -1, 2, 3, 1
1371, 1/4, 1/2, -1/4, 1/2, -7, 0, 2, 0, 0
1372, 1/2, 1/6, 1/2, -1/6, -6, -1, 0, 2, 0
1373, 1/4, 1/2, -1/4, 1/2, -1, 1, 1, 0, 1
1374, 1/2, 1/6, 1/2, -1/6, -1, 0, 2, 1, 1
1375, 1/2, 1/4, 1/2, -1/4, -2, 0, 4, 1, 1
1376, 1/6, 1/2, -1/6, 1/2, -2, 0, 5, 0, 1
1377, 1/6, 1/2, -1/6, 1/2, -6, -1, 0, 2, 0
1378, 1/2, 1/4, 1/2, -1/4, -1, 0, 1, 2, 1
1379, 1/2, 1/6, 1/2, -1/6, -7, 0, 2, 0, 0
1380, 1/2, 1/6, 1/2, -1/6, -1, 1, 1, 0, 1
1381, 1/2, 1/4, 1/2, -1/4, -7, 0, 1, 1, 0
1382, 1/6, 1/2, -1/6, 1/2, -7, 0, 2, 0, 0
1383, 1/2, 1/4, 1/2, -1/4, -2, 1, 3, 0, 1
1384, 1/2, 1/6, 1/2, -1/6, -1, -1, 2, 3, 1
1385, 1/2, 1/4, 1/2, -1/4, -1, 1, 0, 1, 1
1386, 1/6, 1/2, -1/6, 1/2, -1, 1, 1, 0, 1
1387, 1/2, 1/2, -1/2, 1/2, 0, 0, 0, 0, 1
1388, 1/2, 1/6, 1/2, -1/6, -2, 0, 4, 1, 1
1389, 1/2, 1/6, 1/2, -1/6, -1, 0, 1, 2, 1
1390, 1/2, 1/6, 1/2, -1/6, -7, 0, 1, 1, 0
1391, 1/2, 1/6, 1/2, -1/6, -2, 1, 3, 0, 1
1392, 1/2, 1/6, 1/2, -1/6, -1, 1, 0, 1, 1
1393, 1/2, 1/6, 1/2, -1/6, -1, -1, 1, 4, 1
1394, 1/2, 1/2, -1/2, 1/2, -1, 0, 2, 0, 1
1395, 1/2, 1/6, 1/2, -1/6, -2, 0, 3, 2, 1
1396, 1/2, 1/6, 1/2, -1/6, -1, 0, 0, 3, 1
1397, 1/2, 1/6, 1/2, -1/6, -2, 1, 2, 1, 1
1398, 1/2, 1/4, 1/2, -1/4, 0, 0, 0, 0, 1
1399, 1/2, 1/6, 1/2, -1/6, -2, 2, 1, 0, 1
1400, 1/2, 1/2, -1/2, 1/2, -7, 0, 1, 0, 0
1401, 1/2, 1/2, -1/2, 1/2, -1, 1, 0, 0, 1
1402, 1/2, 1/6, 1/2, -1/6, 0, 0, 0, 0, 1
1403, 1/2, 1/4, 1/2, -1/4, -1, 0, 2, 0, 1
1404, 1/2, 1/6, 1/2, -1/6, -2, 2, 0, 1, 1
1405, 1/4, 1/2, -1/4, 1/2, -1, 0, 2, 0, 1
1406, 1/2, 1/4, 1/2, -1/4, -1, -1, 2, 2, 1
1407, 1/2, 1/6, 1/2, -1/6, -1, 0, 2, 0, 1
1408, 1/2, 1/4, 1/2, -1/4, -2, 0, 4, 0, 1
1409, 1/2, 1/4, 1/2, -1/4, -1, 0, 1, 1, 1

1410, 1/6, 1/2, -1/6, 1/2, -1, 0, 2, 0, 1
1411, 1/4, 1/2, -1/4, 1/2, -2, 0, 4, 0, 1
1412, 1/2, 1/4, 1/2, -1/4, -7, 0, 1, 0, 0
1413, 1/2, 1/6, 1/2, -1/6, -1, -1, 2, 2, 1
1414, 1/2, 1/4, 1/2, -1/4, -1, 1, 0, 0, 1
1415, 1/2, 1/4, 1/2, -1/4, -1, -1, 1, 3, 1
1416, 1/4, 1/2, -1/4, 1/2, -7, 0, 1, 0, 0
1417, 1/2, 1/6, 1/2, -1/6, -2, 0, 4, 0, 1
1418, 1/4, 1/2, -1/4, 1/2, -1, 1, 0, 0, 1
1419, 1/2, 1/6, 1/2, -1/6, -1, 0, 1, 1, 1
1420, 1/2, 1/4, 1/2, -1/4, -2, 0, 3, 1, 1
1421, 1/6, 1/2, -1/6, 1/2, -2, 0, 4, 0, 1
1422, 1/2, 1/4, 1/2, -1/4, -1, 0, 0, 2, 1
1423, 1/2, 1/6, 1/2, -1/6, -7, 0, 1, 0, 0
1424, 1/2, 1/6, 1/2, -1/6, -2, 1, 0, 0, 1
1425, 1/6, 1/2, -1/6, 1/2, -7, 0, 1, 0, 0
1426, 1/2, 1/4, 1/2, -1/4, -2, 1, 2, 0, 1
1427, 1/2, 1/6, 1/2, -1/6, -1, -1, 1, 3, 1
1428, 1/6, 1/2, -1/6, 1/2, -1, 1, 0, 0, 1
1429, 1/2, 1/6, 1/2, -1/6, -2, 0, 3, 1, 1
1430, 1/2, 1/6, 1/2, -1/6, -1, 0, 0, 2, 1
1431, 1/2, 1/6, 1/2, -1/6, -2, 1, 2, 0, 1
1432, 1/2, 1/6, 1/2, -1/6, -1, 0, 4, 1
1433, 1/6, 1/2, -1/6, 1/2, -2, 1, 2, 0, 1
1434, 1/2, 1/2, -1/2, 1/2, -1, 0, 1, 0, 1
1435, 1/2, 1/6, 1/2, -1/6, -2, 0, 2, 2, 1
1436, 1/2, 1/4, 1/2, -1/4, -2, 2, 0, 0, 1
1437, 1/2, 1/2, -1/2, 1/2, -1, -1, 1, 2, 1
1438, 1/2, 1/6, 1/2, -1/6, -2, 1, 1, 1, 1
1439, 1/2, 1/2, -1/2, 1/2, -2, 0, 3, 0, 1
1440, 1/2, 1/6, 1/2, -1/6, -2, 2, 0, 0, 1
1441, 1/2, 1/4, 1/2, -1/4, -1, 0, 1, 0, 1
1442, 1/2, 1/6, 1/2, -1/6, -3, 2, 2, 0, 1
1443, 1/4, 1/2, -1/4, 1/2, -1, 0, 1, 0, 1
1444, 1/2, 1/4, 1/2, -1/4, -1, -1, 1, 2, 1
1445, 1/2, 1/6, 1/2, -1/6, -1, 0, 1, 0, 1
1446, 1/4, 1/2, -1/4, 1/2, -1, -1, 1, 2, 1
1447, 1/2, 1/4, 1/2, -1/4, -2, 0, 3, 0, 1
1448, 1/2, 1/4, 1/2, -1/4, -1, 0, 0, 1, 1
1449, 1/6, 1/2, -1/6, 1/2, -1, 0, 1, 0, 1
1450, 1/4, 1/2, -1/4, 1/2, -2, 0, 3, 0, 1
1451, 1/2, 1/6, 1/2, -1/6, -1, -1, 1, 2, 1
1452, 1/2, 1/4, 1/2, -1/4, -1, -1, 0, 3, 1
1453, 1/2, 1/6, 1/2, -1/6, -3, 3, 0, 0, 1
1454, 1/6, 1/2, -1/6, 1/2, -1, -1, 1, 2, 1
1455, 1/2, 1/6, 1/2, -1/6, -2, 0, 3, 0, 1
1456, 1/2, 1/6, 1/2, -1/6, -1, 0, 0, 1, 1
1457, 1/2, 1/4, 1/2, -1/4, -2, 0, 2, 1, 1
1458, 1/6, 1/2, -1/6, 1/2, -2, 0, 3, 0, 1
1459, 1/2, 1/4, 1/2, -1/4, -2, 1, 1, 0, 1
1460, 1/2, 1/6, 1/2, -1/6, -1, -1, 0, 3, 1
1461, 1/4, 1/2, -1/4, 1/2, -2, 1, 1, 0, 1
1462, 1/2, 1/6, 1/2, -1/6, -2, 0, 2, 1, 1
1463, 1/2, 1/2, -1/2, 1/2, -1, -1, 1, 1, 1
1464, 1/2, 1/6, 1/2, -1/6, -2, 1, 1, 0, 1
1465, 1/2, 1/4, 1/2, -1/4, -2, 1, 0, 1, 1
1466, 1/6, 1/2, -1/6, 1/2, -2, 1, 1, 0, 1
1467, 1/2, 1/2, -1/2, 1/2, -1, 0, 0, 0, 1
1468, 1/2, 1/6, 1/2, -1/6, -2, 0, 1, 2, 1
1469, 1/2, 1/2, -1/2, 1/2, -1, -1, 0, 2, 1
1470, 1/2, 1/6, 1/2, -1/6, -2, 1, 0, 1, 1
1471, 1/2, 1/2, -1/2, 1/2, -2, 0, 2, 0, 1
1472, 1/2, 1/6, 1/2, -1/6, -2, 0, 0, 3, 1
1473, 1/2, 1/4, 1/2, -1/4, -1, -1, 1, 1, 1
1474, 1/2, 1/6, 1/2, -1/6, -3, 1, 2, 1, 1
1475, 1/2, 1/4, 1/2, -1/4, -1, 0, 0, 0, 1
1476, 1/2, 1/6, 1/2, -1/6, -3, 2, 1, 0, 1
1477, 1/4, 1/2, -1/4, 1/2, -1, 0, 0, 0, 1
1478, 1/2, 1/6, 1/2, -1/6, -1, -1, 1, 1, 1
1479, 1/2, 1/4, 1/2, -1/4, -1, -1, 0, 2, 1
1480, 1/2, 1/2, -1/2, 1/2, -2, 1, 0, 0, 1
1481, 1/2, 1/6, 1/2, -1/6, -1, 0, 0, 0, 1
1482, 1/4, 1/2, -1/4, 1/2, -1, -1, 0, 2, 1
1483, 1/2, 1/4, 1/2, -1/4, -2, 0, 2, 0, 1
1484, 1/6, 1/2, -1/6, 1/2, -1, 0, 0, 0, 1

1485, 1/2, 1/6, 1/2, -1/6, -3, 2, 0, 1, 1
1486, 1/4, 1/2, -1/4, 1/2, -2, 0, 2, 0, 1
1487, 1/2, 1/6, 1/2, -1/6, -1, -1, 0, 2, 1
1488, 1/6, 1/2, -1/6, 1/2, -1, -1, 0, 2, 1
1489, 1/2, 1/6, 1/2, -1/6, -2, 0, 2, 0, 1
1490, 1/2, 1/4, 1/2, -1/4, -2, 0, 1, 1, 1
1491, 1/6, 1/2, -1/6, 1/2, -2, 0, 2, 0, 1
1492, 1/2, 1/4, 1/2, -1/4, -2, 1, 0, 0, 1
1493, 1/6, 1/2, -1/6, 1/2, -2, -1, 2, 2, 1
1494, 1/4, 1/2, -1/4, 1/2, -2, 1, 0, 0, 1
1495, 1/2, 1/6, 1/2, -1/6, -2, 0, 1, 1, 1
1496, 1/6, 1/2, -1/6, 1/2, -3, 0, 4, 0, 1
1497, 1/2, 1/4, 1/2, -1/4, -2, 0, 0, 2, 1
1498, 1/2, 1/2, -1/2, 1/2, -1, -1, 0, 1, 1
1499, 1/2, 1/6, 1/2, -1/6, -2, 1, 0, 0, 1
1500, 1/2, 1/4, 1/2, -1/4, -3, 1, 2, 0, 1
1501, 1/6, 1/2, -1/6, 1/2, -2, 1, 0, 0, 1
1502, 1/2, 1/6, 1/2, -1/6, -2, 0, 0, 2, 1
1503, 1/2, 1/6, 1/2, -1/6, -3, 1, 0, 2, 0, 1
1504, 1/2, 1/6, 1/2, -1/6, -2, -1, 0, 4, 1
1505, 1/6, 1/2, -1/6, 1/2, -3, 1, 2, 0, 1
1506, 1/2, 1/2, -1/2, 1/2, -2, 0, 1, 0, 1
1507, 1/2, 1/6, 1/2, -1/6, -2, 0, 2, 2, 1
1508, 1/2, 1/4, 1/2, -1/4, -3, 2, 0, 0, 1
1509, 1/2, 1/4, 1/2, -1/4, -1, -1, 0, 1, 1
1510, 1/2, 1/6, 1/2, -1/6, -3, 1, 1, 1, 1
1511, 1/4, 1/2, -1/4, 1/2, -1, -1, 0, 1, 1
1512, 1/2, 1/6, 1/2, -1/6, -3, 2, 0, 0, 1
1513, 1/2, 1/6, 1/2, -1/6, -1, -1, 0, 1, 1
1514, 1/6, 1/2, -1/6, 1/2, -1, -1, 0, 1, 1
1515, 1/2, 1/4, 1/2, -1/4, -2, 0, 1, 0, 1
1516, 1/2, 1/6, 1/2, -1/6, -4, 2, 2, 0, 1
1517, 1/4, 1/2, -1/4, 1/2, -2, 0, 1, 0, 1
1518, 1/6, 1/2, -1/6, 1/2, -2, -1, 2, 1, 1
1519, 1/2, 1/6, 1/2, -1/6, -2, 0, 1, 0, 1
1520, 1/4, 1/2, -1/4, 1/2, -2, -1, 1, 2, 1
1521, 1/2, 1/4, 1/2, -1/4, -2, 0, 0, 1, 1
1522, 1/6, 1/2, -1/6, 1/2, -2, 0, 1, 0, 1
1523, 1/4, 1/2, -1/4, 1/2, -3, 0, 3, 0, 1
1524, 1/2, 1/2, -1/2, 1/2, -1, -1, 0, 0, 1
1525, 1/2, 1/4, 1/2, -1/4, -2, -1, 0, 3, 1
1526, 1/6, 1/2, -1/6, 1/2, -2, -1, 1, 2, 1
1527, 1/2, 1/6, 1/2, -1/6, -2, 0, 1, 1, 1
1528, 1/2, 1/4, 1/2, -1/4, -3, 0, 2, 1, 1
1529, 1/6, 1/2, -1/6, 1/2, -3, 0, 3, 0, 1
1530, 1/2, 1/4, 1/2, -1/4, -3, 1, 1, 0, 1
1531, 1/2, 1/6, 1/2, -1/6, -2, -1, 0, 3, 1
1532, 1/4, 1/2, -1/4, 1/2, -3, 1, 1, 0, 1
1533, 1/2, 1/6, 1/2, -1/6, -3, 0, 2, 1, 1
1534, 1/2, 1/4, 1/2, -1/4, -1, -1, 0, 0, 1
1535, 1/2, 1/6, 1/2, -1/6, -3, 1, 1, 0, 1
1536, 1/2, 1/4, 1/2, -1/4, -3, 1, 0, 1, 1
1537, 1/6, 1/2, -1/6, 1/2, -3, 1, 1, 0, 1
1538, 1/2, 1/2, -1/2, 1/2, -2, 0, 0, 0, 1
1539, 1/2, 1/6, 1/2, -1/6, -3, 0, 1, 2, 1
1540, 1/2, 1/6, 1/2, -1/6, -1, -1, 0, 0, 1
1541, 1/2, 1/2, -1/2, 1/2, -2, -1, 0, 2, 1
1542, 1/2, 1/6, 1/2, -1/6, -3, 1, 0, 1, 1
1543, 1/2, 1/2, -1/2, 1/2, -3, 0, 2, 0, 1
1544, 1/2, 1/6, 1/2, -1/6, -3, 0, 0, 3, 1
1545, 1/6, 1/2, -1/6, 1/2, -2, -1, 2, 0, 1
1546, 1/2, 1/6, 1/2, -1/6, -4, 1, 2, 1, 1
1547, 1/4, 1/2, -1/4, 1/2, -2, -1, 1, 1, 1
1548, 1/2, 1/4, 1/2, -1/4, -2, 0, 0, 0, 1
1549, 1/2, 1/6, 1/2, -1/6, -4, 2, 1, 0, 1
1550, 1/4, 1/2, -1/4, 1/2, -2, 0, 0, 0, 1
1551, 1/2, 1/4, 1/2, -1/4, -2, -1, 0, 2, 1
1552, 1/2, 1/2, -1/2, 1/2, -3, 1, 0, 0, 1
1553, 1/6, 1/2, -1/6, 1/2, -2, -1, 1, 1, 1
1554, 1/2, 1/6, 1/2, -1/6, -2, 0, 0, 0, 1
1555, 1/4, 1/2, -1/4, 1/2, -2, -1, 0, 2, 1
1556, 1/2, 1/4, 1/2, -1/4, -3, 0, 2, 0, 1
1557, 1/6, 1/2, -1/6, 1/2, -2, 0, 0, 0, 1
1558, 1/4, 1/2, -1/4, 1/2, -3, 0, 2, 0, 1
1559, 1/2, 1/6, 1/2, -1/6, -2, -1, 0, 2, 1

1560, 1/6, 1/2, -1/6, 1/2, -2, -1, 0, 2, 1
1561, 1/2, 1/6, 1/2, -1/6, -3, 0, 2, 0, 1
1562, 1/2, 1/4, 1/2, -1/4, -3, 0, 1, 1, 1
1563, 1/6, 1/2, -1/6, 1/2, -3, 0, 2, 0, 1
1564, 1/2, 1/4, 1/2, -1/4, -3, 1, 0, 0, 1
1565, 1/6, 1/2, -1/6, 1/2, -3, -1, 2, 2, 1
1566, 1/4, 1/2, -1/4, 1/2, -3, 1, 0, 0, 1
1567, 1/2, 1/6, 1/2, -1/6, -3, 0, 1, 1, 1
1568, 1/6, 1/2, -1/6, 1/2, -4, 0, 4, 0, 1
1569, 1/2, 1/4, 1/2, -1/4, -3, 0, 0, 2, 1
1570, 1/2, 1/2, -1/2, 1/2, -2, -1, 0, 1, 1
1571, 1/2, 1/6, 1/2, -1/6, -3, 1, 0, 0, 1
1572, 1/2, 1/4, 1/2, -1/4, -4, 1, 2, 0, 1
1573, 1/6, 1/2, -1/6, 1/2, -3, 1, 0, 0, 1
1574, 1/2, 1/6, 1/2, -1/6, -3, 0, 0, 2, 1
1575, 1/2, 1/6, 1/2, -1/6, -4, 1, 2, 0, 1
1576, 1/2, 1/6, 1/2, -1/6, -3, -1, 0, 4, 1
1577, 1/4, 1/2, -1/4, 1/2, -2, -1, 1, 0, 1
1578, 1/2, 1/2, -1/2, 1/2, -2, -1, 0, 1, 0, 1
1579, 1/2, 1/6, 1/2, -1/6, -4, 0, 2, 2, 1
1580, 1/2, 1/4, 1/2, -1/4, -2, -1, 0, 1, 1
1581, 1/6, 1/2, -1/6, 1/2, -2, -1, 1, 0, 1
1582, 1/2, 1/6, 1/2, -1/6, -3, -1, 1, 1, 1, 1
1583, 1/4, 1/2, -1/4, 1/2, -2, -1, 0, 1, 1
1584, 1/2, 1/6, 1/2, -1/6, -4, 2, 0, 0, 1
1585, 1/2, 1/6, 1/2, -1/6, -2, -1, 0, 1, 1
1586, 1/6, 1/2, -1/6, 1/2, -3, -1, 0, 1, 1
1587, 1/2, 1/4, 1/2, -1/4, -3, 0, 1, 0, 1
1588, 1/4, 1/2, -1/4, 1/2, -3, 0, 1, 0, 1
1589, 1/6, 1/2, -1/6, 1/2, -3, -1, 2, 1, 1
1590, 1/2, 1/6, 1/2, -1/6, -3, 0, 1, 0, 1
1591, 1/4, 1/2, -1/4, 1/2, -3, -1, 1, 2, 1
1592, 1/2, 1/4, 1/2, -1/4, -3, 0, 0, 1, 1
1593, 1/6, 1/2, -1/6, 1/2, -3, 0, 1, 0, 1
1594, 1/4, 1/2, -1/4, 1/2, -4, 0, 3, 0, 1
1595, 1/2, 1/2, -1/2, 1/2, -2, -1, 0, 0, 1
1596, 1/2, 1/4, 1/2, -1/4, -3, -1, 0, 3, 1
1597, 1/6, 1/2, -1/6, 1/2, -3, -1, 1, 2, 1
1598, 1/2, 1/6, 1/2, -1/6, -3, 0, 1, 1, 1
1599, 1/2, 1/4, 1/2, -1/4, -4, 0, 2, 1, 1
1600, 1/6, 1/2, -1/6, 1/2, -4, 0, 3, 0, 1
1601, 1/2, 1/4, 1/2, -1/4, -4, 1, 1, 0, 1
1602, 1/2, 1/6, 1/2, -1/6, -3, -1, 0, 3, 1
1603, 1/2, 1/6, 1/2, -1/6, -4, 0, 2, 1, 1
1604, 1/2, 1/4, 1/2, -1/4, -2, -1, 0, 0, 1
1605, 1/2, 1/6, 1/2, -1/6, -4, 1, 1, 0, 1
1606, 1/4, 1/2, -1/4, 1/2, -2, -1, 0, 0, 1
1607, 1/2, 1/2, -1/2, 1/2, -3, 0, 0, 0, 1
1608, 1/2, 1/6, 1/2, -1/6, -4, 0, 1, 2, 1
1609, 1/2, 1/6, 1/2, -1/6, -2, -1, 0, 0, 1
1610, 1/6, 1/2, -1/6, 1/2, -2, -1, 0, 0, 1
1611, 1/2, 1/2, -1/2, 1/2, -3, -1, 0, 2, 1
1612, 1/2, 1/6, 1/2, -1/6, -4, 1, 0, 1, 1
1613, 1/2, 1/6, 1/2, -1/6, -2, -2, 0, 2, 1
1614, 1/2, 1/2, -1/2, 1/2, -4, 0, 2, 0, 1
1615, 1/6, 1/2, -1/6, 1/2, -3, -1, 2, 0, 1
1616, 1/4, 1/2, -1/4, 1/2, -3, -1, 1, 1, 1
1617, 1/2, 1/4, 1/2, -1/4, -3, 0, 0, 0, 1
1618, 1/4, 1/2, -1/4, 1/2, -3, 0, 0, 0, 1
1619, 1/2, 1/4, 1/2, -1/4, -3, -1, 0, 2, 1
1620, 1/6, 1/2, -1/6, 1/2, -3, -1, 1, 1, 1
1621, 1/2, 1/6, 1/2, -1/6, -3, 0, 0, 0, 1
1622, 1/4, 1/2, -1/4, 1/2, -3, -1, 0, 2, 1
1623, 1/2, 1/4, 1/2, -1/4, -4, 0, 2, 0, 1
1624, 1/6, 1/2, -1/6, 1/2, -3, 0, 0, 0, 1
1625, 1/4, 1/2, -1/4, 1/2, -4, 0, 2, 0, 1
1626, 1/2, 1/6, 1/2, -1/6, -3, -1, 0, 2, 1
1627, 1/6, 1/2, -1/6, 1/2, -3, -1, 0, 2, 1
1628, 1/2, 1/6, 1/2, -1/6, -4, 0, 2, 0, 1
1629, 1/2, 1/4, 1/2, -1/4, -4, 0, 1, 1, 1
1630, 1/6, 1/2, -1/6, 1/2, -4, 0, 2, 0, 1
1631, 1/2, 1/4, 1/2, -1/4, -4, 1, 0, 0, 1
1632, 1/2, 1/4, 1/2, -1/4, -2, -2, 0, 1, 1
1633, 1/2, 1/6, 1/2, -1/6, -4, 0, 1, 1, 1
1634, 1/2, 1/2, -1/2, 1/2, -3, -1, 0, 1, 1

1635, 1/2, 1/6, 1/2, -1/6, -4, 1, 0, 0, 1
1636, 1/6, 1/2, -1/6, 1/2, -4, 1, 0, 0, 1
1637, 1/2, 1/6, 1/2, -1/6, -2, -2, 0, 1, 1
1638, 1/2, 1/6, 1/2, -1/6, -4, 0, 0, 2, 1
1639, 1/4, 1/2, -1/4, 1/2, -3, -1, 1, 0, 1
1640, 1/2, 1/2, -1/2, 1/2, -4, 0, 1, 0, 1
1641, 1/2, 1/4, 1/2, -1/4, -3, -1, 0, 1, 1
1642, 1/6, 1/2, -1/6, 1/2, -3, -1, 1, 0, 1
1643, 1/2, 1/2, -1/2, 1/2, -2, -2, 0, 0, 1
1644, 1/4, 1/2, -1/4, 1/2, -3, -1, 0, 1, 1
1645, 1/2, 1/6, 1/2, -1/6, -5, 2, 0, 0, 1
1646, 1/2, 1/6, 1/2, -1/6, -3, -1, 0, 1, 1
1647, 1/6, 1/2, -1/6, 1/2, -3, -1, 0, 1, 1
1648, 1/2, 1/4, 1/2, -1/4, -4, 0, 1, 0, 1
1649, 1/4, 1/2, -1/4, 1/2, -4, 0, 1, 0, 1
1650, 1/2, 1/4, 1/2, -1/4, -2, -2, 0, 0, 1
1651, 1/2, 1/6, 1/2, -1/6, -4, 0, 1, 0, 1
1652, 1/2, 1/4, 1/2, -1/4, -4, 0, 0, 1, 1
1653, 1/6, 1/2, -1/6, 1/2, -4, -1, 0, 1, 0, 1
1654, 1/2, 1/2, -1/2, 1/2, -3, -1, 0, 0, 1
1655, 1/2, 1/6, 1/2, -1/6, -2, -2, 0, 0, 1
1656, 1/2, 1/6, 1/2, -1/6, -4, 0, 0, 1, 1
1657, 1/6, 1/2, -1/6, 1/2, -3, -2, 0, 2, 0, 1
1658, 1/2, 1/4, 1/2, -1/4, -3, -1, 0, 0, 1
1659, 1/2, 1/6, 1/2, -1/6, 1, 2, 0, 0, 2
1660, 1/4, 1/2, -1/4, 1/2, -3, -1, 0, 0, 1
1661, 1/2, 1/2, -1/2, 1/2, -4, 0, 0, 0, 1
1662, 1/2, 1/6, 1/2, -1/6, -3, -1, 0, 0, 1
1663, 1/6, 1/2, -1/6, 1/2, -3, -1, 0, 0, 1
1664, 1/2, 1/6, 1/2, -1/6, -5, 1, 0, 1, 1
1665, 1/2, 1/6, 1/2, -1/6, -3, -2, 0, 2, 1
1666, 1/2, 1/4, 1/2, -1/4, -4, 0, 0, 0, 1
1667, 1/2, 1/6, 1/2, -1/6, 0, 3, 0, 0, 2
1668, 1/4, 1/2, -1/4, 1/2, -4, 0, 0, 0, 1
1669, 1/2, 1/6, 1/2, -1/6, -4, 0, 0, 0, 1
1670, 1/6, 1/2, -1/6, 1/2, -4, 0, 0, 0, 1
1671, 1/6, 1/2, -1/6, 1/2, -5, 0, 2, 0, 1
1672, 1/4, 1/2, -1/4, 1/2, -3, -2, 1, 0, 1
1673, 1/2, 1/4, 1/2, -1/4, -3, 1, 0, 0, 1
1674, 1/2, 1/4, 1/2, -1/4, -3, -2, 0, 1, 1
1675, 1/6, 1/2, -1/6, 1/2, -3, -2, 1, 0, 1
1676, 1/2, 1/6, 1/2, -1/6, 1, 1, 0, 1, 2
1677, 1/2, 1/6, 1/2, -1/6, -5, 1, 0, 0, 1
1678, 1/6, 1/2, -1/6, 1/2, -5, 1, 0, 0, 1
1679, 1/2, 1/6, 1/2, -1/6, -3, -2, 0, 1, 1
1680, 1/2, 1/6, 1/2, -1/6, -5, 0, 0, 2, 1
1681, 1/2, 1/6, 1/2, -1/6, 0, 2, 0, 1, 2
1682, 1/2, 1/2, -1/2, 1/2, -3, -2, 0, 0, 1
1683, 1/2, 1/6, 1/2, -1/6, -6, 2, 0, 0, 1
1684, 1/2, 1/4, 1/2, -1/4, 1, 1, 0, 0, 2
1685, 1/4, 1/2, -1/4, 1/2, -5, 0, 1, 0, 1
1686, 1/2, 1/4, 1/2, -1/4, -3, -2, 0, 0, 1
1687, 1/2, 1/6, 1/2, -1/6, 1, 1, 0, 0, 2
1688, 1/2, 1/4, 1/2, -1/4, -5, 0, 0, 1, 1
1689, 1/6, 1/2, -1/6, 1/2, -5, 0, 1, 0, 1
1690, 1/4, 1/2, -1/4, 1/2, -3, -2, 0, 0, 1
1691, 1/2, 1/6, 1/2, -1/6, -3, -2, 0, 0, 1
1692, 1/6, 1/2, -1/6, 1/2, -3, -2, 0, 0, 1
1693, 1/2, 1/6, 1/2, -1/6, -5, 0, 0, 1, 1
1694, 1/2, 1/6, 1/2, -1/6, -3, -3, 0, 2, 1
1695, 1/6, 1/2, -1/6, 1/2, 0, 1, 2, 0, 2
1696, 1/2, 1/4, 1/2, -1/4, 0, 2, 0, 0, 2
1697, 1/2, 1/6, 1/2, -1/6, 0, 2, 0, 0, 2
1698, 1/2, 1/2, -1/2, 1/2, -5, 0, 0, 0, 1
1699, 1/2, 1/6, 1/2, -1/6, -6, 1, 0, 1, 1
1700, 1/2, 1/6, 1/2, -1/6, -1, 2, 2, 0, 2
1701, 1/2, 1/4, 1/2, -1/4, -5, 0, 0, 0, 1
1702, 1/2, 1/4, 1/2, -1/4, -3, -3, 0, 1, 1
1703, 1/4, 1/2, -1/4, 1/2, -5, 0, 0, 0, 1
1704, 1/2, 1/6, 1/2, -1/6, -5, 0, 0, 0, 1
1705, 1/6, 1/2, -1/6, 1/2, -5, 0, 0, 0, 1
1706, 1/2, 1/6, 1/2, -1/6, -3, -3, 0, 1, 1
1707, 1/4, 1/2, -1/4, 1/2, 0, 1, 1, 0, 2
1708, 1/6, 1/2, -1/6, 1/2, -6, 0, 2, 0, 1
1709, 1/2, 1/4, 1/2, -1/4, 0, 1, 0, 1, 2

1710, 1/6, 1/2, -1/6, 1/2, 0, 1, 1, 0, 2
1711, 1/2, 1/4, 1/2, -1/4, -6, 1, 0, 0, 1
1712, 1/2, 1/6, 1/2, -1/6, 0, 1, 0, 1, 2
1713, 1/2, 1/2, -1/2, 1/2, -3, -3, 0, 0, 1
1714, 1/2, 1/6, 1/2, -1/6, -6, 1, 0, 0, 1
1715, 1/2, 1/6, 1/2, -1/6, 0, 0, 0, 3, 2
1716, 1/2, 1/6, 1/2, -1/6, -6, 0, 1, 0, 2, 1
1717, 1/2, 1/6, 1/2, -1/6, -1, 1, 2, 1, 2
1718, 1/2, 1/6, 1/2, -1/6, -1, 2, 1, 0, 2
1719, 1/2, 1/2, -1/2, 1/2, 0, 1, 0, 0, 2
1720, 1/2, 1/4, 1/2, -1/4, -3, -3, 0, 0, 1
1721, 1/2, 1/6, 1/2, -1/6, -3, -3, 0, 0, 1
1722, 1/2, 1/4, 1/2, -1/4, 0, 1, 0, 0, 2
1723, 1/4, 1/2, -1/4, 1/2, -6, 0, 1, 0, 1
1724, 1/4, 1/2, -1/4, 1/2, 0, 1, 0, 0, 2
1725, 1/6, 1/2, -1/6, 1/2, -1, 0, 4, 0, 2
1726, 1/2, 1/4, 1/2, -1/4, 0, 0, 0, 2, 2
1727, 1/2, 1/6, 1/2, -1/6, 0, 1, 0, 0, 2
1728, 1/2, 1/4, 1/2, -1/4, -6, 0, 0, 1, 1
1729, 1/6, 1/2, -1/6, 1/2, -6, 0, 1, 0, 1
1730, 1/2, 1/4, 1/2, -1/4, -1, 1, 2, 0, 2
1731, 1/6, 1/2, -1/6, 1/2, 0, 1, 0, 0, 2
1732, 1/2, 1/6, 1/2, -1/6, 0, 0, 0, 2, 2
1733, 1/2, 1/6, 1/2, -1/6, -6, 0, 0, 1, 1
1734, 1/2, 1/6, 1/2, -1/6, -1, 1, 2, 0, 2
1735, 1/2, 1/6, 1/2, -1/6, -1, 0, 2, 2, 2
1736, 1/2, 1/6, 1/2, -1/6, -1, 1, 1, 1, 2
1737, 1/2, 1/6, 1/2, -1/6, -1, 2, 0, 0, 2
1738, 1/2, 1/2, -1/2, 1/2, -6, 0, 0, 0, 1
1739, 1/2, 1/4, 1/2, -1/4, 0, 0, 0, 1, 2
1740, 1/4, 1/2, -1/4, 1/2, -1, 0, 3, 0, 2
1741, 1/2, 1/4, 1/2, -1/4, -6, 0, 0, 0, 1
1742, 1/4, 1/2, -1/4, 1/2, -6, 0, 0, 0, 1
1743, 1/2, 1/6, 1/2, -1/6, 0, 0, 0, 1, 2
1744, 1/2, 1/4, 1/2, -1/4, -1, 0, 1, 2, 1, 2
1745, 1/6, 1/2, -1/6, 1/2, -1, 0, 3, 0, 2
1746, 1/2, 1/6, 1/2, -1/6, -6, 0, 0, 0, 1
1747, 1/6, 1/2, -1/6, 1/2, -6, 0, 0, 0, 1
1748, 1/2, 1/4, 1/2, -1/4, -1, 0, 1, 1, 0, 2
1749, 1/2, 1/6, 1/2, -1/6, -1, 0, 2, 1, 2
1750, 1/2, 1/6, 1/2, -1/6, -1, 1, 1, 0, 2
1751, 1/2, 1/2, -1/2, 1/2, 0, 0, 0, 0, 2
1752, 1/2, 1/6, 1/2, -1/6, -1, 0, 1, 2, 2
1753, 1/2, 1/6, 1/2, -1/6, -1, 1, 0, 1, 2
1754, 1/2, 1/2, -1/2, 1/2, -1, 0, 2, 0, 2
1755, 1/2, 1/4, 1/2, -1/4, 0, 0, 0, 0, 2
1756, 1/2, 1/6, 1/2, -1/6, 0, 0, 0, 0, 2
1757, 1/2, 1/4, 1/2, -1/4, -1, 0, 2, 0, 2
1758, 1/4, 1/2, -1/4, 1/2, -1, 0, 2, 0, 2
1759, 1/2, 1/6, 1/2, -1/6, -1, 0, 2, 0, 2
1760, 1/2, 1/4, 1/2, -1/4, -1, 0, 1, 1, 2
1761, 1/6, 1/2, -1/6, 1/2, -1, 0, 2, 0, 2
1762, 1/2, 1/4, 1/2, -1/4, -1, 1, 0, 0, 2
1763, 1/2, 1/6, 1/2, -1/6, -1, 0, 1, 1, 2
1764, 1/2, 1/6, 1/2, -1/6, -1, 1, 0, 0, 2
1765, 1/2, 1/6, 1/2, -1/6, -1, 0, 0, 2, 2
1766, 1/2, 1/2, -1/2, 1/2, -1, 0, 1, 0, 2
1767, 1/2, 1/6, 1/2, -1/6, -2, 2, 0, 0, 2
1768, 1/2, 1/4, 1/2, -1/4, -1, 0, 1, 0, 2
1769, 1/4, 1/2, -1/4, 1/2, -1, 0, 1, 0, 2
1770, 1/2, 1/6, 1/2, -1/6, -1, 0, 1, 0, 2
1771, 1/2, 1/4, 1/2, -1/4, -1, 0, 0, 1, 2
1772, 1/6, 1/2, -1/6, 1/2, -1, 0, 1, 0, 2
1773, 1/2, 1/6, 1/2, -1/6, -1, 0, 0, 1, 2
1774, 1/2, 1/2, -1/2, 1/2, -1, 0, 0, 0, 2
1775, 1/2, 1/6, 1/2, -1/6, -2, 1, 0, 1, 2
1776, 1/2, 1/4, 1/2, -1/4, -1, 0, 0, 0, 2
1777, 1/4, 1/2, -1/4, 1/2, -1, 0, 0, 0, 2
1778, 1/2, 1/6, 1/2, -1/6, -1, 0, 0, 0, 2
1779, 1/6, 1/2, -1/6, 1/2, -1, 0, 0, 0, 2
1780, 1/6, 1/2, -1/6, 1/2, -2, 0, 2, 0, 2
1781, 1/2, 1/4, 1/2, -1/4, -2, 1, 0, 0, 2
1782, 1/2, 1/6, 1/2, -1/6, -2, 1, 0, 0, 2
1783, 1/2, 1/6, 1/2, -1/6, -2, 0, 0, 2, 2
1784, 1/2, 1/6, 1/2, -1/6, -3, 2, 0, 0, 2

1785, $1/4, 1/2, -1/4, 1/2, -2, 0, 1, 0, 2$
1786, $1/2, 1/4, 1/2, -1/4, -2, 0, 0, 1, 2$
1787, $1/6, 1/2, -1/6, 1/2, -2, 0, 1, 0, 2$
1788, $1/2, 1/6, 1/2, -1/6, -2, 0, 0, 1, 2$
1789, $1/2, 1/2, -1/2, 1/2, -2, 0, 0, 0, 2$
1790, $1/2, 1/6, 1/2, -1/6, -3, 1, 0, 1, 2$
1791, $1/2, 1/4, 1/2, -1/4, -2, 0, 0, 0, 2$
1792, $1/4, 1/2, -1/4, 1/2, -2, 0, 0, 0, 2$
1793, $1/2, 1/6, 1/2, -1/6, -2, 0, 0, 0, 2$
1794, $1/6, 1/2, -1/6, 1/2, -2, 0, 0, 0, 2$
1795, $1/6, 1/2, -1/6, 1/2, -3, 0, 2, 0, 2$
1796, $1/2, 1/4, 1/2, -1/4, -3, 1, 0, 0, 2$
1797, $1/2, 1/6, 1/2, -1/6, -3, 1, 0, 0, 2$

1798, $1/2, 1/6, 1/2, -1/6, -3, 0, 0, 2, 2$
1799, $1/4, 1/2, -1/4, 1/2, -3, 0, 1, 0, 2$
1800, $1/2, 1/4, 1/2, -1/4, -3, 0, 0, 1, 2$
1801, $1/6, 1/2, -1/6, 1/2, -3, 0, 1, 0, 2$
1802, $1/2, 1/6, 1/2, -1/6, -3, 0, 0, 1, 2$
1803, $1/2, 1/2, -1/2, 1/2, -3, 0, 0, 0, 2$
1804, $1/2, 1/4, 1/2, -1/4, -3, 0, 0, 0, 2$
1805, $1/4, 1/2, -1/4, 1/2, -3, 0, 0, 0, 2$
1806, $1/2, 1/6, 1/2, -1/6, -3, 0, 0, 0, 2$
1807, $1/6, 1/2, -1/6, 1/2, -3, 0, 0, 0, 2$
1808, $1/6, 1/2, -1/6, 1/2, -4, 0, 0, 0, 2$
1809, $1/2, 1/6, 1/2, -1/6, 0, 2, 0, 0, 3$
1810, $1/6, 1/2, -1/6, 1/2, -5, 0, 0, 0, 2$

1811, $1/2, 1/6, 1/2, -1/6, 0, 1, 0, 1, 3$
1812, $1/2, 1/4, 1/2, -1/4, 0, 1, 0, 0, 3$
1813, $1/2, 1/6, 1/2, -1/6, 0, 1, 0, 0, 3$
1814, $1/2, 1/6, 1/2, -1/6, 0, 0, 0, 2, 3$
1815, $1/2, 1/4, 1/2, -1/4, 0, 0, 0, 1, 3$
1816, $1/2, 1/6, 1/2, -1/6, 0, 0, 0, 1, 3$
1817, $1/2, 1/2, -1/2, 1/2, 0, 0, 0, 0, 3$
1818, $1/2, 1/4, 1/2, -1/4, 0, 0, 0, 0, 3$
1819, $1/2, 1/6, 1/2, -1/6, 0, 0, 0, 0, 3$

1490, 1/6, 1/2, -1/6, 1/2, -4, 0, 1, 0, 1
 1491, 1/2, 1/6, 1/2, -1/6, -2, -2, 0, 0, 1
 1492, 1/2, 1/6, 1/2, -1/6, -4, 0, 0, 1, 1
 1493, 1/6, 1/2, -1/6, 1/2, -3, -2, 2, 0, 1
 1494, 1/2, 1/4, 1/2, -1/4, -3, -1, 0, 0, 1
 1495, 1/2, 1/6, 1/2, -1/6, 1, 2, 0, 0, 2
 1496, 1/4, 1/2, -1/4, 1/2, -3, -1, 0, 0, 1
 1497, 1/2, 1/6, 1/2, -1/6, -3, -1, 0, 0, 1
 1498, 1/6, 1/2, -1/6, 1/2, -3, -1, 0, 0, 1
 1499, 1/2, 1/6, 1/2, -1/6, -5, 1, 0, 1, 1
 1500, 1/2, 1/6, 1/2, -1/6, -3, -2, 0, 2, 1
 1501, 1/2, 1/4, 1/2, -1/4, -4, 0, 0, 0, 1
 1502, 1/2, 1/6, 1/2, -1/6, 0, 3, 0, 0, 2
 1503, 1/4, 1/2, -1/4, 1/2, -4, 0, 0, 0, 1
 1504, 1/2, 1/6, 1/2, -1/6, -4, 0, 0, 0, 1
 1505, 1/6, 1/2, -1/6, 1/2, -4, 0, 0, 0, 1
 1506, 1/6, 1/2, -1/6, 1/2, -5, 0, 2, 0, 1
 1507, 1/4, 1/2, -1/4, 1/2, -3, -2, 1, 0, 1
 1508, 1/2, 1/4, 1/2, -1/4, -5, 1, 0, 0, 1
 1509, 1/2, 1/4, 1/2, -1/4, -3, -2, 0, 1, 1
 1510, 1/6, 1/2, -1/6, 1/2, -3, -2, 1, 0, 1
 1511, 1/2, 1/6, 1/2, -1/6, 1, 1, 0, 1, 2
 1512, 1/2, 1/6, 1/2, -1/6, -1, 1, 0, 0, 1
 1513, 1/6, 1/2, -1/6, 1/2, -5, 1, 0, 0, 1
 1514, 1/2, 1/6, 1/2, -1/6, -3, -2, 0, 1, 1
 1515, 1/2, 1/6, 1/2, -1/6, -5, 0, 0, 2, 1
 1516, 1/2, 1/6, 1/2, -1/6, 0, 2, 0, 1, 2
 1517, 1/2, 1/6, 1/2, -1/6, -6, 2, 0, 0, 1
 1518, 1/2, 1/4, 1/2, -1/4, 1, 1, 0, 0, 2
 1519, 1/4, 1/2, -1/4, 1/2, -5, 0, 1, 0, 1
 1520, 1/2, 1/4, 1/2, -1/4, -3, -2, 0, 0, 1
 1521, 1/2, 1/6, 1/2, -1/6, -1, 1, 0, 0, 2
 1522, 1/2, 1/4, 1/2, -1/4, -5, 0, 0, 1, 1
 1523, 1/6, 1/2, -1/6, 1/2, -5, 0, 1, 0, 1
 1524, 1/4, 1/2, -1/4, 1/2, -3, -2, 0, 0, 1
 1525, 1/2, 1/6, 1/2, -1/6, -3, -2, 0, 0, 1
 1526, 1/6, 1/2, -1/6, 1/2, -3, -2, 0, 0, 1
 1527, 1/2, 1/6, 1/2, -1/6, -5, 0, 0, 1, 1
 1528, 1/2, 1/6, 1/2, -1/6, -3, -3, 0, 2, 1
 1529, 1/6, 1/2, -1/6, 1/2, 0, 1, 2, 0, 2
 1530, 1/2, 1/4, 1/2, -1/4, 0, 2, 0, 0, 2
 1531, 1/2, 1/6, 1/2, -1/6, 0, 2, 0, 0, 2
 1532, 1/2, 1/6, 1/2, -1/6, -6, 1, 0, 1, 1
 1533, 1/2, 1/6, 1/2, -1/6, -1, 2, 2, 0, 2
 1534, 1/2, 1/4, 1/2, -1/4, -5, 0, 0, 0, 1
 1535, 1/2, 1/4, 1/2, -1/4, -3, -3, 0, 1, 1
 1536, 1/4, 1/2, -1/4, 1/2, -5, 0, 0, 0, 1
 1537, 1/2, 1/6, 1/2, -1/6, -5, 0, 0, 0, 1
 1538, 1/6, 1/2, -1/6, 1/2, -5, 0, 0, 0, 1
 1539, 1/2, 1/6, 1/2, -1/6, -3, -3, 0, 1, 1
 1540, 1/4, 1/2, -1/4, 1/2, 0, 1, 1, 0, 2
 1541, 1/6, 1/2, -1/6, 1/2, -6, 0, 2, 0, 1
 1542, 1/2, 1/4, 1/2, -1/4, 0, 1, 0, 1, 2

1543, 1/6, 1/2, -1/6, 1/2, 0, 1, 1, 0, 2
 1544, 1/2, 1/4, 1/2, -1/4, -6, 1, 0, 0, 1
 1545, 1/2, 1/6, 1/2, -1/6, 0, 1, 0, 1, 2
 1546, 1/2, 1/6, 1/2, -1/6, -6, 1, 0, 0, 1
 1547, 1/2, 1/6, 1/2, -1/6, 0, 0, 0, 3, 2
 1548, 1/2, 1/6, 1/2, -1/6, -6, 0, 0, 2, 1
 1549, 1/2, 1/6, 1/2, -1/6, -1, 1, 2, 1, 2
 1550, 1/2, 1/6, 1/2, -1/6, -1, 2, 1, 0, 2
 1551, 1/2, 1/4, 1/2, -1/4, -3, -3, 0, 0, 1
 1552, 1/2, 1/6, 1/2, -1/6, -3, -3, 0, 0, 1
 1553, 1/2, 1/4, 1/2, -1/4, 0, 1, 0, 0, 2
 1554, 1/4, 1/2, -1/4, 1/2, -6, 0, 1, 0, 1
 1555, 1/4, 1/2, -1/4, 1/2, 0, 1, 0, 0, 2
 1556, 1/6, 1/2, -1/6, 1/2, -1, 0, 4, 0, 2
 1557, 1/2, 1/4, 1/2, -1/4, 0, 0, 0, 2, 2
 1558, 1/2, 1/6, 1/2, -1/6, 0, 1, 0, 0, 2
 1559, 1/2, 1/4, 1/2, -1/4, -6, 0, 0, 1, 1
 1560, 1/6, 1/2, -1/6, 1/2, -6, 0, 1, 0, 1
 1561, 1/2, 1/4, 1/2, -1/4, -1, 1, 2, 0, 2
 1562, 1/6, 1/2, -1/6, 1/2, 0, 1, 0, 0, 2
 1563, 1/2, 1/6, 1/2, -1/6, 0, 0, 0, 2, 2
 1564, 1/2, 1/6, 1/2, -1/6, -6, 0, 0, 1, 1
 1565, 1/2, 1/6, 1/2, -1/6, -1, 1, 2, 0, 2
 1566, 1/2, 1/6, 1/2, -1/6, -1, 0, 2, 2, 2
 1567, 1/2, 1/6, 1/2, -1/6, -1, 1, 1, 1, 2
 1568, 1/2, 1/6, 1/2, -1/6, -1, 2, 0, 0, 2
 1569, 1/2, 1/4, 1/2, -1/4, 0, 0, 0, 1, 2
 1570, 1/4, 1/2, -1/4, 1/2, -1, 0, 3, 0, 2
 1571, 1/2, 1/4, 1/2, -1/4, -6, 0, 0, 0, 1
 1572, 1/4, 1/2, -1/4, 1/2, -6, 0, 0, 0, 1
 1573, 1/2, 1/6, 1/2, -1/6, 0, 0, 0, 1, 2
 1574, 1/2, 1/4, 1/2, -1/4, -1, 0, 2, 1, 2
 1575, 1/6, 1/2, -1/6, 1/2, -1, 0, 3, 0, 2
 1576, 1/2, 1/6, 1/2, -1/6, -6, 0, 0, 0, 1
 1577, 1/6, 1/2, -1/6, 1/2, -6, 0, 0, 0, 1
 1578, 1/2, 1/4, 1/2, -1/4, -1, 1, 1, 0, 2
 1579, 1/2, 1/6, 1/2, -1/6, -1, 0, 2, 1, 2
 1580, 1/2, 1/6, 1/2, -1/6, -1, 1, 1, 0, 2
 1581, 1/2, 1/6, 1/2, -1/6, -1, 0, 1, 2, 2
 1582, 1/2, 1/6, 1/2, -1/6, -1, 1, 0, 1, 2
 1583, 1/2, 1/4, 1/2, -1/4, 0, 0, 0, 0, 2
 1584, 1/2, 1/6, 1/2, -1/6, 0, 0, 0, 0, 2
 1585, 1/2, 1/4, 1/2, -1/4, -1, 0, 2, 0, 2
 1586, 1/4, 1/2, -1/4, 1/2, -1, 0, 2, 0, 2
 1587, 1/2, 1/6, 1/2, -1/6, -1, 0, 2, 0, 2
 1588, 1/2, 1/4, 1/2, -1/4, -1, 0, 1, 1, 2
 1589, 1/6, 1/2, -1/6, 1/2, -1, 0, 2, 0, 2
 1590, 1/2, 1/4, 1/2, -1/4, -1, 1, 0, 0, 2
 1591, 1/2, 1/6, 1/2, -1/6, -1, 0, 1, 1, 2
 1592, 1/2, 1/6, 1/2, -1/6, -1, 1, 0, 0, 2
 1593, 1/2, 1/6, 1/2, -1/6, -1, 0, 0, 2, 2
 1594, 1/2, 1/6, 1/2, -1/6, -2, 2, 0, 0, 2
 1595, 1/2, 1/4, 1/2, -1/4, -1, 0, 1, 0, 2

1596, 1/4, 1/2, -1/4, 1/2, -1, 0, 1, 0, 2
 1597, 1/2, 1/6, 1/2, -1/6, -1, 0, 1, 0, 2
 1598, 1/2, 1/4, 1/2, -1/4, -1, 0, 0, 1, 2
 1599, 1/6, 1/2, -1/6, 1/2, -1, 0, 1, 0, 2
 1600, 1/2, 1/6, 1/2, -1/6, -1, 0, 0, 1, 2
 1601, 1/2, 1/6, 1/2, -1/6, -2, 1, 0, 1, 2
 1602, 1/2, 1/4, 1/2, -1/4, -1, 0, 0, 0, 2
 1603, 1/4, 1/2, -1/4, 1/2, -1, 0, 0, 0, 2
 1604, 1/2, 1/6, 1/2, -1/6, -1, 0, 0, 0, 2
 1605, 1/6, 1/2, -1/6, 1/2, -1, 0, 0, 0, 2
 1606, 1/6, 1/2, -1/6, 1/2, -2, 0, 2, 0, 2
 1607, 1/2, 1/4, 1/2, -1/4, -2, 1, 0, 0, 2
 1608, 1/2, 1/6, 1/2, -1/6, -2, 1, 0, 0, 2
 1609, 1/2, 1/6, 1/2, -1/6, -2, 0, 0, 2, 2
 1610, 1/2, 1/6, 1/2, -1/6, -3, 2, 0, 0, 2
 1611, 1/4, 1/2, -1/4, 1/2, -2, 0, 1, 0, 2
 1612, 1/2, 1/4, 1/2, -1/4, -2, 0, 0, 1, 2
 1613, 1/6, 1/2, -1/6, 1/2, -2, 0, 1, 0, 2
 1614, 1/2, 1/6, 1/2, -1/6, -2, 0, 0, 1, 2
 1615, 1/6, 1/2, -1/6, 1/2, -3, 1, 0, 1, 2
 1616, 1/2, 1/4, 1/2, -1/4, -2, 0, 0, 0, 2
 1617, 1/4, 1/2, -1/4, 1/2, -2, 0, 0, 0, 2
 1618, 1/2, 1/6, 1/2, -1/6, -2, 0, 0, 0, 2
 1619, 1/6, 1/2, -1/6, 1/2, -2, 0, 0, 0, 2
 1620, 1/6, 1/2, -1/6, 1/2, -3, 0, 2, 0, 2
 1621, 1/2, 1/4, 1/2, -1/4, -3, 1, 0, 0, 2
 1622, 1/2, 1/6, 1/2, -1/6, -3, 1, 0, 0, 2
 1623, 1/2, 1/6, 1/2, -1/6, -3, 0, 0, 2, 2
 1624, 1/4, 1/2, -1/4, 1/2, -3, 0, 1, 0, 2
 1625, 1/2, 1/4, 1/2, -1/4, -3, 0, 0, 1, 2
 1626, 1/6, 1/2, -1/6, 1/2, -3, 0, 1, 0, 2
 1627, 1/2, 1/6, 1/2, -1/6, -3, 0, 0, 1, 2
 1628, 1/2, 1/4, 1/2, -1/4, -3, 0, 0, 0, 2
 1629, 1/4, 1/2, -1/4, 1/2, -3, 0, 0, 0, 2
 1630, 1/2, 1/6, 1/2, -1/6, -3, 0, 0, 0, 2
 1631, 1/6, 1/2, -1/6, 1/2, -3, 0, 0, 0, 2
 1632, 1/6, 1/2, -1/6, 1/2, -4, 0, 0, 0, 2
 1633, 1/2, 1/6, 1/2, -1/6, 0, 2, 0, 0, 3
 1634, 1/6, 1/2, -1/6, 1/2, -5, 0, 0, 0, 2
 1635, 1/2, 1/6, 1/2, -1/6, 0, 1, 0, 1, 3
 1636, 1/2, 1/4, 1/2, -1/4, 0, 1, 0, 0, 3
 1637, 1/2, 1/6, 1/2, -1/6, 0, 1, 0, 0, 3
 1638, 1/2, 1/6, 1/2, -1/6, 0, 0, 0, 2, 3
 1639, 1/2, 1/4, 1/2, -1/4, 0, 0, 0, 1, 3
 1640, 1/2, 1/6, 1/2, -1/6, 0, 0, 0, 1, 3
 1641, 1/2, 1/4, 1/2, -1/4, 0, 0, 0, 0, 3
 1642, 1/2, 1/6, 1/2, -1/6, 0, 0, 0, 0, 3

1557, $1/2, 1/4, 1/2, -1/4, -1, 1, 0, 0, 2$
1558, $1/2, 1/6, 1/2, -1/6, -1, 0, 1, 1, 2$
1559, $1/2, 1/6, 1/2, -1/6, -1, 1, 0, 0, 2$
1560, $1/2, 1/6, 1/2, -1/6, -1, 0, 0, 2, 2$
1561, $1/2, 1/6, 1/2, -1/6, -2, 2, 0, 0, 2$
1562, $1/2, 1/4, 1/2, -1/4, -1, 0, 1, 0, 2$
1563, $1/4, 1/2, -1/4, 1/2, -1, 0, 1, 0, 2$
1564, $1/2, 1/6, 1/2, -1/6, -1, 0, 1, 0, 2$
1565, $1/2, 1/4, 1/2, -1/4, -1, 0, 0, 1, 2$
1566, $1/6, 1/2, -1/6, 1/2, -1, 0, 1, 0, 2$
1567, $1/2, 1/6, 1/2, -1/6, -1, 0, 0, 1, 2$
1568, $1/2, 1/6, 1/2, -1/6, -2, 1, 0, 1, 2$
1569, $1/2, 1/4, 1/2, -1/4, -1, 0, 0, 0, 2$
1570, $1/4, 1/2, -1/4, 1/2, -1, 0, 0, 0, 2$
1571, $1/2, 1/6, 1/2, -1/6, -1, 0, 0, 0, 2$
1572, $1/6, 1/2, -1/6, 1/2, -1, 0, 0, 0, 2$
1573, $1/6, 1/2, -1/6, 1/2, -2, 0, 2, 0, 2$
1574, $1/2, 1/4, 1/2, -1/4, -2, 1, 0, 0, 2$
1575, $1/2, 1/6, 1/2, -1/6, -2, 1, 0, 0, 2$
1576, $1/2, 1/6, 1/2, -1/6, -2, 0, 0, 2, 2$
1577, $1/2, 1/6, 1/2, -1/6, -3, 2, 0, 0, 2$
1578, $1/4, 1/2, -1/4, 1/2, -2, 0, 1, 0, 2$
1579, $1/2, 1/4, 1/2, -1/4, -2, 0, 0, 1, 2$
1580, $1/6, 1/2, -1/6, 1/2, -2, 0, 1, 0, 2$
1581, $1/2, 1/6, 1/2, -1/6, -2, 0, 0, 1, 2$
1582, $1/2, 1/6, 1/2, -1/6, -3, 1, 0, 1, 2$
1583, $1/2, 1/4, 1/2, -1/4, -2, 0, 0, 0, 2$
1584, $1/4, 1/2, -1/4, 1/2, -2, 0, 0, 0, 2$
1585, $1/2, 1/6, 1/2, -1/6, -2, 0, 0, 0, 2$
1586, $1/6, 1/2, -1/6, 1/2, -2, 0, 0, 0, 2$
1587, $1/6, 1/2, -1/6, 1/2, -3, 0, 2, 0, 2$
1588, $1/2, 1/4, 1/2, -1/4, -3, 1, 0, 0, 2$
1589, $1/2, 1/6, 1/2, -1/6, -3, 1, 0, 0, 2$
1590, $1/2, 1/6, 1/2, -1/6, -3, 0, 0, 2, 2$
1591, $1/4, 1/2, -1/4, 1/2, -3, 0, 1, 0, 2$
1592, $1/2, 1/4, 1/2, -1/4, -3, 0, 0, 1, 2$
1593, $1/6, 1/2, -1/6, 1/2, -3, 0, 1, 0, 2$
1594, $1/2, 1/6, 1/2, -1/6, -3, 0, 0, 1, 2$
1595, $1/2, 1/4, 1/2, -1/4, -3, 0, 0, 0, 2$
1596, $1/4, 1/2, -1/4, 1/2, -3, 0, 0, 0, 2$
1597, $1/2, 1/6, 1/2, -1/6, -3, 0, 0, 0, 2$
1598, $1/6, 1/2, -1/6, 1/2, -3, 0, 0, 0, 2$
1599, $1/6, 1/2, -1/6, 1/2, -4, 0, 0, 0, 2$
1600, $1/2, 1/6, 1/2, -1/6, 0, 2, 0, 0, 3$
1601, $1/6, 1/2, -1/6, 1/2, -5, 0, 0, 0, 2$
1602, $1/2, 1/6, 1/2, -1/6, 0, 1, 0, 1, 3$
1603, $1/2, 1/4, 1/2, -1/4, 0, 1, 0, 0, 3$
1604, $1/2, 1/6, 1/2, -1/6, 0, 1, 0, 0, 3$
1605, $1/2, 1/6, 1/2, -1/6, 0, 0, 0, 2, 3$
1606, $1/2, 1/4, 1/2, -1/4, 0, 0, 0, 1, 3$
1607, $1/2, 1/6, 1/2, -1/6, 0, 0, 0, 1, 3$
1608, $1/2, 1/4, 1/2, -1/4, 0, 0, 0, 0, 3$
1609, $1/2, 1/6, 1/2, -1/6, 0, 0, 0, 0, 3$

1776, $1/2, 1/6, 1/2, -1/6, 0, 2, 0, 0, 3$
1777, $1/6, 1/2, -1/6, 1/2, -5, 0, 0, 0, 2$
1778, $1/2, 1/6, 1/2, -1/6, 0, 1, 0, 1, 3$
1779, $1/2, 1/4, 1/2, -1/4, 0, 1, 0, 0, 3$
1780, $1/2, 1/6, 1/2, -1/6, 0, 1, 0, 0, 3$
1781, $1/2, 1/6, 1/2, -1/6, 0, 0, 0, 2, 3$
1782, $1/2, 1/4, 1/2, -1/4, 0, 0, 0, 1, 3$
1783, $1/2, 1/6, 1/2, -1/6, 0, 0, 0, 1, 3$
1784, $1/2, 1/2, -1/2, 1/2, 0, 0, 0, 0, 3$
1785, $1/2, 1/4, 1/2, -1/4, 0, 0, 0, 0, 3$
1786, $1/2, 1/6, 1/2, -1/6, 0, 0, 0, 0, 3$

Table S5. The energies of the hydrogen molecule in the $^1\Sigma_g$ state calculated with the Free

Complement method at order $n = 3$.

R(Bohr)	E0(X)	E1(EF)	E2(GK)	E3(HH)	E4(P)	E5(O)
0.5	-0.526636133	0.127042609	0.205960702	0.209276728	0.232336865	0.233707889
0.8	-1.020055221	-0.436425387	-0.361818352	-0.360391326	-0.336447454	-0.335880725
1.0	-1.124538673	-0.580085427	-0.508066032	-0.507859752	-0.483310834	-0.483260350
1.2	-1.164934451	-0.653971403	-0.585252978	-0.584281091	-0.560539981	-0.560088868
1.4	-1.174475089	-0.692018079	-0.626518012	-0.624404661	-0.601663797	-0.600722076
1.4011	-1.174475307	-0.692162609	-0.626679488	-0.624559939	-0.601824405	-0.600880012
1.6	-1.168582861	-0.710336895	-0.647791880	-0.644560203	-0.622763004	-0.621334812
1.8	-1.155068305	-0.717335818	-0.657514958	-0.653165887	-0.632268852	-0.630345773
1.9	-1.146850295	-0.718147374	-0.659614561	-0.654696271	-0.634239500	-0.632059071
2.0	-1.138132582	-0.717715211	-0.660430062	-0.654926430	-0.634909096	-0.632458511
2.1	-1.129163485	-0.716337849	-0.660269660	-0.654153900	-0.634582388	-0.631840921
2.2	-1.120131788	-0.714251288	-0.659383677	-0.652612782	-0.633505461	-0.630439258
2.4	-1.102422315	-0.708675427	-0.656268497	-0.647936057	-0.629919007	-0.625986736
2.5	-1.093937856	-0.705475047	-0.654441793	-0.645078959	-0.627820453	-0.623207052
2.6	-1.085790979	-0.702164583	-0.652770232	-0.642031928	-0.625911731	-0.620205694
2.7	-1.078028242	-0.698864847	-0.651662377	-0.638910065	-0.624738776	-0.617086488
2.8	-1.070683006	-0.695715916	-0.651749554	-0.635853586	-0.624751732	-0.613967804
2.9	-1.063777796	-0.692910023	-0.653626316	-0.633040221	-0.624975587	-0.610950581
3.0	-1.057326071	-0.690747023	-0.656985802	-0.630554115	-0.623922686	-0.607983717
3.1	-1.051333588	-0.689687331	-0.660470016	-0.628188863	-0.621624486	-0.604964837
3.2	-1.045799491	-0.690223179	-0.662692224	-0.625732187	-0.618723020	-0.601892722
3.3	-1.040717209	-0.692387324	-0.663103327	-0.623163550	-0.615600249	-0.598805907
3.4	-1.036075251	-0.695573235	-0.662070172	-0.620535270	-0.612422359	-0.595740068
3.5	-1.031857953	-0.699079471	-0.660201805	-0.617899839	-0.609265877	-0.592722005
3.8	-1.021549698	-0.708089846	-0.653002376	-0.610291004	-0.600251840	-0.584124687
4.0	-1.016390175	-0.711884142	-0.648203273	-0.605656911	-0.594769570	-0.578874391
4.2	-1.012359898	-0.713938719	-0.643832322	-0.601461335	-0.589768322	-0.574058514
4.4	-1.009256468	-0.714520129	-0.639999522	-0.597730987	-0.585261666	-0.569694512
4.5	-1.007993686	-0.714350019	-0.638295574	-0.596041641	-0.583192618	-0.567684230
4.6	-1.006895186	-0.713919471	-0.636732589	-0.594468127	-0.581243967	-0.565789174
5.0	-1.003785636	-0.710202888	-0.631802882	-0.589290126	-0.574591102	-0.559393616
5.5	-1.001774568	-0.702838167	-0.628081599	-0.585162325	-0.568532544	-0.554605409
5.7	-1.001311333	-0.699479129	-0.627144974	-0.584199377	-0.566689776	-0.553947402
5.8	-1.001127873	-0.697756744	-0.626764636	-0.583860983	-0.565873033	-0.553842707
6.0	-1.000835702	-0.694266430	-0.626147956	-0.583463397	-0.564424570	-0.553905248
6.1	-1.000720084	-0.692511462	-0.625900478	-0.583400146	-0.563783509	-0.554012692
6.2	-1.000620961	-0.690757143	-0.625687051	-0.583423586	-0.563191959	-0.554142851
7.0	-1.000197913	-0.677164898	-0.624784646	-0.586184664	-0.559799899	-0.555073142
8.0	-1.000055605	-0.662220117	-0.624553267	-0.592842947	-0.557571398	-0.555462996
9.0	-1.000019782	-0.649935059	-0.624575827	-0.599141090	-0.556492989	-0.555533300
10.0	-1.000008756	-0.640253722	-0.624641133	-0.603416613	-0.556000843	-0.555539183
11.0	-1.000004506	-0.633179814	-0.624700928	-0.605239798	-0.555782204	-0.555782204
12.0	-1.000002546	-0.628741479	-0.624745649	-0.604581330	-0.555682255	-0.555533720
13.0	-1.000001529	-0.626498485	-0.624774063	-0.601966646	-0.555632968	-0.555533653

15.0	-1.000000625	-0.625202955	-0.624788933	-0.594508152	-0.555590181	-0.555536678
20.0	-1.000000107	-0.625005640	-0.624867158	-0.578402938	-0.555562710	-0.555545179
25.0	-1.000000027	-0.625001019	-0.624929956	-0.571977037	-0.555557543	-0.555549819

Table S6. The energy of the hydrogen molecule in the $^1\Sigma_u$ state calculated with the Free Complementmethod at order $n = 3$.

R	E0(B)	E1(B')	E2(B''B)	E3(4)	E4(5)	E5(6)
0.8	-0.4318317	-0.3606584	-0.3359861	-0.3357465	-0.3243859	-0.3226968
1.0	-0.5813390	-0.5086231	-0.4835742	-0.4830725	-0.4719092	-0.4698788
1.2	-0.6613363	-0.5866544	-0.5611217	-0.5602847	-0.5493115	-0.5470580
1.4011	-0.7059596	-0.6288622	-0.6027319	-0.6014829	-0.5907271	-0.5883228
1.6	-0.7307753	-0.6508674	-0.6240383	-0.6223098	-0.6118012	-0.6092228
1.8	-0.7446807	-0.6615706	-0.6339386	-0.6316639	-0.6214324	-0.6186341
1.9	-0.7489986	-0.6641717	-0.6361049	-0.6335369	-0.6234510	-0.6205305
2.0	-0.7520828	-0.6654812	-0.6369602	-0.6340877	-0.6241518	-0.6211048
2.1	-0.7542078	-0.6657914	-0.6367988	-0.6336124	-0.6238299	-0.6206567
2.2	-0.7555821	-0.6653305	-0.6358512	-0.6323427	-0.6227156	-0.6194165
2.4	-0.7566747	-0.6627775	-0.6322870	-0.6281136	-0.6188025	-0.6152562
2.43	-0.7566902	-0.6622576	-0.6316115	-0.6273363	-0.6180731	-0.6144902
2.5	-0.7566054	-0.6609431	-0.6299305	-0.6254151	-0.6162645	-0.6125961
2.6	-0.7562266	-0.6588680	-0.6273232	-0.6224587	-0.6134708	-0.6096798
2.8	-0.7547439	-0.6542879	-0.6216466	-0.6160579	-0.6074046	-0.6034340
3.0	-0.7525297	-0.6495062	-0.6157167	-0.6093535	-0.6010556	-0.5967318
3.2	-0.7497751	-0.6448564	-0.6098481	-0.6026388	-0.5947291	-0.5900763
3.4	-0.7466093	-0.6405801	-0.6042562	-0.5961076	-0.5886301	-0.5835819
3.5	-0.7449027	-0.6386375	-0.6016096	-0.5929532	-0.5857094	-0.5804413
3.8	-0.7394033	-0.6337541	-0.5943783	-0.5840730	-0.5775776	-0.5715773
4.0	-0.7354995	-0.6313322	-0.5901551	-0.5787216	-0.5727105	-0.5662325
4.5	-0.7252752	-0.6278305	-0.5812915	-0.5677742	-0.5623630	-0.5552713
5.0	-0.7148549	-0.6266369	-0.5741489	-0.5621569	-0.5546053	-0.5498054
5.2	-0.7107294	-0.6264633	-0.5717016	-0.5623697	-0.5524259	-0.5485942
5.4	-0.7066582	-0.6263697	-0.5695165	-0.5637684	-0.5509402	-0.5471601
5.5	-0.7046477	-0.6263410	-0.5685650	-0.5646864	-0.5504972	-0.5464357
5.6	-0.7026562	-0.6263198	-0.5678477	-0.5655310	-0.5502593	-0.5457479
5.7	-0.7006850	-0.6263037	-0.5678862	-0.5657415	-0.5502020	-0.5451044
5.8	-0.6987353	-0.6262906	-0.5687703	-0.5652002	-0.5502831	-0.5445047
6.0	-0.6949049	-0.6262685	-0.5711135	-0.5637540	-0.5506919	-0.5434432
6.2	-0.6911721	-0.6262460	-0.5735752	-0.5624000	-0.5512376	-0.5425972
7.0	-0.6773011	-0.6261088	-0.5830019	-0.5586606	-0.5532415	-0.5413311
8.0	-0.6624432	-0.6258720	-0.5927742	-0.5567483	-0.5546760	-0.5411816
10.0	-0.6406726	-0.6254855	-0.6040348	-0.5559056	-0.5555508	-0.5404410
11.0	-0.6336661	-0.6253614	-0.6056438	-0.5557940	-0.5556140	-0.5405901
12.0	-0.6292613	-0.6252684	-0.6047815	-0.5557269	-0.5556176	-0.5413032
13.0	-0.6269901	-0.6251948	-0.6020479	-0.5556810	-0.5556066	-0.5425744
15.0	-0.6255496	-0.6250826	-0.5945189	-0.5556253	-0.5555847	-0.5460969
20.0	-0.6251454	-0.6250368	-0.5783903	-0.5555744	-0.5555584	-0.5528419
25.0	-0.6250720	-0.6250008	-0.5677781	-0.5555647	-0.5555575	-0.5549591
30.0	-0.6250414	-0.6250002	-0.5594564	-0.5555603	-0.5555562	-0.5553808
40.0	-0.6250174	-0.6250000	-0.5555591	-0.5555562	-0.5555557	-0.5457230
50.0	-0.6250089	-0.6250000	-0.5555571	-0.5555557	-0.5555556	-0.5313050

Table S7. The energy of the hydrogen molecule in the $^3\Sigma_g$ state calculated with the Free Complement method at order $n = 3$.

R	E0(a)	E1(h)	E2(g)	E3(4s)	E4(4d)	E5
0.8	-0.4614350	-0.3684417	-0.3604283	-0.3391198	-0.3359003	-0.3261338
1.0	-0.6039222	-0.5144506	-0.5079053	-0.4859025	-0.4832844	-0.4731963
1.2	-0.6766831	-0.5904269	-0.5853059	-0.5625977	-0.5605675	-0.5501442
1.4011	-0.7137792	-0.6304644	-0.6267343	-0.6033030	-0.6018516	-0.5910813
1.6	-0.7308901	-0.6502256	-0.6478326	-0.6236720	-0.6227790	-0.6116589
1.8	-0.7368201	-0.6586118	-0.6574854	-0.6326145	-0.6322322	-0.6207725
1.8683	-0.7371560	-0.6597741	-0.6590022	-0.6339526	-0.6336757	-0.6221321
1.9	-0.7371780	-0.6601482	-0.6594548	-0.6343823	-0.6341223	-0.6225304
2.0	-0.7361052	-0.6605680	-0.6598421	-0.6349201	-0.6345103	-0.6229726
2.1	-0.7342453	-0.6602605	-0.6590201	-0.6345164	-0.6338917	-0.6224052
2.2	-0.7314832	-0.6592162	-0.6573124	-0.6333387	-0.6323893	-0.6210926
2.4	-0.7246195	-0.6555703	-0.6522655	-0.6293352	-0.6277781	-0.6169544
2.5	-0.7206896	-0.6532139	-0.6491719	-0.6267683	-0.6248922	-0.6143301
2.6	-0.7165569	-0.6506355	-0.6458311	-0.6239567	-0.6217513	-0.6114567
2.8	-0.7079628	-0.6451099	-0.6386937	-0.6178876	-0.6149892	-0.6052437
3.0	-0.6992715	-0.6394660	-0.6312958	-0.6115772	-0.6079333	-0.5987410
3.2	-0.6907689	-0.6340295	-0.6239272	-0.6053217	-0.6008735	-0.5922289
3.4	-0.6826436	-0.6290275	-0.6167787	-0.5993137	-0.5939999	-0.5859475
3.5	-0.6787634	-0.6267402	-0.6133279	-0.5964420	-0.5906737	-0.5829041
3.8	-0.6679796	-0.6208859	-0.6035959	-0.5884611	-0.5812625	-0.5743454
4.0	-0.6615709	-0.6178816	-0.5976907	-0.5837058	-0.5755266	-0.5691584
4.5	-0.6484430	-0.6133643	-0.5851470	-0.5737757	-0.5632668	-0.5580193
4.8	-0.6425629	-0.6123255	-0.5791657	-0.5690977	-0.5574424	-0.5526354
5.0	-0.6393219	-0.6121269	-0.5757909	-0.5665064	-0.5543765	-0.5497764
5.2	-0.6366696	-0.6122298	-0.5728965	-0.5643504	-0.5524736	-0.5482190
5.5	-0.6335782	-0.6127946	-0.5693823	-0.5619370	-0.5518233	-0.5456304
6.0	-0.6302438	-0.6144058	-0.5653700	-0.5596184	-0.5506971	-0.5412423
7.0	-0.6273440	-0.6182896	-0.5610953	-0.5573567	-0.5479889	-0.5362075
8.0	-0.6263678	-0.6213785	-0.5586250	-0.5564029	-0.5470728	-0.5339039
10.0	-0.6257652	-0.6242683	-0.5564006	-0.5558206	-0.5474300	-0.5324524
15.0	-0.6253404	-0.6250076	-0.5556320	-0.5555911	-0.5529018	-0.5317654
15.6	-0.6253044	-0.6250084	-0.5556187	-0.5555844	-0.5534053	-0.5316784
16.0	-0.6252827	-0.6250082	-0.5556115	-0.5555808	-0.5536979	-0.5316263
20.0	-0.6251448	-0.6250191	-0.5555749	-0.5555578	-0.5552160	-0.5313452

Table S8. The energy of the hydrogen molecule in the $^3\Sigma_u$ state calculated with the Free Complement method at order $n = 3$.

R	E0(b)	E1(e)	E2(f)	E3	E4	E5
0.8	-0.4600921	-0.3683320	-0.3391059	-0.3357538	-0.3260887	-0.3230850
1.0	-0.6222644	-0.5187273	-0.4875728	-0.4830811	-0.4740033	-0.4703633
1.2	-0.7192364	-0.5992936	-0.5659783	-0.5602931	-0.5517879	-0.5475644
1.4011	-0.7845454	-0.6437266	-0.6082783	-0.6014901	-0.5934924	-0.5887812
1.6	-0.8317602	-0.6673238	-0.6300109	-0.6223159	-0.6147216	-0.6096432
1.8	-0.8683100	-0.6789421	-0.6400746	-0.6316697	-0.6243795	-0.6190544
1.9	-0.8835351	-0.6817743	-0.6423676	-0.6335426	-0.6263761	-0.6209597
2.0	-0.8970763	-0.6831519	-0.6430305	-0.6340933	-0.6270190	-0.6215485
2.1	-0.9091359	-0.6834300	-0.6429012	-0.6336179	-0.6266307	-0.6211265
2.2	-0.9198691	-0.6828103	-0.6416767	-0.6323480	-0.6254198	-0.6198758
2.4	-0.9379131	-0.6797021	-0.6377336	-0.6281187	-0.6212833	-0.6157168
2.5	-0.9454537	-0.6774860	-0.6351484	-0.6254200	-0.6186153	-0.6130495
2.6	-0.9521414	-0.6749733	-0.6322899	-0.6224634	-0.6156813	-0.6101206
2.8	-0.9633041	-0.6693774	-0.6260501	-0.6160619	-0.6093046	-0.6037719
3.0	-0.9720150	-0.6634206	-0.6194788	-0.6093574	-0.6026057	-0.5971115
3.2	-0.9787757	-0.6574502	-0.6128876	-0.6026424	-0.5958852	-0.5904350
3.4	-0.9839942	-0.6517094	-0.6064893	-0.5961116	-0.5893460	-0.5839306
3.5	-0.9861309	-0.6489814	-0.6034108	-0.5929579	-0.5861901	-0.5808095
3.8	-0.9910586	-0.6415607	-0.5948277	-0.5840865	-0.5773433	-0.5718914
4.0	-0.9933801	-0.6373608	-0.5897605	-0.5787599	-0.5721010	-0.5665604
4.3	-0.9958365	-0.6323000	-0.5833437	-0.5719601	-0.5659562	-0.5605532
4.4	-0.9964461	-0.6309460	-0.5815700	-0.5702553	-0.5649577	-0.5599166
4.5	-0.9969729	-0.6297523	-0.5800157	-0.5692548	-0.5644852	-0.5589909
4.6	-0.9974263	-0.6287110	-0.5787317	-0.5693184	-0.5636941	-0.5577192
4.7	-0.9978260	-0.6278235	-0.5778321	-0.5700526	-0.5624701	-0.5560856
4.8	-0.9981525	-0.6270490	-0.5775146	-0.5707590	-0.5611218	-0.5551486
4.9	-0.9984407	-0.6264055	-0.5780057	-0.5709878	-0.5598142	-0.5540446
5.0	-0.9986873	-0.6258701	-0.5792134	-0.5707103	-0.5586117	-0.5530846
5.2	-0.9990779	-0.6250740	-0.5826801	-0.5694754	-0.5566266	-0.5514978
5.5	-0.9994717	-0.6243932	-0.5884915	-0.5673277	-0.5547623	-0.5495977
6.0	-0.9998134	-0.6240339	-0.5974299	-0.5640026	-0.5538435	-0.5476725
7.0	-1.0000040	-0.6242118	-0.6101643	-0.5591302	-0.5546615	-0.5476505
8.0	-1.0000202	-0.6244774	-0.6172817	-0.5568064	-0.5553835	-0.5479139
10.0	-1.0000077	-0.6247908	-0.6228807	-0.5558521	-0.5555954	-0.5477113
15.0	-1.0000006	-0.6250137	-0.6246846	-0.5555972	-0.5555390	-0.5528734
20.0	-1.0000001	-0.6250042	-0.6248655	-0.5555631	-0.5555457	-0.5552004

Table S9. The energy of the hydrogen molecule of higher excited states in the $^1\Sigma_g$ state calculated with the Free Complement method at order $n = 3$.

R(Bohr)	E6	E7	E8	E9	E10
0.5	0.244448	0.246208	0.248636	0.252410	0.258159
0.8	-0.324792	-0.323934	-0.321895	-0.317776	-0.312452
1.0	-0.471893	-0.471372	-0.469209	-0.465068	-0.459918
1.2	-0.548880	-0.548641	-0.546412	-0.542126	-0.537137
1.4	-0.589754	-0.589698	-0.587532	-0.582961	-0.578394
1.4011	-0.589912	-0.589857	-0.587692	-0.583119	-0.578540
1.6	-0.610824	-0.610476	-0.608672	-0.603709	-0.599638
1.8	-0.620288	-0.619632	-0.618207	-0.612838	-0.609348
2.0	-0.622863	-0.621871	-0.620803	-0.615075	-0.612226
2.2	-0.621348	-0.619956	-0.619195	-0.613186	-0.611040
2.4	-0.617564	-0.615579	-0.615086	-0.608921	-0.607631
2.5	-0.615300	-0.612818	-0.612436	-0.606423	-0.605380
2.6	-0.613159	-0.609817	-0.609510	-0.604400	-0.602730
2.8	-0.610289	-0.603428	-0.603175	-0.601381	-0.596372
3.0	-0.605439	-0.596971	-0.596508	-0.595759	-0.589579
3.2	-0.598932	-0.590506	-0.589813	-0.589123	-0.582760
3.4	-0.592333	-0.584118	-0.583263	-0.582502	-0.576126
3.5	-0.589118	-0.581007	-0.580090	-0.579283	-0.572929
3.8	-0.580008	-0.572156	-0.571127	-0.570160	-0.563889
4.0	-0.574467	-0.566742	-0.565628	-0.564600	-0.558385
4.5	-0.562692	-0.555127	-0.553794	-0.552751	-0.546705
5.0	-0.554003	-0.546647	-0.544897	-0.544380	-0.540497
6.0	-0.545425	-0.540563	-0.534620	-0.533456	-0.531148
7.0	-0.541167	-0.535821	-0.532381	-0.531127	-0.525964
8.0	-0.540118	-0.533455	-0.532330	-0.531292	-0.524099
10.0	-0.540163	-0.531789	-0.531736	-0.531356	-0.524061
20.0	-0.552828	-0.531292	-0.531259	-0.531253	-0.525825

Table S9. (Continued)

R(Bohr)	E11	E12	E13	E14
0.5	0.259977	0.268345	0.271105	0.275590
0.8	-0.310211	-0.300972	-0.298369	-0.294724
1.0	-0.457362	-0.448265	-0.445313	-0.441974
1.2	-0.534224	-0.525417	-0.521922	-0.519066
1.4	-0.574829	-0.566768	-0.562390	-0.560546
1.4011	-0.574982	-0.566923	-0.562525	-0.560697
1.6	-0.595284	-0.588597	-0.583086	-0.581727
1.8	-0.604176	-0.599073	-0.593203	-0.590590
2.0	-0.606286	-0.602759	-0.596782	-0.592676
2.2	-0.604360	-0.602038	-0.596324	-0.590842
2.4	-0.600129	-0.598818	-0.594058	-0.586923
2.5	-0.597522	-0.596503	-0.592596	-0.584479
2.6	-0.595036	-0.593770	-0.591884	-0.582195
2.8	-0.591985	-0.588131	-0.587453	-0.578810
3.0	-0.586879	-0.581859	-0.580966	-0.573768
3.2	-0.580838	-0.575694	-0.574306	-0.568069
3.4	-0.574710	-0.569521	-0.567827	-0.562346
3.5	-0.571747	-0.566617	-0.564743	-0.559919
3.8	-0.563111	-0.558937	-0.555963	-0.551792
4.0	-0.557804	-0.553944	-0.550601	-0.546818
4.5	-0.546491	-0.543539	-0.539777	-0.536707
5.0	-0.539864	-0.537304	-0.535444	-0.531324
6.0	-0.527258	-0.525171	-0.524951	-0.522194
7.0	-0.524382	-0.523500	-0.520788	-0.518641
8.0	-0.522273	-0.521636	-0.520608	-0.519663
10.0	-0.520489	-0.520430	-0.520161	-0.520073
20.0	-0.520046	-0.520005	-0.519990	-0.519875

Table S10-1. Vibrational energy levels E_v (cm^{-1}) of the $E_0(X) \ ^1\Sigma_g$ state calculated from the PECs with the Free Complement method at order $n = 3$ and comparison with other studies.

v	FC method			Ref.	Ref.
	$\langle R \rangle$	$\langle R^2 \rangle$	E_v ^a	(theoretical) ^b	(experimental) ^c
				$E_v - E_{v-1}$	$E_v - E_{v-1}$
0	0.76646	0.59534	-255590.81		
1	0.81797	0.69308	-251422.77	4168.03	4161.19
2	0.87099	0.79990	-247491.76	3931.02	3925.86
3	0.92594	0.91722	-243799.75	3692.01	3695.41
4	0.98420	1.04843	-240340.90	3458.84	3467.99
5	1.04705	1.19745	-237108.37	3232.53	3241.58
6	1.11551	1.36852	-234100.24	3008.13	3013.86
7	1.19085	1.56737	-231320.39	2779.85	2782.15
8	1.27536	1.80350	-228777.18	2543.21	2543.19
9	1.37269	2.09225	-226482.67	2294.51	2292.96
10	1.48885	2.45993	-224453.96	2028.71	2026.36
11	1.63459	2.95601	-222714.58	1739.37	1736.72
12	1.83156	3.68718	-221296.88	1417.70	1415.08
13	2.13328	4.94305	-220245.25	1051.63	1049.15
14	2.75296	8.07143	-219620.95	624.30	621.96

a: Absolute energies in cm^{-1} .

b: Ref: M. Stanke, D. Kdziera, S. Bubin, M. Molski, and L. Adamowicz, *J. Chem. Phys.*, 2008, **128**, 114313.

c: Ref: A. Pardo, *Spectrochimica Acta*, 1994, **50A**, 941.

Table S10-2. Vibrational energy levels E_v (cm^{-1}) of the $E_1(\text{EF}) \ ^1\Sigma_g$ state calculated from the PECs with the Free Complement method at order $n = 3$ and comparison with other studies.

v	FC method			Ref.	Ref.
	$\langle R \rangle$	$\langle R^2 \rangle$	E_v ^a	(theoretical) ^b $E_v - E_{v-1}$	(experimental) ^c $E_v - E_{v-1}$
0	1.04654	1.10931	-156380.80		
1	2.35303	5.56457	-156203.48	177.32	199.10
2	2.41294	5.90780	-155009.06	1194.42	1194.96
3	1.12820	1.32172	-154053.51	955.55	935.89
4	2.46532	6.23244	-153871.06	182.45	204.21
5	2.50233	6.49463	-152799.62	1071.43	1079.28
6	1.51400	2.67541	-152027.49	772.13	781.37
7	2.30528	5.89949	-151725.39	302.10	278.97
8	2.40554	6.35675	-150866.64	858.75	892.03
9	2.12272	5.30197	-150192.15	674.49	654.32
10	2.32806	6.30229	-149571.13	621.02	581.24
11	2.48828	7.09208	-148837.58	733.55	746.89
12	2.51076	7.31799	-148114.76	722.82	712.80
13	2.57944	7.76638	-147417.63	697.12	672.64
14	2.69065	8.41895	-146718.82	698.82	695.03
15	2.78398	9.00918	-146021.78	697.04	700.35
16	2.86546	9.56633	-145338.65	683.13	669.48
17	2.95514	10.18474	-144671.55	667.10	630.81
18	3.05438	10.87334	-144018.74	652.81	576.50
19	3.15616	11.60076	-143380.67	638.07	735.39
20	3.25846	12.35953	-142759.30	621.37	605.74
21	3.36358	13.16424	-142156.11	603.19	546.40
22	3.47398	14.03174	-141571.94	584.16	603.20
23	3.59103	14.97512	-141007.46	564.48	649.10
24	3.71563	16.00695	-140463.64	543.82	514.31
25	3.84942	17.14730	-139941.82	521.82	538.96
26	3.99579	18.43183	-139443.81	498.01	
27	4.16061	19.92181	-138972.18	471.63	
28	4.35364	21.72133	-138530.65	441.53	407.29
29	4.59193	24.01954	-138124.70	405.94	
30	4.91123	27.22645	-137762.92	361.78	
31	5.39728	32.38781	-137459.99	302.93	
32	6.34799	43.55035	-137242.15	217.84	

a: Absolute energies in cm^{-1} .

b: Ref: L. Wolniewicz and K. Dressler, J. Chem. Phys., 1985, **82**, 3292.

c: Ref: D. Bailly, E.J. Salumbides, M. Vervloet and W. Ubachs, Mol. Phys., 2010, **108**, 827.

Table S10-3. Vibrational energy levels E_v (cm^{-1}) of the $E_2(\text{GK}) \ ^1\Sigma_g$ state calculated from the PECs with the Free Complement method at order $n = 3$ and comparison with other studies.

v	FC method				Ref.	Ref.
	$\langle R \rangle$	$\langle R^2 \rangle$	E_v ^a	$E_v - E_{v-1}$	(theoretical) ^b $E_v - E_{v-1}$	(experimental) ^c $E_v - E_{v-1}$
0	1.717483	2.98119	-144365.95			
1	1.163475	1.400071	-143909.19	456.76	360.60	183.82
2	1.588394	2.652501	-142527.50	1381.69	1452.23	1580.81
3	1.506582	2.476543	-141689.39	838.11	764.63	651.13
4	1.707744	3.165721	-140546.42	1142.96	1145.83	1055.26
5	1.775294	3.482897	-139520.59	1025.84	1001.21	1064.81
6	1.971575	4.292311	-138589.65	930.94	892.81	916.76
7	2.237863	5.509267	-137794.47	795.17	775.20	
8	2.757091	8.250715	-137235.43	559.04	523.71	

a: Absolute energies in cm^{-1} .

b: Ref: L. Wolniewicz and K. Dressler, J. Chern. Phys., 1985, **82**, 3292.

c: Ref: D. Bailly, E.J. Salumbides, M. Vervloet and W. Ubachs, Mol. Phys., 2010, **108**, 827.

Table S10-4. Vibrational energy levels E_v (cm^{-1}) of the $E_3(\text{HH}) \ ^1\Sigma_g$ state calculated from the PECs with the Free Complement method at order $n = 3$ and comparison with other studies.

v	FC method			$E_v - E_{v-1}$	Ref. (theoretical) ^b	Ref. (experimental) ^c
	$\langle R \rangle$	$\langle R^2 \rangle$	E_v ^a		$E_v - E_{v-1}$	$E_v - E_{v-1}$
0	1.077938	1.176718	-142576.61			
1	1.155198	1.380249	-140358.93	2217.68	2248.49	2293.94
2	1.253108	1.651700	-138350.21	2008.72	2130.59	2045.57
3	1.362133	1.975955	-136601.32	1748.89	1817.18	
4	1.444969	2.250600	-134989.12	1612.20	1476.75	
5	1.545178	2.594699	-133467.32	1521.79	1556.35	
6	5.949931	35.496886	-132669.76	797.56	694.39	
7	5.980785	36.060560	-132318.58	351.18	351.03	
8	1.653023	2.990029	-132071.04	247.54	308.81	
9	6.020838	36.747809	-131977.19	93.85	32.60	
10	6.069392	37.552327	-131646.03	331.16	331.93	
11	6.120844	38.407051	-131324.35	321.68	322.63	
12	6.175278	39.313906	-131011.38	312.97	313.51	
13	1.781358	3.486536	-130804.85	206.52	262.16	
14	6.233125	40.280642	-130706.79	98.06	42.45	
15	6.294557	41.312137	-130410.71	296.08	295.83	
16	6.359092	42.404713	-130123.20	287.50	287.20	
17	6.425669	43.546667	-129844.33	278.88	278.75	
18	1.935205	4.123028	-129682.18	162.15	218.56	
19	6.491295	44.701125	-129573.90	108.27	51.81	
20	6.553864	45.843374	-129311.76	262.14	262.10	
21	6.610493	46.940327	-129057.95	253.81	253.75	
22	6.653100	47.902398	-128812.82	245.13	245.14	
23	2.154131	5.135558	-128728.19	84.63	128.31	
24	6.680300	48.707079	-128576.71	151.48	107.92	
25	6.649869	48.873334	-128351.63	225.08	225.51	
26	6.214292	44.670160	-128145.68	205.95	208.62	
27	4.060663	22.960315	-128020.74	124.95	141.54	
28	5.996018	43.795645	-127898.80	121.93	110.60	
29	6.312263	47.414667	-127718.73	180.07	176.89	
30	6.213519	46.940387	-127545.00	173.73	174.94	
31	6.270631	48.270218	-127378.25	166.75	167.65	
32	6.489104	51.361801	-127210.30	167.95	168.20	
33	6.712443	54.578409	-127040.23	170.07	171.35	
34	6.936796	58.030020	-126871.57	168.66	173.16	
35	7.217881	62.497394	-126708.10	163.46	174.24	
36	7.534666	67.660219	-126552.75	155.35	175.55	
37	7.757932	71.519869	-126403.91	148.85	176.71	
38	7.950068	74.983202	-126257.55	146.36	176.39	
39	8.233095	80.008283	-126115.84	141.71	174.14	
40	8.448715	84.091464	-125979.44	136.40	171.51	
41	8.691169	88.731666	-125846.17	133.27	169.83	

42	8.942921	93.669164	-125718.14	128.03	167.37
43	9.177625	98.456195	-125593.45	124.68	163.50
44	9.438259	103.833535	-125473.48	119.97	160.50
45	9.687037	109.157078	-125356.90	116.58	156.94
46	9.943520	114.774084	-125244.71	112.19	152.71
47	10.216578	120.853162	-125135.87	108.84	149.09
48	10.466956	126.692333	-125030.99	104.89	144.43
49	10.755835	133.418941	-124929.61	101.37	140.48
50	11.023350	139.936036	-124831.57	98.04	135.70

a: Absolute energies in cm^{-1} .

b: Ref: L. Wolniewicz and K. Dressler, *J. Chem. Phys.*, 1985, **82**, 3292.

c: Ref: D. Bailly, E.J. Salumbides, M. Vervloet and W. Ubachs, *Mol. Phys.*, 2010, **108**, 827.

Table S10-5. Vibrational energy levels E_v of the $E_4(P)$ and $E_5(O)$ $^1\Sigma_g$ states calculated from the PECs with the Free Complement method at order $n = 3$.

v	E4(P)				E5(O)			
	$\langle R \rangle$	$\langle R^2 \rangle$	E_v^a	$E_v - E_{v-1}$	$\langle R \rangle$	$\langle R^2 \rangle$	E_v^a	$E_v - E_{v-1}$
0	1.115189	1.261542	-138275.69		1.08595	1.19420	-137651.77	
1	1.30156	1.754546	-136556.61	1719.08	1.16094	1.39365	-135453.35	2198.42
2	1.345408	1.911039	-135245.31	1311.30	1.24612	1.63267	-133424.45	2028.89
3	1.387417	2.060816	-133581.29	1664.02	1.33264	1.89225	-131567.13	1857.32
4	1.47903	2.365225	-132044.87	1536.42	1.41388	2.15428	-129822.67	1744.46
5	1.560191	2.656509	-130532.34	1512.53	1.50483	2.46134	-128186.89	1635.78
6	1.656326	3.015283	-129132.85	1399.50	1.60095	2.80550	-126666.44	1520.45
7	1.770446	3.458307	-127823.66	1309.18	1.70764	3.20822	-125263.26	1403.18
8	1.892692	3.966925	-126628.15	1195.51	1.82748	3.68714	-123980.57	1282.69
9	2.038202	4.606462	-125556.71	1071.44	1.97293	4.30381	-122829.47	1151.10
10	2.215249	5.434826	-124614.33	942.38	2.26650	5.65961	-121859.00	970.47
11	2.433489	6.536878	-123810.97	803.36				
12	2.709094	8.057861	-123154.51	656.46				
13	3.061818	10.22003	-122644.13	510.38				
14	3.540645	13.54825	-122271.11	373.02				
15	4.362804	20.30413	-122033.45	237.66				
16	6.874125	50.02362	-121938.46	94.99				

a: Absolute energies in cm^{-1} .

Table S11-1. Vibrational energy levels E_v (cm⁻¹) of the E₀(B) ¹Σ_u state calculated from the PECs with the Free Complement method at order $n = 3$ and comparison with other studies.

v	FC method				Ref.	Ref.
	<R>	<R ² >	E _v ^a	E _v -E _{v-1}	(theoretical) ^b E _v -E _{v-1}	(experimental) ^c E _v -E _{v-1}
0	1.33250	1.80042	-165389.89			
1	1.42150	2.09508	-164068.36	1321.54	1321.88	1318.32
2	1.50630	2.39364	-162784.21	1284.15	1284.61	1281.48
3	1.58860	2.69967	-161535.20	1249.00	1249.43	1246.71
4	1.66951	3.01579	-160320.16	1215.04	1215.67	1213.02
5	1.74968	3.34380	-159138.32	1181.84	1182.97	1180.00
6	1.82957	3.68516	-157989.08	1149.24	1150.48	1147.50
7	1.90962	4.04155	-156872.01	1117.07	1117.75	1115.48
8	1.99000	4.41384	-155786.60	1085.41	1086.03	1083.91
9	2.07104	4.80363	-154732.33	1054.27	1055.09	1052.81
10	2.15282	5.21174	-153708.75	1023.58	1023.92	1022.20
11	2.23551	5.63941	-152715.31	993.44	993.92	992.09
12	2.31929	6.08794	-151751.54	963.77	964.39	962.50
13	2.40424	6.55850	-150816.89	934.65	935.37	933.42
14	2.49050	7.05239	-149910.86	906.03	906.69	
15	2.57815	7.57089	-149032.91	877.95	878.56	
16	2.66736	8.11580	-148182.53	850.39	851.29	
17	2.75833	8.68906	-147359.25	823.28	824.24	
18	2.85108	9.29200	-146562.61	796.64	797.81	
19	2.94575	9.92651	-145792.09	770.52	771.69	
20	3.04260	10.59545	-145047.23	744.85	746.23	
21	3.14195	11.30232	-144327.67	719.56	721.09	
22	3.24422	12.05150	-143633.13	694.54	696.31	
23	3.34996	12.84878	-142963.48	669.65	671.81	
24	3.45976	13.70082	-142318.72	644.76	647.19	
25	3.57445	14.61647	-141698.99	619.73	622.40	
26	3.69508	15.60742	-141104.61	594.38		
27	3.82315	16.68994	-140536.13	568.48		
28	3.96102	17.88921	-139994.47	541.66		
29	4.11272	19.24747	-139481.14	513.33		
30	4.28512	20.83701	-138998.67	482.47		
31	4.48926	22.77916	-138551.08	447.59		
32	4.74432	25.29368	-138144.41	406.66		
33	5.09026	28.85682	-137788.06	356.35		
34	5.61506	34.60739	-137497.13	290.93		
35	6.60004	46.62264	-137294.99	202.13		
36	8.92804	83.15885	-137204.15	90.84		
37	11.71461	143.68205	-137185.44	18.71		
38	17.29622	312.54397	-137176.13	9.31		
39	25.67772	709.09412	-137172.76	3.37		

a: Absolute energies in cm⁻¹.

b: Ref: W. Kolos and L. Wolniewicz, J. Chem. Phys., 1968, **48**, 3672.

c: Ref: D. Bailly, E.J. Salumbides, M. Vervloet and W. Ubachs, Mol. Phys., 2010, **108**, 827.

Table S11-2. Vibrational energy levels E_v (cm^{-1}) of the $E_1(B^2) \ ^1\Sigma_u$ state calculated from the PECs with the Free Complement method at order $n = 3$ and comparison with other studies.

v	FC method				Ref.	Ref.
	$\langle R \rangle$	$\langle R^2 \rangle$	E_v^a	$E_v - E_{v-1}$	(theoretical) ^b	(experimental) ^c
0	1.14540	1.32927	-145120.87			
1	1.23323	1.57425	-143234.09	1886.78	1887.78	1880.04
2	1.33271	1.87001	-141511.65	1722.44	1723.08	1716.64
3	1.45417	2.25578	-139975.26	1536.39	1535.54	1531.26
4	1.62588	2.84457	-138670.93	1304.32	1303.09	
5	1.98390	4.23536	-137709.16	961.78	959.37	
6	3.35447	11.70472	-137382.07	327.09	322.34	
7	4.15899	18.53360	-137279.48	102.59	102.63	
8	5.43675	31.91234	-137213.49	65.99	66.97	
9	8.56057	79.35362	-137177.88	35.61	36.99	

a: Absolute energies in cm^{-1} .

b: Ref: W. Kolos and L. Wolniewicz, J. Chem. Phys., 1968, **48**, 3672.

c: Ref: D. Bailly, E.J. Salumbides, M. Vervloet and W. Ubachs, Mol. Phys., 2010, **108**, 827.

Table S11-3. Vibrational energy levels E_v (cm^{-1}) of the $E_2(B''\bar{B})^1\Sigma_u$ state calculated from the PECs with the Free Complement method at order $n = 3$ and comparison with other studies.

v	$\langle R \rangle$	$\langle R^2 \rangle$	FC method		Ref. (theoretical) ^b	Ref. (experimental) ^c
			E_v ^a	$E_v - E_{v-1}$	$E_v - E_{v-1}$	$E_v - E_{v-1}$
0	1.1122	1.2528	-138714.35			
1	1.1892	1.4627	-136642.22	2072.12	2080.30	2060.20
2	1.2716	1.7006	-134709.89	1932.34	1947.70	1924.50
3	5.9038	34.9502	-132749.73	1960.16	1806.80	1784.70
4	5.9038	34.9502	-132749.73	0.00	130.00	1653.10
5	5.9391	35.5629	-132397.93	351.80	299.50	1548.00
6	5.9840	36.3008	-132054.61	343.33	53.00	1241.00
7	6.0387	37.1715	-131720.19	334.41	344.30	1214.60
8	6.0984	38.1166	-131394.37	325.82	335.70	
9	5.8855	35.4298	-131340.66	53.71	327.40	
10	6.1625	39.1319	-131076.44	264.22	164.30	
11	6.2319	40.2298	-130766.08	310.36	155.70	
12	6.3077	41.4268	-130463.35	302.72	512.30	
13	6.3897	42.7241	-130168.35	295.00	101.10	
14	6.4774	44.1173	-129881.13	287.22	281.80	
15	1.5721	2.6838	-129786.00	95.13	257.20	
16	6.5684	45.5787	-129601.49	184.51	195.80	
17	6.6622	47.1023	-129329.06	272.43	46.00	
18	6.7590	48.6914	-129063.55	265.52		
19	6.8585	50.3455	-128804.71	258.83		
20	6.9604	52.0610	-128552.30	252.42		
21	1.6944	3.1359	-128445.79	106.50		
22	7.0650	53.8443	-128306.09	139.70		
23	7.1722	55.6954	-128065.91	240.18		
24	7.2822	57.6199	-127831.57	234.34		
25	7.3951	59.6194	-127602.931	228.64		
26	7.5110	61.7005	-127379.866	223.07		
27	1.8237	3.6494	-127243.828	136.04		
28	7.6302	63.8667	-127162.273	81.56		
29	7.7525	66.1223	-126950.056	212.22		
30	7.8783	68.4732	-126743.171	206.88		
31	8.0068	70.9107	-126541.505	201.67		
32	8.1366	73.4165	-126344.951	196.55		
33	7.7243	66.4722	-126312.674	32.28		
34	7.9508	72.4056	-126152.791	159.88		
35	8.3988	78.6110	-125966.427	186.36		
36	8.5279	81.2525	-125784.221	182.21		
37	8.6481	83.8212	-125606.551	177.67		
38	8.7323	85.9635	-125433.635	172.92		
39	8.2479	80.9219	-125269.246	164.39		
40	3.3435	20.3086	-125196.292	72.95		

41	8.7150	88.2555	-125090.548	105.74
42	9.0483	93.5119	-124931.548	159.00
43	9.1124	95.4174	-124774.781	156.77
44	9.0232	95.2785	-124623.413	151.37
45	8.5709	90.2179	-124481.938	141.48
46	7.7539	80.2204	-124358.517	123.42
47	8.1117	86.0671	-124244.378	114.14
48	9.0135	99.2699	-124116.835	127.54
49	9.4553	106.3603	-123979.882	136.95
50	9.6449	110.1105	-123841.368	138.51

a: Absolute energies in cm^{-1} .

b: Ref: W. Kolos, *J. Molec. Spectrosc.*, 1976, **62**, 429.

c: Ref: C. Jungen and O. Atabek, *J. Chem. Phys.*, 1977, **66**, 5584.

Table S11-4. Vibrational energy levels E_v (cm^{-1}) of the $E_3(4) \ ^1\Sigma_u$ state calculated from the PECs with the Free Complement method at order $n = 3$ and comparison with other studies.

v	FC method				Ref.
	$\langle R \rangle$	$\langle R^2 \rangle$	E_v ^a	$E_v - E_{v-1}$	(theoretical) ^b $E_v - E_{v-1}$
0	1.093282	1.210319	-138021.21		
1	1.165363	1.403951	-135839.80	2181.42	2163.18
2	1.240582	1.617845	-133787.44	2052.36	2034.70
3	1.319512	1.855171	-131860.51	1926.93	1909.67
4	1.40304	2.120493	-130056.50	1804.01	1787.04
5	1.492388	2.420219	-128374.25	1682.25	1665.40
6	1.589886	2.765589	-126815.09	1559.16	1542.50
7	1.701792	3.184254	-125385.53	1429.56	1413.46
8	1.569473	2.72268	-125157.68	227.85	1258.39
9	2.91853	8.687758	-123564.47	1593.21	781.87
10	2.318212	5.970671	-123036.53	527.93	267.45
11	2.998033	9.640772	-122584.03	452.51	487.48
12	3.385725	12.39247	-122183.47	400.55	259.65
13	4.688609	23.36239	-121991.01	192.47	147.77
14			-121932.61	58.40	33.22

a: Absolute energies in cm^{-1} .

b: Ref: G. Staszewska and L. Wolniewicz, J. Mol. Spectrosc., 2002, **212**, 208.

Table S11-5. Vibrational energy levels E_v (cm^{-1}) of the $E_4(5) \ ^1\Sigma_u$ state calculated from the PECs with the Free Complement method at order $n = 3$ and comparison with other studies.

v	FC method				Ref.
	$\langle R \rangle$	$\langle R^2 \rangle$	E_v^a	$E_v - E_{v-1}$	(theoretical) ^b $E_v - E_{v-1}$
0	1.102174	1.230183	-135867.16		
1	1.176305	1.430687	-133735.66	2131.50	2129.88
2	1.254432	1.654518	-131737.30	1998.35	1997.51
3	1.337643	1.906847	-129870.97	1866.33	1866.36
4	1.427354	2.194708	-128137.14	1733.83	1734.74
5	1.524767	2.525786	-126536.51	1600.63	1601.55
6	1.630447	2.906948	-125068.21	1468.31	1467.85
7	1.745184	3.34687	-123728.56	1339.65	1337.92
8	1.874522	3.8742	-122515.54	1213.02	1214.79
9	2.056082	4.663727	-121446.62	1068.92	532.33

a: Absolute energies in cm^{-1} .

b: Ref: G. Staszewska and L. Wolniewicz, J. Mol. Spectrosc., 2002, **212**, 208.

Table S11-6. Vibrational energy levels E_v (cm^{-1}) of the $E_5(6) \ ^1\Sigma_u$ state calculated from the PECs with the Free Complement method at order $n = 3$ and comparison with other studies.

v	FC method ^c			Ref. (theoretical) ^b	
	$\langle R \rangle$	$\langle R^2 \rangle$	E_v^a	$E_v - E_{v-1}$	$E_v - E_{v-1}$
0	1.09501	1.21418	-135177.24		
1	1.16804	1.41048	-133008.34	2168.90	2167.75
2	1.24360	1.62575	-130970.23	2038.11	2040.11
3	1.32192	1.86209	-129052.10	1918.13	1916.16
4	1.40651	2.13092	-127257.05	1795.05	1795.02
5	1.49483	2.42842	-125582.15	1674.91	1675.65
6	1.59264	2.77525	-124028.73	1553.42	1556.52
7	1.70445	3.19457	-122602.34	1426.39	1435.61
8					704.73
9					35.70
10					42.05
11					46.66
12					49.43
13					49.91
14					49.52
15					52.45
16					57.25
17					59.24
18					56.92
19					55.34
20					47.02
21					12.14
22					60.08
23					56.57
24					58.29
25					59.65
26					56.29
27					58.33
28					57.46
29					55.85
30					57.49
31					54.67
32					56.21
33					53.96
34					54.69
35					53.06
36					53.29
37					51.88
38					52.04
39					50.53
40					50.83
41					39.57
42					9.59
43					49.52

44	47.95
45	47.96
46	47.01
47	46.24
48	46.06
49	44.78
50	44.68

a: Absolute energies in cm^{-1} .

b: Ref: G. Staszewska and L. Wolniewicz, *J. Mol. Spectrosc.*, 2002, **212**, 208.

c: we could obtain the eight lowest vibrational states.

Table S12-1. Vibrational energy levels E_v (cm^{-1}) of the $^3\Sigma_g$ states calculated from the PECs with the Free Complement method at order $n = 3$.

v	E0(a)				E1(h)			
	$\langle R \rangle$	$\langle R^2 \rangle$	E_v^a	$E_v - E_{v-1}$	$\langle R \rangle$	$\langle R^2 \rangle$	E_v^a	$E_v - E_{v-1}$
0	1.02035	1.05412	-160472.51		1.09772	1.22118	-143933.32	
1	1.08465	1.21606	-157942.71	2529.81	1.17673	1.43395	-141910.28	2023.04
2	1.15200	1.39488	-155554.36	2388.35	1.26671	1.68953	-140015.69	1894.59
3	1.22147	1.58976	-153295.80	2258.56	1.36780	1.99615	-138279.54	1736.15
4	1.29449	1.80547	-151168.64	2127.16	1.49017	2.39302	-136730.55	1549.00
5	1.37163	2.04537	-149168.04	2000.60	1.66179	2.99316	-135411.18	1319.37
6	1.45341	2.31341	-147295.25	1872.79	2.03985	4.47355	-134443.84	967.33
7	1.54222	2.61939	-145550.68	1744.57				
8	1.64000	2.97415	-143936.11	1614.57				
9	1.75025	3.39638	-142457.80	1478.31				
10	1.87972	3.92057	-141126.49	1331.31				
11	2.03662	4.59676	-139954.70	1171.79				
12	2.24645	5.56684	-138961.26	993.44				
13	2.55282	7.12107	-138183.03	778.22				
14	3.06810	10.11935	-137653.42	529.62				
15	4.00804	16.97181	-137383.46	269.96				
16	5.46816	31.38705	-137283.87	99.60				
17	6.83709	49.62063	-137234.02	49.84				
18	8.66344	80.30296	-137201.60	32.43				
19	11.62852	144.83781	-137184.29	17.31				
20	16.46336	290.41993	-137176.18	8.11				
21	24.57499	653.09681	-137172.94	3.24				

a: Absolute energies in cm^{-1} .

Table S12-2. Vibrational energy levels E_v (cm^{-1}) of the $^3\Sigma_g$ states calculated from the PECs with the Free Complement method at order $n = 3$.

v	E2(g)				E3(4s)			
	$\langle R \rangle$	$\langle R^2 \rangle$	E_v^a	$E_v - E_{v-1}$	$\langle R \rangle$	$\langle R^2 \rangle$	E_v^a	$E_v - E_{v-1}$
0	1.07992	1.18027	-143576.84		1.09536	1.21527	-138240.12	
1	1.14937	1.36422	-141235.43	2341.41	1.16931	1.41441	-136118.45	2121.67
2	1.21927	1.56127	-139059.17	2176.26	1.24896	1.64087	-134124.99	1993.46
3	1.29403	1.78258	-137017.74	2041.43	1.33377	1.89654	-132263.41	1861.58
4	1.37261	2.02786	-135100.65	1917.09	1.42492	2.18794	-130536.76	1726.65
5	1.45547	2.30060	-133305.65	1795.00	1.52402	2.52400	-128945.87	1590.89
6	1.54390	2.60730	-131630.68	1674.97	1.63269	2.91532	-127490.70	1455.17
7	1.63939	2.95628	-130074.90	1555.78	1.75330	3.37743	-126170.89	1319.81
8	1.74422	3.36021	-128639.40	1435.50	1.89145	3.94163	-124987.93	1182.96
9	1.86208	3.83960	-127327.46	1311.94	2.06486	4.69870	-123952.44	1035.49
10	1.99917	4.42984	-126145.66	1181.80	2.33127	5.95622	-123102.36	850.08
11	2.16772	5.20168	-125105.63	1040.03	2.77313	8.30827	-122507.81	594.55
12	2.38962	6.29298	-124227.47	878.17	3.39525	12.32334	-122145.17	362.64
13	2.68017	7.85875	-123528.88	698.59	4.75168	23.82935	-121974.61	170.57
14	3.01837	9.90174	-122996.82	532.06	8.71354	82.89522	-121932.14	42.47
15	3.37022	12.31101	-122585.32	411.50				
16	3.84893	15.96635	-122269.25	316.07				
17	4.57534	22.37030	-122055.09	214.16				

a: Absolute energies in cm^{-1} .

Table S12-3. Vibrational energy levels E_v (cm^{-1}) of the $^3\Sigma_g$ states calculated from the PECs with the Free Complement method at order $n = 3$.

v	E4(4d)				E5			
	$\langle R \rangle$	$\langle R^2 \rangle$	E_v^a	$E_v - E_{v-1}$	$\langle R \rangle$	$\langle R^2 \rangle$	E_v^a	$E_v - E_{v-1}$
0	1.08560	1.19308	-138074.61	1.08560	1.09072	1.20486	-135587.85	
1	1.15689	1.38288	-135818.77	1.15689	1.16654	1.40711	-133431.86	2155.99
2	1.22935	1.58791	-133704.54	1.22935	1.24346	1.62584	-131405.79	2026.07
3	1.30572	1.81579	-131718.66	1.30572	1.32468	1.87022	-129508.37	1897.41
4	1.38586	2.06814	-129854.77	1.38586	1.41113	2.14535	-127736.56	1771.81
5	1.47064	2.34968	-128109.97	1.47064	1.50268	2.45396	-126089.56	1647.00
6	1.56107	2.66632	-126481.89	1.56107	1.60122	2.80536	-124564.06	1525.50
7	1.65850	3.02627	-124970.21	1.65850	1.70752	3.20687	-123159.34	1404.72
8	1.76636	3.44662	-123576.93	1.76636	1.82732	3.68590	-121874.74	1284.60
9	1.89807	3.98805	-122311.90	1.89807	1.98334	4.34589	-120727.94	1146.80
10	2.17153	5.18513	-121242.59	2.17153	2.21546	5.38990	-119777.91	950.03
11	2.76281	8.11004	-120663.37	2.76281	2.36165	6.15122	-118990.83	787.08
12	3.04690	10.03078	-120214.19	3.04690	2.57636	7.30735	-118255.62	735.21
13					2.87964	9.08288	-117675.79	579.83
14					3.30055	11.81498	-117235.73	440.07
15					3.96675	16.85525	-116933.34	302.39
16					5.21804	28.65284	-116786.56	146.77
17					6.29554	41.92223	-116715.97	70.59
18					6.99431	52.52916	-116658.51	57.47
19					8.81943	83.20825	-116614.40	44.10
20					14.47498	224.35979	-116597.25	17.15

a: Absolute energies in cm^{-1} .

Table S13-1. Vibrational energy levels E_v (cm^{-1}) of the $^3\Sigma_u$ states calculated from the PECs with the Free Complement method at order $n = 3$.

v	E0(b) ^a		E1(e)		E2(f)			
	<R>	<R ² >	E_v ^b	$E_v - E_{v-1}$	<R>	<R ² >	E_v ^b	$E_v - E_{v-1}$
0	1.13522	1.30460	-148912.31		1.10457	1.23525	-140009.18	
1	1.21032	1.51347	-146846.15	2066.16	1.17768	1.43326	-137844.64	2164.545
2	1.29054	1.74948	-144915.61	1930.54	1.25229	1.64804	-135815.33	2029.307
3	1.37813	2.02186	-143123.41	1792.20	1.33266	1.89162	-133913.25	1902.075
4	1.47664	2.34597	-141476.12	1647.30	1.41814	2.16557	-132136.42	1776.835
5	1.59314	2.75239	-139987.33	1488.79	1.51187	2.48256	-130489.25	1647.166
6	1.74413	3.31422	-138683.29	1304.04	1.62005	2.86860	-128977.73	1511.519
7	1.98193	4.27555	-137618.98	1064.31	1.76910	3.43240	-127629.80	1347.931

a: The PEC is repulsive.

b: Absolute energies in cm^{-1} .

Table S13-2. Vibrational energy levels E_v (cm^{-1}) of the $^3\Sigma_u$ states calculated from the PECs with the Free Complement method at order $n = 3$.

v	E3				E4			
	$\langle R \rangle$	$\langle R^2 \rangle$	E_v^b	$E_v - E_{v-1}$	$\langle R \rangle$	$\langle R^2 \rangle$	E_v^b	$E_v - E_{v-1}$
0	1.09328	1.21032	-138022.48		1.09768	1.21998	-136473.68	
1	1.16535	1.40392	-135840.96	2181.52	1.16945	1.41359	-134296.01	2177.67
2	1.24057	1.61780	-133788.54	2052.43	1.24431	1.62727	-132246.59	2049.42
3	1.31950	1.85515	-131861.57	1926.97	1.32306	1.86476	-130321.83	1924.76
4	1.40307	2.12060	-130057.60	1803.97	1.40669	2.13109	-128519.99	1801.84
5	1.49278	2.42149	-128375.84	1681.76	1.49756	2.43649	-126842.08	1677.91
6	1.59412	2.78032	-126820.65	1555.19	1.60526	2.81793	-125298.78	1543.30
7	1.77831	3.47203	-125438.87	1381.78	1.77920	3.46600	-123948.91	1349.86
8	2.41708	6.11707	-124717.83	721.04	2.00978	4.39698	-122920.63	1028.28
9	2.20298	5.37594	-124049.67	668.16	2.14123	5.05310	-122004.66	915.98
10	2.57463	7.20043	-123454.67	595.00				
11	2.76805	8.37126	-122865.25	589.42				
12	3.03086	10.11014	-122408.37	456.88				
13	3.70509	14.85292	-122076.63	331.74				
14	5.83514	35.47465	-121955.23	121.40				
15	17.41552	389.48856	-121930.41	24.82				

a: The PEC is repulsive.

b: Absolute energies in cm^{-1} .

Table S13-3. Vibrational energy levels E_v (cm^{-1}) of the $^3\Sigma_u$ states calculated from the PECs with the Free Complement method at order $n = 3$.

E5				
v	$\langle R \rangle$	$\langle R^2 \rangle$	E_v^a	$E_v - E_{v-1}$
0	1.09524	1.21467	-135275.15	
1	1.16741	1.40894	-133103.00	2172.15
2	1.24268	1.62340	-131059.73	2043.27
3	1.32187	1.86187	-129140.77	1918.97
4	1.40542	2.12780	-127343.78	1796.99
5	1.49491	2.42863	-125668.05	1675.73
6	1.59974	2.80000	-124119.52	1548.53
7	1.77120	3.43636	-122759.68	1359.84
8	1.99278	4.33002	-121711.37	1048.31
9	2.17122	5.17187	-120803.07	908.31
10	2.66170	7.62492	-120170.20	632.87

a: Absolute energies in cm^{-1} .

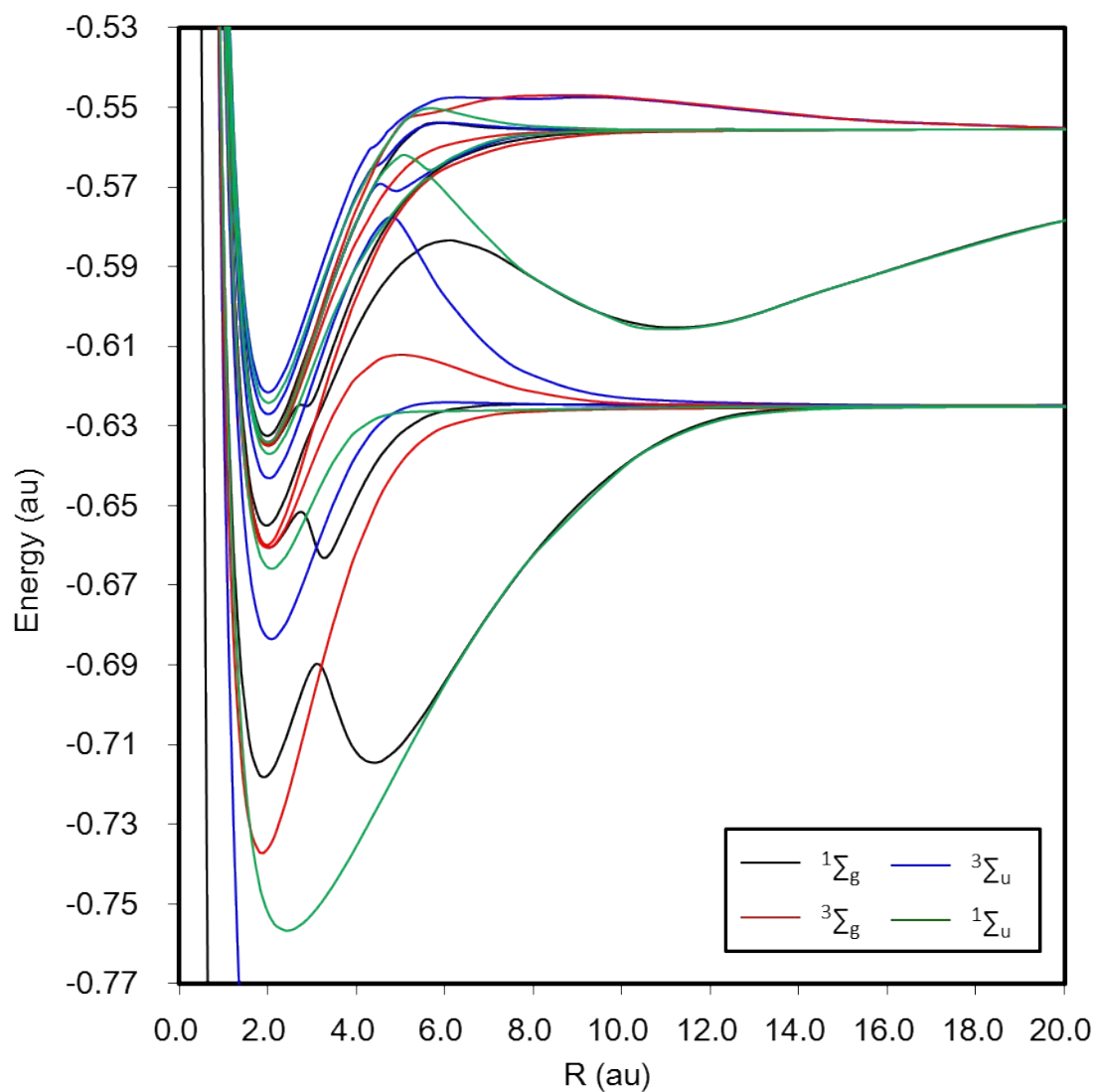


Fig S1. Potential curves of all the Σ states calculated by the FC method at order $n = 3$. The black, blue, red, and green curves are for the $1\Sigma_g$, $3\Sigma_u$, $3\Sigma_g$, and $1\Sigma_u$ symmetries, respectively.