

Electronic Supplementary Information

The Conformational Topography of Tris(2-methylbutyl) Phosphate and the role of Methyl Branching on Non-Hyperconjugative Carbon in Controlling the Conformational Landscape: Matrix Isolation Infrared Spectroscopy and *DFT* Computations

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Table S1. Illustration of the additivity rule wherein the relative energies of T2MBP conformers are greater than equal to the sum of the relative energies of the respective DM2MBP counterparts.

Sl.No	DM2MBP		T2MBP		Expected by Additivity
	Conformer	Energy	Conformer	Energy	
	$G^\pm(wxyz)G^\pm G^\pm$		$G^\pm(wxyz)G^\pm(wxyz)G^\pm(wxyz)$		
1	$G^\pm(tg^-tt)G^\pm G^\pm$	0.00	$G^\pm(tg^-tg^\mp)G^\pm(tg^-tt)G^\pm(tg^-tt)$	0.00	0.10 (6+1+1)
2	$G^\pm(tg^+g^-t)G^\pm G^\pm$	0.42	$G^\pm(tg^+g^-t)G^\pm(tg^-tg^\mp)G^\pm(tg^-tg^\mp)$	0.91	0.62 (2+6+6)
3	$G^\pm(g^+tg^+t)G^\pm G^\pm$	0.33	$G^\pm(g^+tg^+t)G^\pm(tg^-tg^\mp)G^\pm(ttg^+t)$	1.03	0.49 (3+6+4)
4	$G^\pm(ttg^+t)G^\pm G^\pm$	0.06	$G^\pm(ttg^+t)G^\pm(tg^+g^-t)G^\pm(tg^+g^-t)$	1.30	0.90 (4+2+2)
5	$G^\pm(ttg^+g^\pm)G^\pm G^\pm$	0.85	$G^\pm(ttg^+g^\pm)G^\pm(tg^-tg^\mp)G^\pm(tg^-tg^\mp)$	2.46	1.05 (5+6+6)
6	$G^\pm(tg^-tg^\mp)G^\pm G^\pm$	0.10	$G^\pm(tg^-tg^\mp)G^\pm(ttg^+g^\pm)G^\pm(tg^+g^-t)$	2.47	1.37 (6+5+2)
7	$G^\pm(tg^+g^-g^\mp)G^\pm G^\pm$	0.23	$G^\pm(tg^+g^-g^\mp)G^\pm(tg^+g^-t)G^\pm(tg^+g^-t)$	2.22	1.07 (7+2+2)
	$T(wxyz)G^\pm G^\pm$		$T(wxyz)G^\pm(wxyz)G^\pm(wxyz)$		
8	$T(tg^+g^-t)G^\pm G^\pm$	0.98	$T(tg^+g^-t)G^\pm(ttg^+t)G^\pm(tg^-tg^\mp)$	2.03	1.14 (8+4+6)
9	$T(ttg^+t)G^\pm G^\pm$	0.69	$T(ttg^+t)G^\pm(ttg^+t)G^\pm(ttg^+t)$	1.82	2.07 (9+9+9)
10	$T(tg^+g^-g^\mp)G^\pm G^\pm$	0.90	$T(tg^+g^-g^\mp)G^\pm(tg^-tt)G^\pm(tg^-tt)$	2.10	0.90 (9+1+1)

Table S2. Total number of all possible conformations of T2MBP after elimination of a bunch of conformers based on the analysis DM2MBP.

S. No.	Structure	Remarks
$G^\pm(\text{xyz})G^\pm(\text{xyz})G^\pm(\text{xyz})\text{cluster}$		
1	$G^\pm(g^\pm tg^\pm t)G^\pm(g^\pm tg^\pm t)G^\pm(g^\pm tg^\pm t)$	
2	$G^\pm(tg^\pm tt)G^\pm(tg^\pm tt)G^\pm(tg^\pm tt)$	
3	$G^\pm(tg^\pm tg^\mp)G^\pm(tg^\pm tg^\mp)G^\pm(tg^\pm tg^\mp)$	
4	$G^\pm(ttg^\pm g^\pm)G^\pm(ttg^\pm g^\pm)G^\pm(ttg^\pm g^\pm)$	
5	$G^\pm(ttg^\pm t)G^\pm(ttg^\pm t)G^\pm(ttg^\pm t)$	
6	$G^\pm(tg^\pm g^\pm t)G^\pm(tg^\pm g^\pm t)G^\pm(tg^\pm g^\pm t)$	
7	$G^\pm(tg^\pm g^\pm g^\mp)G^\pm(tg^\pm g^\pm g^\mp)G^\pm(tg^\pm g^\pm g^\mp)$	
8	$G^\pm(g^\pm tg^\pm t)G^\pm(tg^\pm tt)G^\pm(tg^\pm tt)$	
9	$G^\pm(g^\pm tg^\pm t)G^\pm(tg^\pm tg^\mp)G^\pm(tg^\pm tg^\mp)$	
10	$G^\pm(g^\pm tg^\pm t)G^\pm(ttg^\pm g^\pm)G^\pm(ttg^\pm g^\pm)$	
11	$G^\pm(g^\pm tg^\pm t)G^\pm(ttg^\pm t)G^\pm(ttg^\pm t)$	
12	$G^\pm(g^\pm tg^\pm t)G^\pm(tg^\pm g^\pm t)G^\pm(tg^\pm g^\pm t)$	
13	$G^\pm(g^\pm tg^\pm t)G^\pm(tg^\pm g^\pm g^\mp)G^\pm(tg^\pm g^\pm g^\mp)$	
14	$G^\pm(tg^\pm tt)G^\pm(g^\pm tg^\pm t)G^\pm(tg^\pm tt)$	Identical as 8
15	$G^\pm(tg^\pm tg^\mp)G^\pm(g^\pm tg^\pm t)G^\pm(tg^\pm tg^\mp)$	Identical as 9
16	$G^\pm(ttg^\pm g^\pm)G^\pm(g^\pm tg^\pm t)G^\pm(ttg^\pm g^\pm)$	Identical as 10
17	$G^\pm(ttg^\pm t)G^\pm(g^\pm tg^\pm t)G^\pm(ttg^\pm t)$	Identical as 11
18	$G^\pm(tg^\pm g^\pm t)G^\pm(g^\pm tg^\pm t)G^\pm(tg^\pm g^\pm t)$	Identical as 12
19	$G^\pm(tg^\pm g^\pm g^\mp)G^\pm(g^\pm tg^\pm t)G^\pm(tg^\pm g^\pm g^\mp)$	Identical as 13
20	$G^\pm(tg^\pm tt)G^\pm(tg^\pm tt)G^\pm(g^\pm tg^\pm t)$	Identical as 8
21	$G^\pm(tg^\pm tg^\mp)G^\pm(tg^\pm tg^\mp)G^\pm(g^\pm tg^\pm t)$	Identical as 9
22	$G^\pm(ttg^\pm g^\pm)G^\pm(ttg^\pm g^\pm)G^\pm(g^\pm tg^\pm t)$	Identical as 10
23	$G^\pm(ttg^\pm t)G^\pm(ttg^\pm t)G^\pm(g^\pm tg^\pm t)$	Identical as 11
24	$G^\pm(tg^\pm g^\pm t)G^\pm(tg^\pm g^\pm t)G^\pm(g^\pm tg^\pm t)$	Identical as 12
25	$G^\pm(tg^\pm g^\pm g^\mp)G^\pm(tg^\pm g^\pm g^\mp)G^\pm(g^\pm tg^\pm t)$	Identical as 13
26	$G^\pm(tg^\pm tt)G^\pm(g^\pm tg^\pm t)G^\pm(g^\pm tg^\pm t)$	
27	$G^\pm(tg^\pm tt)G^\pm(tg^\pm tg^\mp)G^\pm(tg^\pm tg^\mp)$	
28	$G^\pm(tg^\pm tt)G^\pm(ttg^\pm g^\pm)G^\pm(ttg^\pm g^\pm)$	
29	$G^\pm(tg^\pm tt)G^\pm(ttg^\pm t)G^\pm(ttg^\pm t)$	

30	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}t)$	
31	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	
32	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 26
33	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})$	Identical as 27
34	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 28
35	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)$	Identical as 29
36	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}t)$	Identical as 30
37	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})$	Identical as 31
38	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tt)$	Identical as 26
39	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tt)$	Identical as 27
40	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tt)$	Identical as 28
41	$G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tt)$	Identical as 29
42	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tt)$	Identical as 30
43	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tt)$	Identical as 31
44	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)$	
45	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)$	
46	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}g^{\pm})$	
47	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)$	
48	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}t)$	
49	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	
50	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 44
51	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tt)$	Identical as 45
52	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})$	Identical as 46
53	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}t)$	Identical as 47
54	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}t)$	Identical as 48
55	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	Identical as 49
56	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tg^{\mp})$	Identical as 44
57	$G^{\pm}(tg^{\mp}tt)G^{\pm}(tg^{\mp}tt)G^{\pm}(tg^{\mp}tg^{\mp})$	Identical as 45
58	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tg^{\mp})$	Identical as 46
59	$G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})$	Identical as 47
60	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tg^{\mp})$	Identical as 48
61	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	Identical as 49
62	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)$	

63	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)$	
64	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	
65	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)$	
66	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}t)$	
67	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	
68	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 62
69	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tt)$	Identical as 63
70	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tg^{\mp})$	Identical as 64
71	$G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)$	Identical as 65
72	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}t)$	Identical as 66
73	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}g^{\mp})$	Identical as 67
74	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 62
75	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 63
76	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})$	Identical as 64
77	$G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 65
78	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 66
79	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(ttg^{+}g^{\pm})$	Identical as 67
80	$G^{\pm}(ttg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)$	
81	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)$	
82	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	
83	$G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}g^{\pm})$	
84	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}t)$	
85	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	
86	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 80
87	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tt)$	Identical as 81
88	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})$	Identical as 82
89	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 83
90	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}t)$	Identical as 84
91	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	Identical as 85
92	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}t)$	Identical as 80
93	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)$	Identical as 81
94	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}t)$	Identical as 82
95	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)$	Identical as 83

96	$G^{\pm}(tg^+g^-t)G^{\pm}(tg^+g^-t)G^{\pm}(ttg^+t)$	Identical as 84
97	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(ttg^+t)$	Identical as 85
98	$G^{\pm}(tg^+g^-t)G^{\pm}(g^{\pm}tg^+t)G^{\pm}(g^{\pm}tg^+t)$	
99	$G^{\pm}(tg^+g^-t)G^{\pm}(tg^-tt)G^{\pm}(tg^-tt)$	
100	$G^{\pm}(tg^+g^-t)G^{\pm}(tg^-tg^{\mp})G^{\pm}(tg^-tg^{\mp})$	
101	$G^{\pm}(tg^+g^-t)G^{\pm}(ttg^+g^{\pm})G^{\pm}(ttg^+g^{\pm})$	
102	$G^{\pm}(tg^+g^-t)G^{\pm}(ttg^+t)G^{\pm}(ttg^+t)$	
103	$G^{\pm}(tg^+g^-t)G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-g^{\mp})$	
104	$G^{\pm}(g^{\pm}tg^+t)G^{\pm}(tg^+g^-t)G^{\pm}(g^{\pm}tg^+t)$	Identical as 98
105	$G^{\pm}(tg^-tt)G^{\pm}(tg^+g^-t)G^{\pm}(tg^-tt)$	Identical as 99
106	$G^{\pm}(tg^-tg^{\mp})G^{\pm}(tg^+g^-t)G^{\pm}(tg^-tg^{\mp})$	Identical as 100
107	$G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^+g^-t)G^{\pm}(ttg^+g^{\pm})$	Identical as 101
108	$G^{\pm}(ttg^+t)G^{\pm}(tg^+g^-t)G^{\pm}(ttg^+t)$	Identical as 102
109	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-t)G^{\pm}(tg^+g^-g^{\mp})$	Identical as 103
110	$G^{\pm}(g^{\pm}tg^+t)G^{\pm}(g^{\pm}tg^+t)G^{\pm}(tg^+g^-t)$	Identical as 98
111	$G^{\pm}(tg^-tt)G^{\pm}(tg^-tt)G^{\pm}(tg^+g^-t)$	Identical as 99
112	$G^{\pm}(tg^-tg^{\mp})G^{\pm}(tg^-tg^{\mp})G^{\pm}(tg^+g^-t)$	Identical as 100
113	$G^{\pm}(ttg^+g^{\pm})G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^+g^-t)$	Identical as 101
114	$G^{\pm}(ttg^+t)G^{\pm}(ttg^+t)G^{\pm}(tg^+g^-t)$	Identical as 102
115	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-t)$	Identical as 103
116	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(g^{\pm}tg^+t)G^{\pm}(g^{\pm}tg^+t)$	
117	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(tg^-tt)G^{\pm}(tg^-tt)$	
118	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(tg^-tg^{\mp})G^{\pm}(tg^-tg^{\mp})$	
119	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(ttg^+g^{\pm})G^{\pm}(ttg^+g^{\pm})$	
120	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(ttg^+t)G^{\pm}(ttg^+t)$	
121	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-t)G^{\pm}(tg^+g^-t)$	
122	$G^{\pm}(g^{\pm}tg^+t)G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(g^{\pm}tg^+t)$	Identical as 116
123	$G^{\pm}(tg^-tt)G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(tg^-tt)$	Identical as 117
124	$G^{\pm}(tg^-tg^{\mp})G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(tg^-tg^{\mp})$	Identical as 118
125	$G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(ttg^+g^{\pm})$	Identical as 119
126	$G^{\pm}(ttg^+t)G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(ttg^+t)$	Identical as 120
127	$G^{\pm}(tg^+g^-t)G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-t)$	Identical as 121
128	$G^{\pm}(g^{\pm}tg^+t)G^{\pm}(g^{\pm}tg^+t)G^{\pm}(tg^+g^-g^{\mp})$	Identical as 116

129	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})$	Identical as 117
130	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	Identical as 118
131	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}g^{\mp})$	Identical as 119
132	$G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	Identical as 120
133	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	Identical as 121
134	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})$	
135	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})$	
136	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)$	
137	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}t)$	
138	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})$	
139	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tt)$	Identical as 134
140	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})$	
141	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}t)$	
142	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}t)$	
143	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	
144	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tt)$	Identical as 135
145	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tg^{\mp})$	Identical as 140
146	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)$	
147	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}t)$	
148	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}g^{\mp})$	
149	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tt)$	Identical as 136
150	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})$	Identical as 141
151	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 146
152	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}t)$	
153	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	
154	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tt)$	Identical as 137
155	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tg^{\mp})$	Identical as 142
156	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 147
157	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}t)$	Identical as 152
158	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	
159	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tt)$	Identical as 138
160	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	Identical as 143
161	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(ttg^{+}g^{\pm})$	Identical as 148

162	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(ttg^{+}t)$	Identical as 153
163	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}t)$	Identical as 158
164	$G^{\pm}(tg^{-}tt)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tg^{\mp})$	Identical as 134
165	$G^{\pm}(tg^{-}tt)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 135
166	$G^{\pm}(tg^{-}tt)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}t)$	Identical as 136
167	$G^{\pm}(tg^{-}tt)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}t)$	Identical as 137
168	$G^{\pm}(tg^{-}tt)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	Identical as 138
169	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 134
170	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})$	
171	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}t)$	
172	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}t)$	
173	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	
174	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 135
175	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tg^{\mp})$	Identical as 170
176	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)$	
177	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}t)$	
178	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}g^{\mp})$	
179	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 136
180	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})$	Identical as 171
181	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 176
182	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}t)$	
183	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	
184	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 137
185	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tg^{\mp})$	Identical as 172
186	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 177
187	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}t)$	Identical as 182
188	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	
189	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 138
190	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	Identical as 173
191	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(ttg^{+}g^{\pm})$	Identical as 178
192	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(ttg^{+}t)$	Identical as 183
193	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}t)$	Identical as 188
194	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tt)$	Identical as 134

195	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 140
196	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}t)$	Identical as 141
197	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}t)$	Identical as 142
198	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	Identical as 143
199	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 134
200	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 170
201	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)$	Identical as 171
202	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}t)$	Identical as 172
203	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})$	Identical as 173
204	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 140
205	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tt)$	Identical as 170
206	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)$	
207	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}t)$	
208	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}g^{\mp})$	
209	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 141
210	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tt)$	Identical as 171
211	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 206
212	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}t)$	
213	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	
214	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}t)G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 142
215	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tt)$	Identical as 172
216	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 207
217	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}t)$	Identical as 212
218	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	
219	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 143
220	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tt)$	Identical as 173
221	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(ttg^{+}g^{\pm})$	Identical as 208
222	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(ttg^{+}t)$	Identical as 213
223	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}t)$	Identical as 218
224	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tt)$	Identical as 135
225	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tg^{\mp})$	Identical as 140
226	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}t)$	Identical as 146
227	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}t)$	Identical as 147

228	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	Identical as 148
229	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tt)G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 135
230	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})$	Identical as 170
231	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)$	Identical as 176
232	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}t)$	Identical as 177
233	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})$	Identical as 178
234	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 140
235	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tt)$	Identical as 170
236	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}t)$	Identical as 206
237	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}t)$	Identical as 207
238	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	Identical as 208
239	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 146
240	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tt)$	Identical as 176
241	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})$	Identical as 206
242	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}t)$	
243	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	
244	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}t)G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 147
245	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tt)$	Identical as 177
246	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tg^{\mp})$	Identical as 207
247	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}t)$	Identical as 242
248	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	
249	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 148
250	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tt)$	Identical as 178
251	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	Identical as 208
252	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(ttg^{+}t)$	Identical as 243
253	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}t)$	Identical as 248
254	$G^{\pm}(ttg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tt)$	Identical as 136
255	$G^{\pm}(ttg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tg^{\mp})$	Identical as 141
256	$G^{\pm}(ttg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 146
257	$G^{\pm}(ttg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}t)$	Identical as 152
258	$G^{\pm}(ttg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	Identical as 153
259	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 136
260	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})$	Identical as 171

261	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 176
262	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}t)$	Identical as 182
263	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})$	Identical as 183
264	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 141
265	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tt)$	Identical as 171
266	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})$	Identical as 206
267	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}t)$	Identical as 212
268	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	Identical as 213
269	$G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 146
270	$G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tt)$	Identical as 176
271	$G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tg^{\mp})$	Identical as 206
272	$G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}t)$	Identical as 242
273	$G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}g^{\mp})$	Identical as 243
274	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 152
275	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tt)$	Identical as 182
276	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 242
277	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tg^{\mp})$	Identical as 212
278	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	
279	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 153
280	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tt)$	Identical as 183
281	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	Identical as 213
282	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(ttg^{+}g^{\pm})$	Identical as 243
283	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}t)$	Identical as 278
284	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tt)$	Identical as 137
285	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tg^{\mp})$	Identical as 142
286	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 147
287	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}t)$	Identical as 152
288	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	Identical as 158
289	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tt)G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 137
290	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})$	Identical as 172
291	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 177
292	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)$	Identical as 182
293	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})$	Identical as 188

294	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 142
295	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tt)$	Identical as 172
296	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})$	Identical as 207
297	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}t)$	Identical as 212
298	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	Identical as 218
299	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 147
300	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tt)$	Identical as 177
301	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tg^{\mp})$	Identical as 207
302	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)$	Identical as 242
303	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}g^{\mp})$	Identical as 248
304	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 152
305	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tt)$	Identical as 182
306	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})$	Identical as 212
307	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 242
308	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	Identical as 278
309	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 158
310	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tt)$	Identical as 188
311	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	Identical as 218
312	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(ttg^{+}g^{\pm})$	Identical as 248
313	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(ttg^{+}t)$	Identical as 278
314	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tt)$	Identical as 138
315	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tg^{\mp})$	Identical as 143
316	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 148
317	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}t)$	Identical as 153
318	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}t)$	Identical as 158
319	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 138
320	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})$	Identical as 173
321	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{-}g^{\pm})$	Identical as 178
322	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)$	Identical as 183
323	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}t)$	Identical as 188
324	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 143
325	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tt)$	Identical as 173
326	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})$	Identical as 208

327	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(tg^-tg^{\mp})G^{\pm}(ttg^{\pm}t)$	Identical as 213
328	$G^{\pm}(t+g^-g^{\mp})G^{\pm}(tg^-tg^{\mp})G^{\pm}(tg^+g^-t)$	Identical as 218
329	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(ttg^+g^{\pm})G^{\pm}(g^{\pm}tg^+t)$	Identical as 148
330	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^-tt)$	Identical as 178
331	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^-tg^{\mp})$	Identical as 208
332	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(ttg^+g^{\pm})G^{\pm}(ttg^+t)$	Identical as 243
333	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^+g^-t)$	Identical as 248
334	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(ttg^+t)G^{\pm}(g^{\pm}tg^+t)$	Identical as 153
335	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(ttg^+t)G^{\pm}(tg^-tt)$	Identical as 183
336	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(ttg^+t)G^{\pm}(tg^-tg^{\mp})$	Identical as 213
337	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(ttg^+t)G^{\pm}(ttg^{\pm}g^{\pm})$	Identical as 243
338	$G^{\pm}(tg^{\pm}g^{\mp}g^{\mp})G^{\pm}(ttg^{\pm}t)G^{\pm}(tg^+g^-t)$	Identical as 278
339	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-t)G^{\pm}(g^{\pm}tg^+t)$	Identical as 158
340	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-t)G^{\pm}(tg^-tt)$	Identical as 188
341	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-t)G^{\pm}(tg^-tg^{\mp})$	Identical as 218
342	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-t)G^{\pm}(ttg^+g^{\pm})$	Identical as 248
343	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-t)G^{\pm}(ttg^+t)$	Identical as 278
T(xyz)G[±](xyz)G[±](xyz) cluster		
1	$T(tg^+g^-t)G^{\pm}(g^{\pm}tg^+t)G^{\pm}(g^{\pm}tg^+t)$	
2	$T(tg^+g^-t)G^{\pm}(tg^-tt)G^{\pm}(tg^-tt)$	
3	$T(tg^+g^-t)G^{\pm}(tg^-tg^{\mp})G^{\pm}(tg^-tg^{\mp})$	
4	$T(tg^+g^-t)G^{\pm}(ttg^+g^{\pm})G^{\pm}(ttg^+g^{\pm})$	
5	$T(tg^+g^-t)G^{\pm}(ttg^+t)G^{\pm}(ttg^+t)$	
6	$T(tg^+g^-t)G^{\pm}(tg^+g^-t)G^{\pm}(tg^+g^-t)$	
7	$T(tg^+g^-t)G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-g^{\mp})$	
8	$T(tg^{\pm}g^-g^{\mp})G^{\pm}(g^{\pm}tg^+t)G^{\pm}(g^{\pm}tg^+t)$	
9	$T(tg^+g^-g^{\mp})G^{\pm}(tg^-tt)G^{\pm}(tg^-tt)$	
10	$T(tg^+g^-g^{\mp})G^{\pm}(tg^-tg^{\mp})G^{\pm}(tg^-tg^{\mp})$	
11	$T(tg^+g^-g^{\mp})G^{\pm}(ttg^+g^{\pm})G^{\pm}(ttg^+g^{\pm})$	
12	$T(tg^+g^-g^{\mp})G^{\pm}(ttg^+t)G^{\pm}(ttg^+t)$	
13	$T(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-t)G^{\pm}(tg^+g^-t)$	
14	$T(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-g^{\mp})$	
15	$T(ttg^+t)G^{\pm}(g^{\pm}tg^+t)G^{\pm}(g^{\pm}tg^+t)$	

16	$T(ttg^+t)G^\pm(tg^-tt)G^\pm(tg^-tt)$	
17	$T(ttg^+t)G^\pm(tg^-tg^\mp)G^\pm(tg^-tg^\mp)$	
18	$T(ttg^+t)G^\pm(ttg^+g^\pm)G^\pm(ttg^+g^\pm)$	
19	$T(ttg^+t)G^\pm(ttg^+t)G^\pm(ttg^+t)$	
20	$T(ttg^+t)G^\pm(tg^+g^-t)G^\pm(tg^+g^-t)$	
21	$T(ttg^+t)G^\pm(tg^+g^-g^\mp)G^\pm(tg^+g^-g^\mp)$	
22	$T(tg^-tt)G^\pm(g^\pm tg^+t)G^\pm(g^\pm tg^+t)$	
23	$T(tg^-tt)G^\pm(tg^-tt)G^\pm(tg^-tt)$	
24	$T(tg^-tt)G^\pm(tg^-tg^\mp)G^\pm(tg^-tg^\mp)$	
25	$T(tg^-tt)G^\pm(ttg^+g^\pm)G^\pm(ttg^+g^\pm)$	
26	$T(tg^-tt)G^\pm(ttg^+t)G^\pm(ttg^+t)$	
27	$T(tg^-tt)G^\pm(tg^+g^-t)G^\pm(tg^+g^-t)$	
28	$T(tg^-tt)G^\pm(tg^+g^-g^\mp)G^\pm(tg^+g^-g^\mp)$	
29	$T(tg^-tg^\mp)G^\pm(g^\pm tg^+t)G^\pm(g^\pm tg^+t)$	
30	$T(tg^-tg^\mp)G^\pm(tg^-tt)G^\pm(tg^-tt)$	
31	$T(tg^-tg^\mp)G^\pm(tg^-tg^\mp)G^\pm(tg^-tg^\mp)$	
32	$T(tg^-tg^\mp)G^\pm(ttg^+g^\pm)G^\pm(ttg^+g^\pm)$	
33	$T(tg^-tg^\mp)G^\pm(ttg^+t)G^\pm(ttg^+t)$	
34	$T(tg^-tg^\mp)G^\pm(tg^+g^-t)G^\pm(tg^+g^-t)$	
35	$T(tg^-tg^\mp)G^\pm(tg^+g^-g^\mp)G^\pm(tg^+g^-g^\mp)$	
36	$T(tg^+g^-t)G^\pm(g^\pm tg^+t)G^\pm(tg^-tt)$	
37	$T(tg^+g^-t)G^\pm(g^\pm tg^+t)G^\pm(tg^-tg^\mp)$	
38	$T(tg^+g^-t)G^\pm(g^\pm tg^+t)G^\pm(ttg^+g^\pm)$	
39	$T(tg^+g^-t)G^\pm(g^\pm tg^+t)G^\pm(ttg^+t)$	
40	$T(tg^+g^-t)G^\pm(g^\pm tg^+t)G^\pm(tg^+g^-t)$	
41	$T(tg^+g^-t)G^\pm(g^\pm tg^+t)G^\pm(tg^+g^-g^\mp)$	
42	$T(tg^+g^-t)G^\pm(tg^-tt)G^\pm(g^\pm tg^+t)$	Identical as 36
43	$T(tg^+g^-t)G^\pm(tg^-tt)G^\pm(tg^-tg^\mp)$	
44	$T(tg^+g^-t)G^\pm(tg^-tt)G^\pm(ttg^+g^\pm)$	
45	$T(tg^+g^-t)G^\pm(tg^-tt)G^\pm(ttg^+t)$	
46	$T(tg^+g^-t)G^\pm(tg^-tt)G^\pm(tg^+g^-t)$	
47	$T(tg^+g^-t)G^\pm(tg^-tt)G^\pm(tg^+g^-g^\mp)$	
48	$T(tg^+g^-t)G^\pm(tg^-tg^\mp)G^\pm(g^\pm tg^+t)$	Identical as 37

49	$T(tg^+g^-t)G^\pm(tg^-tg^\mp)G^\pm(tg^-tt)$	Identical as 43
50	$T(tg^+g^-t)G^\pm(tg^-tg^\mp)G^\pm(ttg^+g^\pm)$	
51	$T(tg^+g^-t)G^\pm(tg^-tg^\mp)G^\pm(ttg^+t)$	
52	$T(tg^+g^-t)G^\pm(tg^-tg^\mp)G^\pm(tg^+g^-t)$	
53	$T(tg^+g^-t)G^\pm(tg^-tg^\mp)G^\pm(tg^+g^-g^\mp)$	
54	$T(tg^+g^-t)G^\pm(ttg^+g^\pm)G^\pm(g^\pm tg^+t)$	Identical as 38
55	$T(tg^+g^-t)G^\pm(ttg^+g^\pm)G^\pm(tg^-tt)$	Identical as 44
56	$T(tg^+g^-t)G^\pm(ttg^+g^\pm)G^\pm(tg^-tg^\mp)$	Identical as 50
57	$T(tg^+g^-t)G^\pm(ttg^+g^\pm)G^\pm(ttg^+t)$	
58	$T(tg^+g^-t)G^\pm(ttg^+g^\pm)G^\pm(tg^+g^-t)$	
59	$T(tg^+g^-t)G^\pm(ttg^+g^\pm)G^\pm(tg^+g^-g^\mp)$	
60	$T(tg^+g^-t)G^\pm(ttg^+t)G^\pm(g^\pm tg^+t)$	Identical as 39
61	$T(tg^+g^-t)G^\pm(ttg^+t)G^\pm(tg^-tt)$	Identical as 45
62	$T(tg^+g^-t)G^\pm(ttg^+t)G^\pm(tg^-tg^\mp)$	Identical as 51
63	$T(tg^+g^-t)G^\pm(ttg^+t)G^\pm(ttg^+g^\pm)$	Identical as 57
64	$T(tg^+g^-t)G^\pm(ttg^+t)G^\pm(tg^+g^-t)$	
65	$T(tg^+g^-t)G^\pm(ttg^+t)G^\pm(tg^+g^-g^\mp)$	
66	$T(tg^+g^-t)G^\pm(tg^+g^-t)G^\pm(g^\pm tg^+t)$	Identical as 40
67	$T(tg^+g^-t)G^\pm(tg^+g^-t)G^\pm(tg^-tt)$	Identical as 46
68	$T(tg^+g^-t)G^\pm(tg^+g^-t)G^\pm(tg^-tg^\mp)$	Identical as 52
69	$T(tg^+g^-t)G^\pm(tg^+g^-t)G^\pm(ttg^+g^\pm)$	Identical as 58
70	$T(tg^+g^-t)G^\pm(tg^+g^-t)G^\pm(ttg^+t)$	Identical as 64
71	$T(tg^+g^-t)G^\pm(tg^+g^-t)G^\pm(tg^+g^-g^\mp)$	
72	$T(tg^+g^-t)G^\pm(tg^+g^-g^\mp)G^\pm(g^\pm tg^+t)$	Identical as 41
73	$T(tg^+g^-t)G^\pm(tg^+g^-g^\mp)G^\pm(tg^-tt)$	Identical as 47
74	$T(tg^+g^-t)G^\pm(tg^+g^-g^\mp)G^\pm(tg^-tg^\mp)$	Identical as 53
75	$T(tg^+g^-t)G^\pm(tg^+g^-g^\mp)G^\pm(ttg^+g^\pm)$	Identical as 59
76	$T(tg^+g^-t)G^\pm(tg^+g^-g^\mp)G^\pm(ttg^+t)$	Identical as 65
77	$T(tg^+g^-t)G^\pm(tg^+g^-g^\mp)G^\pm(tg^+g^-t)$	Identical as 71
78	$T(tg^+g^-g^\mp)G^\pm(g^\pm tg^+t)G^\pm(tg^-tt)$	
79	$T(tg^+g^-g^\mp)G^\pm(g^\pm tg^+t)G^\pm(tg^-tg^\mp)$	
80	$T(tg^+g^-g^\mp)G^\pm(g^\pm tg^+t)G^\pm(ttg^+g^\pm)$	
81	$T(tg^+g^-g^\mp)G^\pm(g^\pm tg^+t)G^\pm(ttg^+t)$	

82	$T(tg^+g^-g^{\bar{+}})G^{\pm}(g^{\pm}tg^+t)G^{\pm}(tg^+g^-t)$	
83	$T(tg^+g^-g^{\bar{+}})G^{\pm}(g^{\pm}tg^+t)G^{\pm}(tg^+g^-g^{\bar{+}})$	
84	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^-tt)G^{\pm}(g^{\pm}tg^+t)$	Identical as 78
85	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^-tt)G^{\pm}(tg^-tg^{\bar{+}})$	
86	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^-tt)G^{\pm}(ttg^+g^{\pm})$	
87	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^-tt)G^{\pm}(ttg^+t)$	
88	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^-tt)G^{\pm}(tg^+g^-t)$	
89	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^-tt)G^{\pm}(tg^+g^-g^{\bar{+}})$	
90	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^-tg^{\bar{+}})G^{\pm}(g^{\pm}tg^+t)$	Identical as 79
91	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^-tg^{\bar{+}})G^{\pm}(tg^-tt)$	Identical as 85
92	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^-tg^{\bar{+}})G^{\pm}(ttg^+g^{\pm})$	
93	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^-tg^{\bar{+}})G^{\pm}(ttg^+t)$	
94	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^-tg^{\bar{+}})G^{\pm}(tg^+g^-t)$	
95	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^-tg^{\bar{+}})G^{\pm}(tg^+g^-g^{\bar{+}})$	
96	$T(tg^+g^-g^{\bar{+}})G^{\pm}(ttg^+g^{\pm})G^{\pm}(g^{\pm}tg^+t)$	Identical as 80
97	$T(tg^+g^-g^{\bar{+}})G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^-tt)$	Identical as 86
98	$T(tg^+g^-g^{\bar{+}})G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^-tg^{\bar{+}})$	Identical as 92
99	$T(tg^+g^-g^{\bar{+}})G^{\pm}(ttg^+g^{\pm})G^{\pm}(ttg^+t)$	
100	$T(tg^+g^-g^{\bar{+}})G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^+g^-t)$	
101	$T(tg^+g^-g^{\bar{+}})G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^+g^-g^{\bar{+}})$	
102	$T(tg^+g^-g^{\bar{+}})G^{\pm}(ttg^+t)G^{\pm}(g^{\pm}tg^+t)$	Identical as 81
103	$T(tg^+g^-g^{\bar{+}})G^{\pm}(ttg^+t)G^{\pm}(tg^-tt)$	Identical as 87
104	$T(tg^+g^-g^{\bar{+}})G^{\pm}(ttg^+t)G^{\pm}(tg^-tg^{\bar{+}})$	Identical as 93
105	$T(tg^+g^-g^{\bar{+}})G^{\pm}(ttg^+t)G^{\pm}(ttg^+g^{\pm})$	Identical as 99
106	$T(tg^+g^-g^{\bar{+}})G^{\pm}(ttg^+t)G^{\pm}(tg^+g^-t)$	
107	$T(tg^+g^-g^{\bar{+}})G^{\pm}(ttg^+t)G^{\pm}(tg^+g^-g^{\bar{+}})$	
108	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^+g^-t)G^{\pm}(g^{\pm}tg^+t)$	Identical as 82
109	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^+g^-t)G^{\pm}(tg^-tt)$	Identical as 88
110	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^+g^-t)G^{\pm}(tg^-tg^{\bar{+}})$	Identical as 94
111	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^+g^-t)G^{\pm}(ttg^+g^{\pm})$	Identical as 100
112	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^+g^-t)G^{\pm}(ttg^+t)$	Identical as 106
113	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^+g^-t)G^{\pm}(tg^+g^-g^{\bar{+}})$	
114	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^+g^-g^{\bar{+}})G^{\pm}(g^{\pm}tg^+t)$	Identical as 83

115	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^+g^-g^{\bar{+}})G^{\pm}(tg^{-}tt)$	Identical as 89
116	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^+g^-g^{\bar{+}})G^{\pm}(tg^{-}tg^{\bar{+}})$	Identical as 95
117	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^+g^-g^{\bar{+}})G^{\pm}(ttg^+g^{\pm})$	Identical as 101
118	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^+g^-g^{\bar{+}})G^{\pm}(ttg^+t)$	Identical as 107
119	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^+g^-g^{\bar{+}})G^{\pm}(tg^+g^{-}t)$	Identical as 113
120	$T(ttg^+t)G^{\pm}(g^{\pm}tg^+t)G^{\pm}(tg^{-}tt)$	
121	$T(ttg^+t)G^{\pm}(g^{\pm}tg^+t)G^{\pm}(tg^{-}tg^{\bar{+}})$	
122	$T(ttg^+t)G^{\pm}(g^{\pm}tg^+t)G^{\pm}(ttg^+g^{\pm})$	
123	$T(ttg^+t)G^{\pm}(g^{\pm}tg^+t)G^{\pm}(ttg^+t)$	
124	$T(ttg^+t)G^{\pm}(g^{\pm}tg^+t)G^{\pm}(tg^+g^{-}t)$	
125	$T(ttg^+t)G^{\pm}(g^{\pm}tg^+t)G^{\pm}(tg^+g^-g^{\bar{+}})$	
126	$T(ttg^+t)G^{\pm}(tg^{-}tt)G^{\pm}(g^{\pm}tg^+t)$	Identical as 120
127	$T(ttg^+t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\bar{+}})$	
128	$T(ttg^+t)G^{\pm}(tg^{-}tt)G^{\pm}(ttg^+g^{\pm})$	
129	$T(ttg^+t)G^{\pm}(tg^{-}tt)G^{\pm}(ttg^+t)$	
130	$T(ttg^+t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^+g^{-}t)$	
131	$T(ttg^+t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^+g^-g^{\bar{+}})$	
132	$T(ttg^+t)G^{\pm}(tg^{-}tg^{\bar{+}})G^{\pm}(g^{\pm}tg^+t)$	Identical as 121
133	$T(ttg^+t)G^{\pm}(tg^{-}tg^{\bar{+}})G^{\pm}(tg^{-}tt)$	Identical as 127
134	$T(ttg^+t)G^{\pm}(tg^{-}tg^{\bar{+}})G^{\pm}(ttg^+g^{\pm})$	
135	$T(ttg^+t)G^{\pm}(tg^{-}tg^{\bar{+}})G^{\pm}(ttg^+t)$	
136	$T(ttg^+t)G^{\pm}(tg^{-}tg^{\bar{+}})G^{\pm}(tg^+g^{-}t)$	
137	$T(ttg^+t)G^{\pm}(tg^{-}tg^{\bar{+}})G^{\pm}(tg^+g^-g^{\bar{+}})$	
138	$T(ttg^+t)G^{\pm}(ttg^+g^{\pm})G^{\pm}(g^{\pm}tg^+t)$	Identical as 122
139	$T(ttg^+t)G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^{-}tt)$	Identical as 128
140	$T(ttg^+t)G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^{-}tg^{\bar{+}})$	Identical as 134
141	$T(ttg^+t)G^{\pm}(ttg^+g^{\pm})G^{\pm}(ttg^+t)$	
142	$T(ttg^+t)G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^+g^{-}t)$	
143	$T(ttg^+t)G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^+g^-g^{\bar{+}})$	
144	$T(ttg^+t)G^{\pm}(ttg^+t)G^{\pm}(g^{\pm}tg^+t)$	Identical as 123
145	$T(ttg^+t)G^{\pm}(ttg^+t)G^{\pm}(tg^{-}tt)$	Identical as 129
146	$T(ttg^+t)G^{\pm}(ttg^+t)G^{\pm}(tg^{-}tg^{\bar{+}})$	Identical as 135
147	$T(ttg^+t)G^{\pm}(ttg^+t)G^{\pm}(ttg^+g^{\pm})$	Identical as 141

148	$T(ttg^+t)G^\pm(ttg^+t)G^\pm(tg^+g^-t)$	
149	$T(ttg^+t)G^\pm(ttg^+t)G^\pm(tg^+g^-g^\mp)$	
150	$T(ttg^+t)G^\pm(tg^+g^-t)G^\pm(g^\pm tg^+t)$	Identical as 124
151	$T(ttg^+t)G^\pm(tg^+g^-t)G^\pm(tg^-tt)$	Identical as 130
152	$T(ttg^+t)G^\pm(tg^+g^-t)G^\pm(tg^-tg^\mp)$	Identical as 136
153	$T(ttg^+t)G^\pm(tg^+g^-t)G^\pm(ttg^+g^\pm)$	Identical as 142
154	$T(ttg^+t)G^\pm(tg^+g^-t)G^\pm(ttg^+t)$	Identical as 148
155	$T(ttg^+t)G^\pm(tg^+g^-t)G^\pm(tg^+g^-g^\mp)$	
156	$T(ttg^+t)G^\pm(tg^+g^-g^\mp)G^\pm(g^\pm tg^+t)$	Identical as 125
157	$T(ttg^+t)G^\pm(tg^+g^-g^\mp)G^\pm(tg^-tt)$	Identical as 131
158	$T(ttg^+t)G^\pm(tg^+g^-g^\mp)G^\pm(tg^-tg^\mp)$	Identical as 137
159	$T(ttg^+t)G^\pm(tg^+g^-g^\mp)G^\pm(ttg^+g^\pm)$	Identical as 143
160	$T(ttg^+t)G^\pm(tg^+g^-g^\mp)G^\pm(ttg^+t)$	Identical as 149
161	$T(ttg^+t)G^\pm(tg^+g^-g^\mp)G^\pm(tg^+g^-t)$	Identical as 155
162	$T(tg^-tt)G^\pm(g^\pm tg^+t)G^\pm(tg^-tt)$	
163	$T(tg^-tt)G^\pm(g^\pm tg^+t)G^\pm(tg^-tg^\mp)$	
164	$T(tg^-tt)G^\pm(g^\pm tg^+t)G^\pm(ttg^+g^\pm)$	
165	$T(tg^-tt)G^\pm(g^\pm tg^+t)G^\pm(ttg^+t)$	
166	$T(tg^-tt)G^\pm(g^\pm tg^+t)G^\pm(tg^+g^-t)$	
167	$T(tg^-tt)G^\pm(g^\pm tg^+t)G^\pm(tg^+g^-g^\mp)$	
168	$T(tg^-tt)G^\pm(tg^-tt)G^\pm(g^\pm tg^+t)$	Identical as 162
169	$T(tg^-tt)G^\pm(tg^-tt)G^\pm(tg^-tg^\mp)$	
170	$T(tg^-tt)G^\pm(tg^-tt)G^\pm(ttg^+g^\pm)$	
171	$T(tg^-tt)G^\pm(tg^-tt)G^\pm(ttg^+t)$	
172	$T(tg^-tt)G^\pm(tg^-tt)G^\pm(tg^+g^-t)$	
173	$T(tg^-tt)G^\pm(tg^-tt)G^\pm(tg^+g^-g^\mp)$	
174	$T(tg^-tt)G^\pm(tg^-tg^\mp)G^\pm(g^\pm tg^+t)$	Identical as 163
175	$T(tg^-tt)G^\pm(tg^-tg^\mp)G^\pm(tg^-tt)$	Identical as 169
176	$T(tg^-tt)G^\pm(tg^-tg^\mp)G^\pm(ttg^+g^\pm)$	
177	$T(tg^-tt)G^\pm(tg^-tg^\mp)G^\pm(ttg^+t)$	
178	$T(tg^-tt)G^\pm(tg^-tg^\mp)G^\pm(tg^+g^-t)$	
179	$T(tg^-tt)G^\pm(tg^-tg^\mp)G^\pm(tg^+g^-g^\mp)$	
180	$T(tg^-tt)G^\pm(ttg^+g^\pm)G^\pm(g^\pm tg^+t)$	Identical as 164

181	$T(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tt)$	Identical as 170
182	$T(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tg^{\mp})$	Identical as 176
183	$T(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)$	
184	$T(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}t)$	
185	$T(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}g^{\mp})$	
186	$T(tg^{-}tt)G^{\pm}(ttg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 165
187	$T(tg^{-}tt)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tt)$	Identical as 171
188	$T(tg^{-}tt)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})$	Identical as 177
189	$T(tg^{-}tt)G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 183
190	$T(tg^{-}tt)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}t)$	
191	$T(tg^{-}tt)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	
192	$T(tg^{-}tt)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 166
193	$T(tg^{-}tt)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tt)$	Identical as 172
194	$T(tg^{-}tt)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tg^{\mp})$	Identical as 178
195	$T(tg^{-}tt)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 184
196	$T(tg^{-}tt)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}t)$	Identical as 190
197	$T(tg^{-}tt)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	
198	$T(tg^{-}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 167
199	$T(tg^{-}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tt)$	Identical as 173
200	$T(tg^{-}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	Identical as 179
201	$T(tg^{-}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(ttg^{+}g^{\pm})$	Identical as 185
202	$T(tg^{-}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(ttg^{+}t)$	Identical as 191
203	$T(tg^{-}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}t)$	Identical as 197
204	$T(tg^{-}tg^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tt)$	
205	$T(tg^{-}tg^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tg^{\mp})$	
206	$T(tg^{-}tg^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}g^{\pm})$	
207	$T(tg^{-}tg^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}t)$	
208	$T(tg^{-}tg^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}t)$	
209	$T(tg^{-}tg^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	
210	$T(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 204
211	$T(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})$	
212	$T(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})$	
213	$T(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)$	

214	$T(tg^{-}tg^{\overline{+}})G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}t)$	
215	$T(tg^{-}tg^{\overline{+}})G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}g^{\overline{+}})$	
216	$T(tg^{-}tg^{\overline{+}})G^{\pm}(tg^{-}tg^{\overline{+}})G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 205
217	$T(tg^{-}tg^{\overline{+}})G^{\pm}(tg^{-}tg^{\overline{+}})G^{\pm}(tg^{-}tt)$	Identical as 211
218	$T(tg^{-}tg^{\overline{+}})G^{\pm}(tg^{-}tg^{\overline{+}})G^{\pm}(ttg^{+}g^{\pm})$	
219	$T(tg^{-}tg^{\overline{+}})G^{\pm}(tg^{-}tg^{\overline{+}})G^{\pm}(ttg^{+}t)$	
220	$T(tg^{-}tg^{\overline{+}})G^{\pm}(tg^{-}tg^{\overline{+}})G^{\pm}(tg^{+}g^{-}t)$	
221	$T(tg^{-}tg^{\overline{+}})G^{\pm}(tg^{-}tg^{\overline{+}})G^{\pm}(tg^{+}g^{-}g^{\overline{+}})$	
222	$T(tg^{-}tg^{\overline{+}})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 206
223	$T(tg^{-}tg^{\overline{+}})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tt)$	Identical as 212
224	$T(tg^{-}tg^{\overline{+}})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tg^{\overline{+}})$	Identical as 218
225	$T(tg^{-}tg^{\overline{+}})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)$	
226	$T(tg^{-}tg^{\overline{+}})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}t)$	
227	$T(tg^{-}tg^{\overline{+}})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}g^{\overline{+}})$	
228	$T(tg^{-}tg^{\overline{+}})G^{\pm}(ttg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 207
229	$T(tg^{-}tg^{\overline{+}})G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tt)$	Identical as 213
230	$T(tg^{-}tg^{\overline{+}})G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tg^{\overline{+}})$	Identical as 219
231	$T(tg^{-}tg^{\overline{+}})G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 225
232	$T(tg^{-}tg^{\overline{+}})G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}t)$	
233	$T(tg^{-}tg^{\overline{+}})G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\overline{+}})$	
234	$T(tg^{-}tg^{\overline{+}})G^{\pm}(tg^{+}g^{-}t)G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 208
235	$T(tg^{-}tg^{\overline{+}})G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tt)$	Identical as 214
236	$T(tg^{-}tg^{\overline{+}})G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tg^{\overline{+}})$	Identical as 220
237	$T(tg^{-}tg^{\overline{+}})G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}g^{\pm})$	Identical as 226
238	$T(tg^{-}tg^{\overline{+}})G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}t)$	Identical as 232
239	$T(tg^{-}tg^{\overline{+}})G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}g^{\overline{+}})$	
240	$T(tg^{-}tg^{\overline{+}})G^{\pm}(tg^{+}g^{-}g^{\overline{+}})G^{\pm}(g^{\pm}tg^{+}t)$	Identical as 209
241	$T(tg^{-}tg^{\overline{+}})G^{\pm}(tg^{+}g^{-}g^{\overline{+}})G^{\pm}(tg^{-}tt)$	Identical as 215
242	$T(tg^{-}tg^{\overline{+}})G^{\pm}(tg^{+}g^{-}g^{\overline{+}})G^{\pm}(tg^{-}tg^{\overline{+}})$	Identical as 221
243	$T(tg^{-}tg^{\overline{+}})G^{\pm}(tg^{+}g^{-}g^{\overline{+}})G^{\pm}(ttg^{+}g^{\pm})$	Identical as 227
244	$T(tg^{-}tg^{\overline{+}})G^{\pm}(tg^{+}g^{-}g^{\overline{+}})G^{\pm}(ttg^{+}t)$	Identical as 233
245	$T(tg^{-}tg^{\overline{+}})G^{\pm}(tg^{+}g^{-}g^{\overline{+}})G^{\pm}(tg^{+}g^{-}t)$	Identical as 239

Table S3. Conformations of 1-methyl butyl dimethyl phosphate (DM1MBP) calculated at B3LYP level of theory with 6-311++G(d,p) basis set.

S. No.	Conformer	Energy (Hartrees)	Relative energy (kcal/mol)
1	$G^+(g^-tg^+t)G^+G^+$	-919.270935	0
2	$G^+(g^+ttt)G^+G^+$	-919.269666	0.80
3	$G^+(g^-tg^+g^+)G^+G^+$	-919.269601	0.84
4	$G^+(tg^+g^+t)G^+G^+$	-919.269101	1.15
5	$G^+(g^-tg^+t)G^+G^+$	-919.269102	1.15
6	$G^+(g^+ttg^+)G^+G^+$	-919.26809	1.79
7	$G^+(g^-tg^+g^+)G^+G^+$	-919.267781	1.98
8	$G^+(tg^+g^+g^+)G^+G^+$	-919.266434	2.82
9	$G^+(g^-tg^+g^+)G^+G^+$	-919.266179	2.98
10	$G^+(g^+ttg^-)G^+G^+$	-919.265869	3.18
11	$G^+(tg^+tg^+)G^+G^+$	-919.265703	3.28
12	$G^+(tg^+tg^+)G^+G^+$	-919.265703	3.28
13	$G^+(tg^+g^+g^+)G^+G^+$	-919.265509	3.40
14	$G^+(g^-tg^+g^+)G^+G^+$	-919.265376	3.49
15	$G^+(tg^+tt)G^+G^+$	Interconverted to $G^+(g^+ttt)G^+G^+$	

Table S4. Conformations of 2-methyl butyl dimethyl phosphate (DM2MBP) calculated at B3LYP level of theory with 6-311++G(d,p) basis set.

S. No.	Conformer	Energy (Hartrees)	Relative energy (kcal/mol)
1	$G^{\pm}(tg^{-}tt)G^{\pm}G^{\pm}$	-919.265324	0.00
2	$G^{\pm}(ttg^{+}t)G^{\pm}G^{\pm}$	-919.265233	0.06
3	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}G^{\pm}$	-919.265161	0.10
4	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}G^{\pm}$	-919.264961	0.23
5	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}G^{\pm}$	-919.264805	0.33
6	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}G^{\pm}$	-919.264654	0.42
7	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}G^{\pm}$	-919.263968	0.85
8	$G^{\pm}(tg^{-}tg^{\pm})G^{\pm}G^{\pm}$	-919.263585	1.09
9	$G^{\pm}(g^{\pm}g^{+}g^{-}g^{\mp})G^{\pm}G^{\pm}$	-919.263586	1.09
10	$G^{\pm}(g^{\pm}g^{+}g^{-}t)G^{\pm}G^{\pm}$	-919.263320	1.26
11	$G^{\pm}(g^{\pm}tg^{-}g^{\pm})G^{\pm}G^{\pm}$	-919.263161	1.36
12	$G^{\pm}(ttg^{+}g^{\mp})G^{\pm}G^{\pm}$	-919.263023	1.44
13	$G^{\pm}(g^{\pm}tg^{+}g^{\mp})G^{\pm}G^{\pm}$	-919.262780	1.60
14	$G^{\pm}(tg^{+}g^{-}g^{\pm})G^{\pm}G^{\pm}$	-919.262246	1.93
15	$G^{\pm}(g^{\pm}g^{-}tg^{\pm})G^{\pm}G^{\pm}$	<i>optimized to $G^{\pm}(tg^{-}tg^{\pm})G^{\pm}G^{\pm}$</i>	
16	$G^{\pm}(g^{\pm}g^{+}g^{-}g^{\pm})G^{\pm}G^{\pm}$	<i>optimized to $G^{\pm}(tg^{+}g^{-}g^{\pm})G^{\pm}G^{\pm}$</i>	
17	$G^{\pm}(g^{\pm}g^{-}tt)G^{\pm}G^{\pm}$	<i>optimized to $G^{\pm}(tg^{-}tt)G^{\pm}G^{\pm}$</i>	
18	$G^{\pm}(g^{\pm}g^{-}tg^{\mp})G^{\pm}G^{\pm}$	<i>optimized to $G^{\pm}(tg^{-}tg^{\mp})G^{\pm}G^{\pm}$</i>	

Table S5. Conformations of 3-methyl butyl dimethyl phosphate (DM3MBP) or iso-amyl dimethyl phosphate calculated at B3LYP level of theory with 6-311++G(d,p) basis set.

S. No.	Conformer	Energy (Hartrees)	Relative energy (kcal/mol)
1	$G^+(tg^{\bar{+}}g^+t)G^+G^+$	-919.265697	0
2	$G^+(tg^+tg^+)G^+G^+$	-919.265558	0.09
3	$G^+(ttg^+t)G^+G^+$	-919.265199	0.31
4	$G^+(tttg^+)G^+G^+$	-919.265125	0.36
5	$G^+(g^+g^+tg^+)G^+G^+$	-919.264882	0.51
6	$G^+(g^+ttg^+)G^+G^+$	-919.264273	0.89
7	$G^+(tg^{\bar{+}}tg^+)G^+G^+$	-919.264207	0.93
8	$G^+(g^+tg^+t)G^+G^+$	-919.264084	1.01
9	$G^+(tg^+g^+t)G^+G^+$	-919.263688	1.26
10	$G^+(ttg^+g^+)G^+G^+$	-919.263257	1.53
11	$G^+(tg^{\bar{+}}g^+g^+)G^+G^+$	-919.262633	1.92
12	$G^+(g^+tg^+g^+)G^+G^+$	-919.26238	2.08
13	$G^+(tg^+g^+g^+)G^+G^+$	-919.26223	2.18
14	$G^+(g^+g^+g^+g^+)G^+G^+$	-919.261952	2.35
15	$G^+(g^+g^{\bar{+}}tg^+)G^+G^+$	interconverted to $G^+(tg^{\bar{+}}tg^+)G^+G^+$	
16	$G^+(g^+g^{\bar{+}}g^+g^+)G^+G^+$	interconverted to $G^+(tg^{\bar{+}}g^+g^+)G^+G^+$	
17	$G^+(g^+g^{\bar{+}}g^+t)G^+G^+$	interconverted to $G^+(tg^{\bar{+}}g^+t)G^+G^+$	
18	$G^+(g^+g^+g^+t)G^+G^+$	interconverted to $G^+(tg^+g^+t)G^+G^+$	

Table S6. Conformations of 4-methyl butyl dimethyl phosphate (DM4MBP) or dimethyl amyl phosphate (DMAmP) calculated at B3LYP level of theory with 6-311++G(d,p) basis set.

S. No.	Conformer	Energy (Hartrees)	Relative energy (kcal/mol)
1	G [±] (tg [∓] tt)G [±] G [±]	-919.265525	0
2	G [±] (tttt)G [±] G [±]	-919.265519	0.00
3	G [±] (tg [±] tt)G [±] G [±]	-919.265415	0.07
4	G [±] (g [±] g [±] tt)G [±] G [±]	-919.264865	0.41
5	G [±] (g [±] ttt)G [±] G [±]	-919.264356	0.51
6	G [±] (tg [∓] g [∓] t)G [±] G [±]	-919.264356	0.73
7	G [±] (tg [∓] tg [±])G [±] G [±]	-919.264208	0.83
8	G [±] (tg [±] g [±] t)G [±] G [±]	-919.264199	0.83
9	G [±] (ttg [∓] t)G [±] G [±]	-919.26411	0.89
10	G [±] (tg [∓] tg [∓])G [±] G [±]	-919.264027	0.94
11	G [±] (tttg [∓])G [±] G [±]	-919.263994	0.96
12	G [±] (ttg [±] t)G [±] G [±]	-919.263977	0.97
13	G [±] (tg [±] tg [∓])G [±] G [±]	-919.263975	0.97
14	G [±] (tttg [±])G [±] G [±]	-919.263967	0.98
15	G [±] (tg [±] tg [±])G [±] G [±]	-919.263919	1.01
16	G [±] (g [±] g [±] g [±] t)G [±] G [±]	-919.263467	1.29
17	G [±] (g [±] g [±] tg [±])G [±] G [±]	-919.263321	1.38
18	G [±] (tg [∓] g [±] t)G [±] G [±]	-919.263305	1.39
19	G [±] (g [±] g [±] tg [∓])G [±] G [±]	-919.263292	1.40
20	G [±] (g [±] ttg [±])G [±] G [±]	-919.263158	1.49
21	G [±] (g [±] tg [±] t)G [±] G [±]	-919.263150	1.49
22	G [±] (g [±] ttg [∓])G [±] G [±]	-919.263130	1.50
23	G [±] (g [±] tg [∓] t)G [±] G [±]	-919.263030	1.57
24	G [±] (g [±] g [∓] g [∓] t)G [±] G [±]	-919.262972	1.60
25	G [±] (tg [∓] g [∓] g [∓])G [±] G [±]	-919.262971	1.60
26	G [±] (tg [±] g [±] g [±])G [±] G [±]	-919.262772	1.73
27	G [±] (tg [±] g [∓] t)G [±] G [±]	-919.262720	1.76
28	G [±] (ttg [∓] g [∓])G [±] G [±]	-919.262598	1.84
29	G [±] (g [±] g [±] g [∓] t)G [±] G [±]	-919.262417	1.95
30	G [±] (ttg [±] g [±])G [±] G [±]	-919.262406	1.96
31	G [±] (g [±] g [±] g [±] g [±])G [±] G [±]	-919.262029	2.19
32	G [±] (tg [∓] g [±] g [±])G [±] G [±]	-919.261909	2.27
33	G [±] (g [±] tg [±] g [±])G [±] G [±]	-919.261556	2.49
34	G [±] (g [±] tg [∓] g [∓])G [±] G [±]	-919.261538	2.50
35	G [±] (tg [±] g [∓] g [∓])G [±] G [±]	-919.261513	2.52
36	G [±] (g [±] g [∓] g [∓] g [∓])G [±] G [±]	-919.261464	2.55
37	G [±] (ttg [∓] g [±])G [±] G [±]	-919.260415	3.21

38	$G^\pm(tg^\mp g^\mp g^\pm)G^\pm G^\pm$	-919.260374	3.23
39	$G^\pm(ttg^\pm g^\mp)G^\pm G^\pm$	-919.260344	3.25
40	$G^\pm(tg^\pm g^\pm g^\mp)G^\pm G^\pm$	-919.260317	3.27
41	$G^\pm(g^\pm tg^\pm g^\mp)G^\pm G^\pm$	-919.259767	3.61
42	$G^\pm(g^\pm g^\pm g^\pm g^\mp)G^\pm G^\pm$	-919.259584	3.73
43	$G^\pm(g^\pm tg^\mp g^\pm)G^\pm G^\pm$	-919.259099	4.03
44	$G^\pm(tg^\mp g^\pm g^\mp)G^\pm G^\pm$	-919.259075	4.05
45	$G^\pm(g^\pm g^\mp g^\mp g^\pm)G^\pm G^\pm$	-919.258449	4.44
46	$G^\pm(g^\pm g^\pm g^\mp g^\pm)G^\pm G^\pm$	-919.258445	4.44
47	$G^\pm(tg^\pm g^\mp g^\pm)G^\pm G^\pm$	-919.258337	4.51
48	$G^\pm(g^\pm g^\mp g^\mp g^\pm)G^\pm G^\pm$	<i>interconverted to $G^\pm(g^\pm g^\mp g^\pm t)G^\pm G^\pm$</i>	
49	$G^\pm(g^\pm g^\mp g^\mp t)G^\pm G^\pm$	<i>interconverted to $G^\pm(g^\pm tg^\pm t)G^\pm G^\pm$</i>	
50	$G^\pm(g^\pm g^\mp tg^\pm)G^\pm G^\pm$	<i>interconverted to $G^\pm(tg^\mp tg^\pm)G^\pm G^\pm$</i>	
51	$G^\pm(g^\pm g^\mp tg^\mp)G^\pm G^\pm$	<i>interconverted to $G^\pm(tg^\mp tg^\mp)G^\pm G^\pm$</i>	
52	$G^\pm(g^\pm g^\mp tt)G^\pm G^\pm$	<i>interconverted to $G^\pm(tg^\mp tt)G^\pm G^\pm$</i>	

Table S7. Infrared Vibrational wavenumber (cm⁻¹) in the P=O stretching + CH₂ twisting mixed mode along with intensity calculated at B3LYP level of theory with 6-311++G(d,p) basis set.

S. No.	Structure of conformers	Infrared vibrational wavenumber (cm ⁻¹)	Scaled Infrared vibrational wavenumber (cm ⁻¹)	Intensity (km/mol)
G[±](wxyz)G[±](wxyz)G[±](wxyz)cluster				
1	G [±] (tg ⁺ tg ⁺)G [±] (tg ⁺ tt)G [±] (tg ⁺ tt)	1293.1	1314.7	127.0
2	G [±] (tg ⁺ tg ⁺)G [±] (tg ⁺ g ⁺ t)G [±] (tg ⁺ g ⁺ g ⁺)	1254.8	1275.8	202.5
3	G [±] (ttg ⁺ t)G [±] (tg ⁺ tt)G [±] (tg ⁺ tt)	1255.3	1276.3	172.4
4	G [±] (tg ⁺ tt)G [±] (tg ⁺ tg ⁺)G [±] (tg ⁺ tg ⁺)	1255.3	1276.3	192.4
5	G [±] (tg ⁺ tt)G [±] (ttg ⁺ t)G [±] (ttg ⁺ t)	1253.7	1274.6	150.9
6	G [±] (tg ⁺ tt)G [±] (ttg ⁺ t)G [±] (tg ⁺ g ⁺ g ⁺)	1254.2	1275.1	177.0
7	G [±] (tg ⁺ tt)G [±] (tg ⁺ tt)G [±] (tg ⁺ tt)	1256.0	1277	194.0
8	G [±] (tg ⁺ g ⁺ t)G [±] (tg ⁺ tt)G [±] (tg ⁺ tt)	1255.7	1276.7	198.8
9	G [±] (ttg ⁺ t)G [±] (ttg ⁺ t)G [±] (ttg ⁺ t)	1234.2	1254.8	179.2
10	G [±] (tg ⁺ tt)G [±] (tg ⁺ tg ⁺)G [±] (tg ⁺ g ⁺ t)	1254.9	1275.9	197.1
11	G [±] (tg ⁺ g ⁺ g ⁺)G [±] (tg ⁺ g ⁺ g ⁺)G [±] (tg ⁺ g ⁺ g ⁺)	1254.6	1275.6	210.3
12	G [±] (ttg ⁺ t)G [±] (tg ⁺ tg ⁺)G [±] (tg ⁺ tg ⁺)	1254.2	1275.1	172.6
13	G [±] (tg ⁺ g ⁺ t)G [±] (tg ⁺ tg ⁺)G [±] (tg ⁺ tg ⁺)	1254.8	1275.8	196.1
14	G [±] (tg ⁺ tt)G [±] (tg ⁺ g ⁺ g ⁺)G [±] (tg ⁺ g ⁺ g ⁺)	1254.5	1275.5	204.1
15	G [±] (tg ⁺ tg ⁺)G [±] (ttg ⁺ t)G [±] (tg ⁺ g ⁺ g ⁺)	1265.8	1286.9	63.1
16	G [±] (tg ⁺ g ⁺ g ⁺)G [±] (ttg ⁺ t)G [±] (ttg ⁺ t)	1253.2	1274.1	156.4
17	G [±] (tg ⁺ tt)G [±] (tg ⁺ tg ⁺)G [±] (tg ⁺ g ⁺ g ⁺)	1255.4	1276.4	198.4
18	G [±] (g ⁺ tg ⁺ t)G [±] (tg ⁺ tg ⁺)G [±] (ttg ⁺ t)	1251.7	1272.6	172.3
19	G [±] (g ⁺ tg ⁺ t)G [±] (tg ⁺ tt)G [±] (tg ⁺ tt)	1253.4	1274.3	193.2
20	G [±] (tg ⁺ tg ⁺)G [±] (ttg ⁺ t)G [±] (ttg ⁺ t)	1253.9	1274.8	162.9
21	G [±] (tg ⁺ g ⁺ g ⁺)G [±] (tg ⁺ tt)G [±] (tg ⁺ tt)	1255.6	1276.6	198.7
22	G [±] (tg ⁺ tg ⁺)G [±] (tg ⁺ g ⁺ g ⁺)G [±] (tg ⁺ g ⁺ g ⁺)	1254.7	1275.7	202.0
23	G [±] (ttg ⁺ g ⁺)G [±] (tg ⁺ tt)G [±] (tg ⁺ tt)	1253.9	1274.8	179.6
24	G [±] (ttg ⁺ t)G [±] (tg ⁺ g ⁺ t)G [±] (tg ⁺ g ⁺ t)	1253.6	1274.5	180.8
25	G [±] (tg ⁺ tt)G [±] (tg ⁺ tg ⁺)G [±] (ttg ⁺ t)	1254.2	1275.1	170.8
26	G [±] (g ⁺ tg ⁺ t)G [±] (ttg ⁺ t)G [±] (tg ⁺ g ⁺ t)	1251.9	1272.8	182.4

27	$G^{\pm}(g^{\pm}tg^{\pm}t)G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{\pm}t)$	1252.5	1273.4	177.4
28	$G^{\pm}(tg^{-}tt)G^{\pm}(g^{\pm}tg^{\pm}t)G^{\pm}(g^{\pm}tg^{\pm}t)$	1250.7	1271.6	188.9
29	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{\pm}t)G^{\pm}(tg^{\pm}g^{-}t)$	1254.6	1275.6	180.2
30	$G^{\pm}(g^{\pm}tg^{\pm}t)G^{\pm}(ttg^{\pm}t)G^{\pm}(ttg^{\pm}t)$	1252.0	1272.9	165.9
31	$G^{\pm}(g^{\pm}tg^{\pm}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{\pm}g^{-}g^{\mp})$	1252.9	1273.8	197.0
32	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{\pm}t)G^{\pm}(tg^{\pm}g^{-}t)$	1254.4	1275.3	176.7
33	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	1186.7	1206.5	36.8
34	$G^{\pm}(tg^{\pm}g^{-}t)G^{\pm}(ttg^{\pm}t)G^{\pm}(ttg^{\pm}t)$	1253.3	1274.2	164.5
35	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{\pm}g^{\pm})G^{\pm}(ttg^{\pm}t)$	1253.5	1274.4	164.9
36	$G^{\pm}(g^{\pm}tg^{\pm}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{\pm}g^{-}t)$	1252.2	1273.1	196.2
37	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{\pm}g^{-}t)G^{\pm}(tg^{\pm}g^{-}t)$	1254.2	1275.1	201.4
38	$G^{\pm}(tg^{\pm}g^{-}g^{\mp})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	1254.3	1275.2	197.1
39	$G^{\pm}(ttg^{\pm}t)G^{\pm}(tg^{\pm}g^{-}t)G^{\pm}(tg^{\pm}g^{-}g^{\mp})$	1253.8	1274.7	185.7
40	$G^{\pm}(g^{\pm}tg^{\pm}t)G^{\pm}(tg^{\pm}g^{-}g^{\mp})G^{\pm}(tg^{\pm}g^{-}g^{\mp})$	1252.3	1273.2	204.1
41	$G^{\pm}(g^{\pm}tg^{\pm}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})$	1252.3	1273.2	189.3
42	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{\pm}g^{-}t)G^{\pm}(tg^{\pm}g^{-}g^{\mp})$	1255.5	1276.5	202.0
43	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{\pm}g^{\pm})G^{\pm}(tg^{\pm}g^{-}t)$	1253.8	1274.7	184.6
44	$G^{\pm}(g^{\pm}tg^{\pm}t)G^{\pm}(ttg^{\pm}t)G^{\pm}(tg^{\pm}g^{-}g^{\mp})$	1252.0	1272.9	182.0
45	$G^{\pm}(g^{\pm}tg^{\pm}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	1252.8	1273.7	188.6
46	$G^{\pm}(g^{\pm}tg^{\pm}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{\pm}g^{-}g^{\mp})$	1252.3	1273.2	195.5
47	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{\pm}g^{\pm})$	1253.9	1274.8	177.1
48	$G^{\pm}(ttg^{\pm}t)G^{\pm}(tg^{\pm}g^{-}g^{\mp})G^{\pm}(tg^{\pm}g^{-}g^{\mp})$	1254.2	1275.1	181.4
49	$G^{\pm}(g^{\pm}tg^{\pm}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{\pm}g^{\pm})$	1251.6	1272.5	174.3
50	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{\pm}g^{\pm})G^{\pm}(tg^{\pm}g^{-}g^{\mp})$	1253.5	1274.4	178.3
51	$G^{\pm}(tg^{\pm}g^{-}g^{\mp})G^{\pm}(tg^{\pm}g^{-}t)G^{\pm}(tg^{\pm}g^{-}t)$	1254.3	1275.2	206.3
52	$G^{\pm}(tg^{\pm}g^{-}t)G^{\pm}(g^{\pm}tg^{\pm}t)G^{\pm}(g^{\pm}tg^{\pm}t)$	1250.1	1271	194.9
53	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{\pm}g^{\pm})G^{\pm}(tg^{\pm}g^{-}g^{\mp})$	1252.5	1273.4	175.2
54	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(g^{\pm}tg^{\pm}t)G^{\pm}(g^{\pm}tg^{\pm}t)$	1249.5	1270.4	182.6
55	$G^{\pm}(ttg^{\pm}g^{\pm})G^{\pm}(tg^{\pm}g^{-}g^{\mp})G^{\pm}(tg^{\pm}g^{-}g^{\mp})$	1253.7	1274.6	190.1
56	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{\pm}g^{\pm})G^{\pm}(ttg^{\pm}t)$	1253.1	1274	165.5
57	$G^{\pm}(g^{\pm}tg^{\pm}t)G^{\pm}(g^{\pm}tg^{\pm}t)G^{\pm}(g^{\pm}tg^{\pm}t)$	1293.2	1314.8	137.2
58	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{\pm}g^{-}t)G^{\pm}(tg^{\pm}g^{-}t)$	1254.5	1275.5	200.8

59	$G^{\pm}(ttg^+g^{\pm})G^{\pm}(ttg^+t)G^{\pm}(ttg^+t)$	1219.2	1239.6	177.7
60	$G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^-tg^{\mp})G^{\pm}(tg^-tg^{\mp})$	1253.7	1274.6	171.0
61	$G^{\pm}(tg^-tg^{\mp})G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^+g^-t)$	1253.6	1274.5	173.4
62	$G^{\pm}(g^{\pm}tg^+t)G^{\pm}(tg^-tt)G^{\pm}(ttg^+g^{\pm})$	1252.3	1273.2	175.4
63	$G^{\pm}(g^{\pm}tg^+t)G^{\pm}(tg^+g^-t)G^{\pm}(tg^+g^-t)$	1252.3	1273.2	201.5
64	$G^{\pm}(ttg^+t)G^{\pm}(g^{\pm}tg^+t)G^{\pm}(g^{\pm}tg^+t)$	1250.6	1271.5	177.3
65	$G^{\pm}(tg^+g^-t)G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-g^{\mp})$	1254.5	1275.5	207.6
66	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(g^{\pm}tg^+t)G^{\pm}(g^{\pm}tg^+t)$	1249.6	1270.5	194.2
67	$G^{\pm}(g^{\pm}tg^+t)G^{\pm}(tg^+g^-t)G^{\pm}(tg^+g^-g^{\mp})$	1252.3	1273.2	201.4
68	$G^{\pm}(ttg^+g^{\pm})G^{\pm}(ttg^+t)G^{\pm}(tg^+g^-t)$	1251.9	1272.8	163.7
69	$G^{\pm}(g^{\pm}tg^+t)G^{\pm}(tg^-tg^{\mp})G^{\pm}(tg^+g^-t)$	1252.3	1273.2	193.8
70	$G^{\pm}(tg^-tt)G^{\pm}(ttg^+g^{\pm})G^{\pm}(ttg^+g^{\pm})$	1251.9	1272.8	168.4
71	$G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^+g^-t)G^{\pm}(tg^+g^-t)$	1253.1	1274	188.2
72	$G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^+g^-t)G^{\pm}(tg^+g^-g^{\mp})$	1253.0	1273.9	188.9
73	$G^{\pm}(ttg^+t)G^{\pm}(ttg^+g^{\pm})G^{\pm}(ttg^+g^{\pm})$	1251.8	1272.7	149.1
74	$G^{\pm}(ttg^+g^{\pm})G^{\pm}(g^{\pm}tg^+t)G^{\pm}(g^{\pm}tg^+t)$	1249.8	1270.7	173.4
75	$G^{\pm}(tg^+g^-t)G^{\pm}(tg^+g^-t)G^{\pm}(tg^+g^-t)$	1270.9	1292.1	11.3
76	$G^{\pm}(ttg^+g^{\pm})G^{\pm}(ttg^+t)G^{\pm}(tg^+g^-g^{\mp})$	1253.3	1274.2	173.0
77	$G^{\pm}(g^{\pm}tg^+t)G^{\pm}(ttg^+g^{\pm})G^{\pm}(ttg^+t)$	1250.4	1271.3	158.3
78	$G^{\pm}(g^{\pm}tg^+t)G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^+g^-g^{\mp})$	1251.5	1272.4	185.1
79	$G^{\pm}(tg^-tg^{\mp})G^{\pm}(ttg^+g^{\pm})G^{\pm}(ttg^+g^{\pm})$	1251.8	1272.7	165.5
80	$G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(ttg^+g^{\pm})G^{\pm}(ttg^+g^{\pm})$	1252.0	1272.9	163.4
81	$G^{\pm}(tg^+g^-t)G^{\pm}(ttg^+g^{\pm})G^{\pm}(ttg^+g^{\pm})$	1252.3	1273.2	160.5
82	$G^{\pm}(g^{\pm}tg^+t)G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^+g^-t)$	1251.1	1272	182.9
83	$G^{\pm}(g^{\pm}tg^+t)G^{\pm}(ttg^+g^{\pm})G^{\pm}(ttg^+g^{\pm})$	1250.4	1271.3	165.7
84	$G^{\pm}(ttg^+g^{\pm})G^{\pm}(ttg^+g^{\pm})G^{\pm}(ttg^+g^{\pm})$	1263.5	1284.6	6.9
T(wxyz)G[±](wxyz)G[±](wxyz) cluster				
85	$T(ttg^+t)G^{\pm}(tg^-tg^{\mp})G^{\pm}(tg^-tg^{\mp})$	1280.5	1301.9	221.6
86	$T(ttg^+t)G^{\pm}(tg^-tt)G^{\pm}(tg^-tt)$	1281.7	1303.1	220.2
87	$T(ttg^+t)G^{\pm}(tg^-tt)G^{\pm}(tg^-tg^{\mp})$	1280.9	1302.3	223.8
88	$T(ttg^+t)G^{\pm}(tg^-tt)G^{\pm}(ttg^+t)$	1284.7	1306.2	204.9
89	$T(ttg^+t)G^{\pm}(ttg^+t)G^{\pm}(tg^-tg^{\mp})$	1284.1	1305.5	201.3

90	$T(ttg^+t)G^\pm(tg^+gt)G^\pm(ttg^+t)$	1284.8	1306.3	185.4
91	$T(ttg^+t)G^\pm(ttg^+t)G^\pm(ttg^+t)$	1286.1	1307.6	188.0
92	$T(tg^+gt)G^\pm(ttg^+t)G^\pm(tg^+tg^-)$	1283.4	1304.8	192.3
93	$T(tg^+g^-g^+)G^\pm(tg^-tt)G^\pm(tg^-tt)$	1280.7	1302.1	216.2
94	$T(tg^+g^-g^+)G^\pm(ttg^+t)G^\pm(ttg^+t)$	1284.6	1306.1	181.5
95	$T(tg^+g^-g^+)G^\pm(tg^-tg^-)G^\pm(tg^-tg^-)$	1280.2	1301.6	214.8
96	$T(ttg^+t)G^\pm(tg^-tt)G^\pm(g^+tg^+t)$	1276.4	1297.7	114.6
97	$T(ttg^+t)G^\pm(tg^-tg^-)G^\pm(tg^+g^-g^+)$	1281.3	1302.7	176.0
98	$T(tg^+g^-g^+)G^\pm(tg^-tt)G^\pm(tg^-tg^-)$	1280.6	1302	209.0
99	$T(tg^+gt)G^\pm(tg^-tt)G^\pm(tg^-tt)$	1281.1	1302.5	199.7
100	$T(ttg^+t)G^\pm(tg^+gt)G^\pm(tg^+g^-g^+)$	1282.5	1303.9	189.9
101	$T(ttg^+t)G^\pm(tg^-tt)G^\pm(tg^+gt)$	1283.2	1304.6	195.1
102	$T(ttg^+t)G^\pm(ttg^+t)G^\pm(ttg^+g^+)$	1283.9	1305.3	182.2
103	$T(tg^+gt)G^\pm(tg^-tt)G^\pm(tg^-tg^-)$	1280.5	1301.9	216.2
104	$T(ttg^+t)G^\pm(tg^-tt)G^\pm(tg^+g^-g^+)$	1282.0	1303.4	189.9
105	$T(tg^+gt)G^\pm(tg^-tt)G^\pm(ttg^+t)$	1284.0	1305.4	188.5
106	$T(ttg^+t)G^\pm(tg^+gt)G^\pm(tg^-tg^-)$	1282.6	1304	185.6
107	$T(ttg^+t)G^\pm(ttg^+t)G^\pm(tg^+g^-g^+)$	1282.9	1304.3	179.8
108	$T(tg^+g^-g^+)G^\pm(ttg^+t)G^\pm(tg^-tg^-)$	1283.8	1305.2	192.8
109	$T(tg^+gt)G^\pm(tg^-tg^-)G^\pm(tg^-tg^-)$	1280.5	1301.9	221.5
110	$T(tg^+g^-g^+)G^\pm(g^+tg^+t)G^\pm(tg^-tg^-)$	1274.3	1295.6	157.5
111	$T(tg^+gt)G^\pm(ttg^+t)G^\pm(ttg^+t)$	1285.4	1306.9	187.6
112	$T(ttg^+t)G^\pm(g^+tg^+t)G^\pm(ttg^+t)$	1277.8	1299.1	110.9
113	$T(tg^+g^-g^+)G^\pm(tg^-tt)G^\pm(g^+tg^+t)$	1274.8	1296.1	129.8
114	$T(tg^+g^-g^+)G^\pm(g^+tg^+t)G^\pm(ttg^+t)$	1277.9	1299.2	104.3
115	$T(tg^+gt)G^\pm(tg^-tt)G^\pm(g^+tg^+t)$	1275.6	1296.9	111.6
116	$T(tg^+gt)G^\pm(g^+tg^+t)G^\pm(tg^-tg^-)$	1274.6	1295.9	156.1
117	$T(tg^+gt)G^\pm(g^+tg^+t)G^\pm(ttg^+t)$	1277.9	1299.2	106.4
118	$T(ttg^+t)G^\pm(tg^+g^-g^+)G^\pm(tg^+g^-g^+)$	1281.7	1303.1	175.0
119	$T(tg^+g^-g^+)G^\pm(tg^+g^-g^+)G^\pm(tg^+g^-g^+)$	1280.0	1301.4	152.4
120	$T(tg^+g^-g^+)G^\pm(tg^+gt)G^\pm(tg^+gt)$	1281.7	1303.1	165.5
121	$T(ttg^+t)G^\pm(g^+tg^+t)G^\pm(tg^-tg^-)$	1274.9	1296.2	134.8

122	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^+g^-t)G^{\pm}(ttg^+t)$	1283.7	1305.1	168.8
123	$T(tg^+g^-t)G^{\pm}(tg^+g^-t)G^{\pm}(tg^+g^-g^{\bar{+}})$	1281.1	1302.5	169.6
124	$T(ttg^+t)G^{\pm}(tg^+g^-t)G^{\pm}(g^{\pm}tg^+t)$	1271.6	1292.8	111.2
125	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^-tt)G^{\pm}(ttg^+t)$	1283.4	1304.8	193.8
126	$T(tg^+g^-t)G^{\pm}(tg^-tt)G^{\pm}(tg^+g^-g^{\bar{+}})$	1281.8	1303.2	181.3
127	$T(tg^+g^-t)G^{\pm}(ttg^+t)G^{\pm}(ttg^+g^{\pm})$	1281.4	1302.8	171.3
128	$T(tg^+g^-t)G^{\pm}(tg^-tt)G^{\pm}(tg^+g^-t)$	1282.5	1303.9	179.5
129	$T(tg^+g^-g^{\bar{+}})G^{\pm}(ttg^+t)G^{\pm}(ttg^+g^{\pm})$	1281.2	1302.6	173.0
130	$T(tg^+g^-t)G^{\pm}(tg^+g^-t)G^{\pm}(ttg^+t)$	1283.1	1304.5	164.6
131	$T(tg^+g^-t)G^{\pm}(tg^+g^-t)G^{\pm}(tg^-tg^{\bar{+}})$	1281.0	1302.4	158.8
132	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^+g^-t)G^{\pm}(ttg^+g^{\pm})$	1281.1	1302.5	134.8
133	$T(ttg^+t)G^{\pm}(tg^-tt)G^{\pm}(ttg^+g^{\pm})$	1281.7	1303.1	194.2
134	$T(ttg^+t)G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^-tg^{\bar{+}})$	1280.5	1301.9	194.1
135	$T(tg^+g^-g^{\bar{+}})G^{\pm}(ttg^+t)G^{\pm}(tg^+g^-g^{\bar{+}})$	1281.4	1302.8	162.5
136	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^+g^-t)G^{\pm}(tg^+g^-g^{\bar{+}})$	1280.2	1301.6	143.8
137	$T(ttg^+t)G^{\pm}(g^{\pm}tg^+t)G^{\pm}(g^{\pm}tg^+t)$	1271.4	1292.6	177.6
138	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^-tt)G^{\pm}(tg^+g^-g^{\bar{+}})$	1280.4	1301.8	178.4
139	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^-tg^{\bar{+}})G^{\pm}(tg^+g^-g^{\bar{+}})$	1280.1	1301.5	169.1
140	$T(tg^+g^-t)G^{\pm}(tg^-tg^{\bar{+}})G^{\pm}(tg^+g^-g^{\bar{+}})$	1280.6	1302	156.8
141	$T(tg^+g^-t)G^{\pm}(tg^+g^-g^{\bar{+}})G^{\pm}(tg^+g^-g^{\bar{+}})$	1280.7	1302.1	150.8
142	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^-tt)G^{\pm}(tg^+g^-t)$	1281.9	1303.3	169.3
143	$T(tg^+g^-t)G^{\pm}(g^{\pm}tg^+t)G^{\pm}(tg^+g^-g^{\bar{+}})$	1297.1	1318.8	5.3
144	$T(tg^+g^-t)G^{\pm}(tg^+g^-t)G^{\pm}(ttg^+g^{\pm})$	1280.5	1301.9	141.2
145	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^+g^-t)G^{\pm}(tg^-tg^{\bar{+}})$	1281.6	1303	158.1
146	$T(tg^+g^-t)G^{\pm}(tg^+g^-t)G^{\pm}(tg^+g^-t)$	1282.2	1303.6	158.2
147	$T(tg^+g^-t)G^{\pm}(ttg^+t)G^{\pm}(tg^+g^-g^{\bar{+}})$	1283.4	1304.8	171.2
148	$T(tg^+g^-t)G^{\pm}(g^{\pm}tg^+t)G^{\pm}(g^{\pm}tg^+t)$	1283.3	1304.7	40.7
149	$T(ttg^+t)G^{\pm}(g^{\pm}tg^+t)G^{\pm}(ttg^+g^{\pm})$	1275.7	1297	101.9
150	$T(tg^+g^-g^{\bar{+}})G^{\pm}(tg^-tt)G^{\pm}(ttg^+g^{\pm})$	1281.3	1302.7	187.9
151	$T(ttg^+t)G^{\pm}(g^{\pm}tg^+t)G^{\pm}(tg^+g^-g^{\bar{+}})$	1282.6	1304	64.6
152	$T(tg^+g^-t)G^{\pm}(tg^-tt)G^{\pm}(ttg^+g^{\pm})$	1281.5	1302.9	189.1
153	$T(tg^+g^-g^{\bar{+}})G^{\pm}(g^{\pm}tg^+t)G^{\pm}(tg^+g^-g^{\bar{+}})$	1284.4	1305.8	34.4

154	$T(tg^+g^-)G^\pm(ttg^+g^\pm)G^\pm(tg^-tg^\mp)$	1279.4	1300.8	186.8
155	$T(tg^+g^-g^\mp)G^\pm(tg^+g^-)G^\pm(g^\pm tg^+t)$	1276.5	1297.8	79.2
156	$T(ttg^+t)G^\pm(tg^+g^-)G^\pm(ttg^+g^\pm)$	1281.1	1302.5	199.7
157	$T(ttg^+t)G^\pm(tg^+g^-)G^\pm(tg^+g^-)$	1283.3	1304.7	180.8
158	$T(tg^+g^-)G^\pm(tg^+g^-)G^\pm(g^\pm tg^+t)$	1277.6	1298.9	83.3
159	$T(tg^+g^-g^\mp)G^\pm(ttg^+g^\pm)G^\pm(tg^-tg^\mp)$	1280.5	1301.9	191.0
160	$T(tg^+g^-g^\mp)G^\pm(g^\pm tg^+t)G^\pm(ttg^+g^\pm)$	1275.3	1296.6	144.9
161	$T(tg^+g^-)G^\pm(g^\pm tg^+t)G^\pm(ttg^+g^\pm)$	1275.1	1296.4	130.4
162	$T(tg^+g^-g^\mp)G^\pm(g^\pm tg^+t)G^\pm(g^\pm tg^+t)$	1270.2	1291.4	147.5
163	$T(ttg^+t)G^\pm(ttg^+g^\pm)G^\pm(ttg^+g^\pm)$	1279.4	1300.8	169.7
164	$T(tg^+g^-g^\mp)G^\pm(ttg^+g^\pm)G^\pm(tg^+g^-g^\mp)$	1279.2	1300.6	149.3
165	$T(ttg^+t)G^\pm(ttg^+g^\pm)G^\pm(tg^+g^-g^\mp)$	1248.0	1268.8	214.3
166	$T(tg^+g^-)G^\pm(ttg^+g^\pm)G^\pm(ttg^+g^\pm)$	1279.9	1301.3	172.4
167	$T(tg^+g^-)G^\pm(ttg^+g^\pm)G^\pm(tg^+g^-g^\mp)$	1279.2	1300.6	111.2
168	$T(tg^+g^-g^\mp)G^\pm(ttg^+g^\pm)G^\pm(ttg^+g^\pm)$	1279.5	1300.9	164.4

Table S8. Total number of all possible conformations of DMDMPP.

S. No.	Conformer	Energy (Hartrees)	Relative energy (kcal/mol)
1	$G^+(g^-tg^-t)G^+G^+$	-919.270009	0
2	$G^+(g^-ttg^+)G^+G^+$	-919.269285	0.45
3	$G^+(g^-tg^+g^-)G^+G^+$	-919.269762	0.15
4	$G^+(g^+g^-tg^+)G^+G^+$	-919.264554	3.42
5	$G^+(g^+g^-g^+g^-)G^+G^+$	interconverted to $G^+(g^-tg^+g^-)G^+G^+$	
6	$G^+(g^+g^-g^-t)G^+G^+$	-919.266149	2.42
7	$G^+(tg^+tg^+)G^+G^+$	-919.269373	0.40
8	$G^+(tg^+g^+g^-)G^+G^+$	interconverted to $G^+(g^-tg^+g^-)G^+G^+$	
9	$G^+(tg^+g^-t)G^+G^+$	interconverted to $G^+(g^-tg^+t)G^+G^+$	

Table S9. Absolute and relative energies of all the appropriate 168 conformers of T2MBP calculated at B3LYP level of theory inclusive of Grimme's D3 empirical corrections for dispersion with 6-311++G(d,p) basis set.

S. No.	Conformer	Energy (Hartrees)	Relative energy (kcal/mol)
1	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)$	-1233.70	0.00
2	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	0.02
3	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	0.06
4	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)$	-1233.70	0.34
5	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)$	-1233.70	0.42
6	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	0.42
7	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	0.47
8	$G^{\pm}(ttg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)$	-1233.70	0.50
9	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	0.56
10	$G^{\pm}(tg^{+}tg^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	0.60
11	$G^{\pm}(tg^{+}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	0.65
12	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	0.67
13	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	0.69
14	$G^{\pm}(tg^{+}tt)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)$	-1233.70	0.73
15	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	0.79
16	$G^{\pm}(tg^{+}tg^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)$	-1233.70	0.82
17	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}g^{\pm})$	-1233.70	0.85
18	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}tg^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	0.90
19	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}tt)G^{\pm}(ttg^{+}g^{\pm})$	-1233.70	0.94
20	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.70	0.94
21	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	0.95
22	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}t)$	-1233.70	1.01
23	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)$	-1233.70	1.04
24	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)$	-1233.70	1.10
25	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}t)$	-1233.70	1.10
26	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}g^{\pm})$	-1233.70	1.15
27	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})$	-1233.70	1.17
28	$G^{\pm}(tg^{+}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	1.21
29	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}tt)G^{\pm}(ttg^{+}t)$	-1233.70	1.28
30	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}t)$	-1233.70	1.33
31	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}tg^{\mp})G^{\pm}(ttg^{+}t)$	-1233.70	1.39
32	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.70	1.45
33	$G^{\pm}(tg^{+}tt)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	1.46
34	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	1.46
35	$G^{\pm}(tg^{+}tg^{\mp})G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	1.47
36	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}tt)G^{\pm}(tg^{+}tt)$	-1233.70	1.49

37	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}gt)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	1.49
38	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}gt)$	-1233.70	1.50
39	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}gt)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	1.52
40	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}gt)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	1.53
41	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}gt)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	1.54
42	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)$	-1233.70	1.56
43	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	1.56
44	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}gt)$	-1233.70	1.58
45	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})$	-1233.70	1.60
46	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	1.62
47	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	-1233.70	1.64
48	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}gt)G^{\pm}(tg^{+}gt)$	-1233.70	1.69
49	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}g^{\pm})$	-1233.70	1.78
50	$G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}g^{\pm})$	-1233.70	2.13
51	$G^{\pm}(tg^{+}gt)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}g^{\pm})$	-1233.70	2.13
52	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.70	2.17
53	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	-1233.70	2.26
54	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}g^{\pm})$	-1233.70	2.27
55	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}g^{\pm})$	-1233.70	2.31
56	$G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.70	2.36
57	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}gt)$	-1233.70	2.39
58	$G^{\pm}(tg^{+}gt)G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.70	2.39
59	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}gt)$	-1233.70	2.43
60	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}gt)G^{\pm}(tg^{+}gt)$	-1233.70	2.45
61	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}gt)G^{\pm}(tg^{+}gt)$	-1233.70	2.48
62	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)$	-1233.70	2.48
63	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)$	-1233.70	2.51
64	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.70	2.55
65	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.70	2.58
66	$G^{\pm}(tg^{+}gt)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)$	-1233.70	2.63
67	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)$	-1233.70	2.64
68	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	-1233.70	2.68
69	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})$	-1233.70	2.70
70	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}gt)G^{\pm}(tg^{+}gt)$	-1233.70	2.72
71	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)$	-1233.70	2.73
72	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}gt)$	-1233.70	2.74
73	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}t)$	-1233.70	2.75
74	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}gt)G^{\pm}(tg^{+}gt)$	-1233.70	2.81
75	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}gt)$	-1233.70	2.89
76	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	-1233.70	2.95
77	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)$	-1233.69	3.01

78	$G^{\pm}(tg^{+}gt)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	-1233.69	3.06
79	$G^{\pm}(tg^{+}gt)G^{\pm}(tg^{+}gt)G^{\pm}(tg^{+}gt)$	-1233.69	3.07
80	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)$	-1233.69	3.08
81	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	-1233.69	3.22
82	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	-1233.69	3.22
83	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}gt)$	-1233.69	3.44
84	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}gt)$	-1233.69	3.51
85	$T(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	-1233.70	0.40
86	$T(ttg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)$	-1233.70	0.51
87	$T(ttg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})$	-1233.70	0.55
88	$T(ttg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)$	-1233.70	0.60
89	$T(ttg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})$	-1233.70	0.71
90	$T(ttg^{+}t)G^{\pm}(tg^{+}gt)G^{\pm}(ttg^{+}t)$	-1233.70	0.75
91	$T(ttg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.70	0.77
92	$T(tg^{+}gt)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})$	-1233.70	0.82
93	$T(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)$	-1233.70	0.86
94	$T(tg^{+}g^{-}g^{\mp})G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.70	0.99
95	$T(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	-1233.70	1.09
96	$T(ttg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(g^{\pm}tg^{+}t)$	-1233.70	1.21
97	$T(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	1.22
98	$T(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})$	-1233.70	1.23
99	$T(tg^{+}gt)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)$	-1233.70	1.32
100	$T(ttg^{+}t)G^{\pm}(tg^{+}gt)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	1.35
101	$T(ttg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}gt)$	-1233.70	1.36
102	$T(ttg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}g^{\pm})$	-1233.70	1.40
103	$T(tg^{+}gt)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})$	-1233.70	1.41
104	$T(ttg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	1.43
105	$T(tg^{+}gt)G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)$	-1233.70	1.44
106	$T(ttg^{+}t)G^{\pm}(tg^{+}gt)G^{\pm}(tg^{-}tg^{\mp})$	-1233.70	1.61
107	$T(ttg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	1.63
108	$T(tg^{+}g^{-}g^{\mp})G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})$	-1233.70	1.63
109	$T(tg^{+}gt)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	-1233.70	1.66
110	$T(tg^{+}g^{-}g^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tg^{\mp})$	-1233.70	1.66
111	$T(tg^{+}gt)G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.70	1.68
112	$T(ttg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.70	1.71
113	$T(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(g^{\pm}tg^{+}t)$	-1233.70	1.71
114	$T(tg^{+}g^{-}g^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.70	1.71
115	$T(tg^{+}gt)G^{\pm}(tg^{-}tt)G^{\pm}(g^{\pm}tg^{+}t)$	-1233.70	1.72
116	$T(tg^{+}gt)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tg^{\mp})$	-1233.70	1.74
117	$T(tg^{+}gt)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.70	1.78
118	$T(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.70	1.82

119	$T(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-g^{\mp})$	-1233.70	1.83
120	$T(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-t)G^{\pm}(tg^+g^-t)$	-1233.70	1.85
121	$T(ttg^+t)G^{\pm}(g^{\pm}tg^+t)G^{\pm}(tg^-tg^{\mp})$	-1233.70	1.86
122	$T(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-t)G^{\pm}(ttg^+t)$	-1233.70	1.88
123	$T(tg^+g^-t)G^{\pm}(tg^+g^-t)G^{\pm}(tg^+g^-g^{\mp})$	-1233.70	1.89
124	$T(ttg^+t)G^{\pm}(tg^+g^-t)G^{\pm}(g^{\pm}tg^+t)$	-1233.70	1.92
125	$T(tg^+g^-g^{\mp})G^{\pm}(tg^-tt)G^{\pm}(ttg^+t)$	-1233.70	1.93
126	$T(tg^+g^-t)G^{\pm}(tg^-tt)G^{\pm}(tg^+g^-g^{\mp})$	-1233.70	1.93
127	$T(tg^+g^-t)G^{\pm}(ttg^+t)G^{\pm}(ttg^+g^{\pm})$	-1233.70	1.95
128	$T(tg^+g^-t)G^{\pm}(tg^-tt)G^{\pm}(tg^+g^-t)$	-1233.70	2.04
129	$T(tg^+g^-g^{\mp})G^{\pm}(ttg^+t)G^{\pm}(ttg^+g^{\pm})$	-1233.70	2.07
130	$T(tg^+g^-t)G^{\pm}(tg^+g^-t)G^{\pm}(ttg^+t)$	-1233.70	2.08
131	$T(tg^+g^-t)G^{\pm}(tg^+g^-t)G^{\pm}(tg^-tg^{\mp})$	-1233.70	2.10
132	$T(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-t)G^{\pm}(ttg^+g^{\pm})$	-1233.70	2.13
133	$T(ttg^+t)G^{\pm}(tg^-tt)G^{\pm}(ttg^+g^{\pm})$	-1233.70	2.21
134	$T(ttg^+t)G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^-tg^{\mp})$	-1233.70	2.23
135	$T(tg^+g^-g^{\mp})G^{\pm}(ttg^+t)G^{\pm}(tg^+g^-g^{\mp})$	-1233.70	2.23
136	$T(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-t)G^{\pm}(tg^+g^-g^{\mp})$	-1233.70	2.35
137	$T(ttg^+t)G^{\pm}(g^{\pm}tg^+t)G^{\pm}(g^{\pm}tg^+t)$	-1233.70	2.35
138	$T(tg^+g^-g^{\mp})G^{\pm}(tg^-tt)G^{\pm}(tg^+g^-g^{\mp})$	-1233.70	2.36
139	$T(tg^+g^-g^{\mp})G^{\pm}(tg^-tg^{\mp})G^{\pm}(tg^+g^-g^{\mp})$	-1233.70	2.41
140	$T(tg^+g^-t)G^{\pm}(tg^-tg^{\mp})G^{\pm}(tg^+g^-g^{\mp})$	-1233.70	2.43
141	$T(tg^+g^-t)G^{\pm}(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-g^{\mp})$	-1233.70	2.43
142	$T(tg^+g^-g^{\mp})G^{\pm}(tg^-tt)G^{\pm}(tg^+g^-t)$	-1233.70	2.43
143	$T(tg^+g^-t)G^{\pm}(g^{\pm}tg^+t)G^{\pm}(tg^+g^-g^{\mp})$	-1233.70	2.46
144	$T(tg^+g^-t)G^{\pm}(tg^+g^-t)G^{\pm}(ttg^+g^{\pm})$	-1233.70	2.50
145	$T(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-t)G^{\pm}(tg^-tg^{\mp})$	-1233.70	2.51
146	$T(tg^+g^-t)G^{\pm}(tg^+g^-t)G^{\pm}(tg^+g^-t)$	-1233.70	2.53
147	$T(tg^+g^-t)G^{\pm}(ttg^+t)G^{\pm}(tg^+g^-g^{\mp})$	-1233.70	2.55
148	$T(tg^+g^-t)G^{\pm}(g^{\pm}tg^+t)G^{\pm}(g^{\pm}tg^+t)$	-1233.70	2.59
149	$T(ttg^+t)G^{\pm}(g^{\pm}tg^+t)G^{\pm}(ttg^+g^{\pm})$	-1233.70	2.60
150	$T(tg^+g^-g^{\mp})G^{\pm}(tg^-tt)G^{\pm}(ttg^+g^{\pm})$	-1233.70	2.63
151	$T(ttg^+t)G^{\pm}(g^{\pm}tg^+t)G^{\pm}(tg^+g^-g^{\mp})$	-1233.70	2.64
152	$T(tg^+g^-t)G^{\pm}(tg^-tt)G^{\pm}(ttg^+g^{\pm})$	-1233.70	2.65
153	$T(tg^+g^-g^{\mp})G^{\pm}(g^{\pm}tg^+t)G^{\pm}(tg^+g^-g^{\mp})$	-1233.70	2.66
154	$T(tg^+g^-t)G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^-tg^{\mp})$	-1233.70	2.66
155	$T(tg^+g^-g^{\mp})G^{\pm}(tg^+g^-t)G^{\pm}(g^{\pm}tg^+t)$	-1233.70	2.68
156	$T(ttg^+t)G^{\pm}(tg^+g^-t)G^{\pm}(ttg^+g^{\pm})$	-1233.70	2.68
157	$T(ttg^+t)G^{\pm}(tg^+g^-t)G^{\pm}(tg^+g^-t)$	-1233.70	2.73
158	$T(tg^+g^-t)G^{\pm}(tg^+g^-t)G^{\pm}(g^+tg^+t)$	-1233.70	2.77
159	$T(tg^+g^-g^{\mp})G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^-tg^{\mp})$	-1233.70	2.82

160	$T(tg^+g^-g^{\bar{+}})G^{\pm}(g^{\pm}tg^+t)G^{\pm}(ttg^+g^{\pm})$	-1233.70	2.90
161	$T(tg^+g^+t)G^{\pm}(g^{\pm}tg^+t)G^{\pm}(ttg^+g^{\pm})$	-1233.69	3.05
162	$T(tg^+g^-g^{\bar{+}})G^{\pm}(g^{\pm}tg^+t)G^{\pm}(g^{\pm}tg^+t)$	-1233.69	3.14
163	$T(ttg^+t)G^{\pm}(ttg^+g^{\pm})G^{\pm}(ttg^+g^{\pm})$	-1233.64	35.77
164	$T(tg^+g^-g^{\bar{+}})G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^+g^-g^{\bar{+}})$	-1233.64	35.85
165	$T(ttg^+t)G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^+g^-g^{\bar{+}})$	-1233.64	35.89
166	$T(tg^+g^+t)G^{\pm}(ttg^+g^{\pm})G^{\pm}(ttg^+g^{\pm})$	-1233.64	35.91
167	$T(tg^+g^+t)G^{\pm}(ttg^+g^{\pm})G^{\pm}(tg^+g^-g^{\bar{+}})$	-1233.64	35.91
168	$T(tg^+g^-g^{\bar{+}})G^{\pm}(ttg^+g^{\pm})G^{\pm}(ttg^+g^{\pm})$	-1233.64	36.23

Table S10. Absolute and relative energies of all the appropriate 168 conformers of T2MBP calculated at ω B97XD level of theory with 6-311++G(d,p) basis set.

S. No.	Conformer	Energy (Hartrees)	Relative energy (kcal/mol)
1	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)$	-1233.35	0.00
2	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	0.05
3	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)$	-1233.35	0.19
4	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	-1233.35	0.40
5	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.35	0.42
6	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	0.54
7	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)$	-1233.35	0.54
8	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)$	-1233.35	0.61
9	$G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.35	0.62
10	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}t)$	-1233.35	0.66
11	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	0.69
12	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	-1233.35	0.73
13	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	-1233.35	0.90
14	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	0.91
15	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	1.05
16	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.35	1.08
17	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	1.08
18	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}t)$	-1233.35	1.11
19	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)$	-1233.35	1.15
20	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.35	1.18
21	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)$	-1233.35	1.18
22	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	1.22
23	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)$	-1233.35	1.24
24	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}t)$	-1233.35	1.33
25	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}t)$	-1233.35	1.41
26	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}t)$	-1233.35	1.48
27	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)$	-1233.35	1.50
28	$G^{\pm}(tg^{-}tt)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)$	-1233.35	1.52
29	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}t)$	-1233.35	1.53
30	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.35	1.54
31	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	1.56
32	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}t)$	-1233.35	1.57
33	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	-1233.35	1.64
34	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.35	1.68
35	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)$	-1233.35	1.69
36	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}t)$	-1233.35	1.70
37	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}t)$	-1233.35	1.72

38	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	-1233.35	1.76
39	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	1.78
40	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	1.82
41	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})$	-1233.35	1.93
42	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	1.97
43	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}t)$	-1233.35	2.01
44	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	2.03
45	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	-1233.35	2.08
46	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	2.08
47	$G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})$	-1233.35	2.09
48	$G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	2.11
49	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})$	-1233.35	2.12
50	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	2.14
51	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}t)$	-1233.35	2.28
52	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)$	-1233.35	2.35
53	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	2.37
54	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)$	-1233.35	2.39
55	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	2.59
56	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)$	-1233.35	2.60
57	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)$	-1233.35	2.64
58	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}t)$	-1233.35	2.66
59	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.35	2.70
60	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	-1233.35	2.72
61	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}t)$	-1233.35	2.78
62	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})$	-1233.35	2.88
63	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}t)$	-1233.35	2.92
64	$G^{\pm}(ttg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)$	-1233.35	2.95
65	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	3.00
66	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)$	-1233.35	3.04
67	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	3.06
68	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}t)$	-1233.35	3.06
69	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}t)$	-1233.35	3.10
70	$G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}g^{\pm})$	-1233.35	3.10
71	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}t)$	-1233.35	3.20
72	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	3.23
73	$G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}g^{\pm})$	-1233.35	3.36
74	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)$	-1233.34	3.37
75	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}t)$	-1233.34	3.40
76	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.34	3.43
77	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}t)$	-1233.34	3.47
78	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.34	3.51

79	$G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}g^{\pm})$	-1233.34	3.57
80	$G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}g^{\pm})$	-1233.34	3.76
81	$G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}g^{\pm})$	-1233.34	3.86
82	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(tg^{+}g^{-}t)$	-1233.34	3.90
83	$G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}g^{\pm})$	-1233.34	3.91
84	$G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}g^{\pm})G^{\pm}(ttg^{+}g^{\pm})$	-1233.34	4.22
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86	$T(ttg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)$	-1233.35	0.19
87	$T(ttg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})$	-1233.35	0.37
88	$T(ttg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)$	-1233.35	0.43
89	$T(ttg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})$	-1233.35	0.49
90	$T(ttg^{+}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(ttg^{+}t)$	-1233.35	0.52
91	$T(ttg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.35	0.54
92	$T(tg^{+}g^{-}t)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})$	-1233.35	0.58
93	$T(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)$	-1233.35	0.79
94	$T(tg^{+}g^{-}g^{\mp})G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.35	0.87
95	$T(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	-1233.35	0.98
96	$T(ttg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(g^{\pm}tg^{+}t)$	-1233.35	1.00
97	$T(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	1.03
98	$T(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})$	-1233.35	1.14
99	$T(tg^{+}g^{-}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tt)$	-1233.35	1.17
100	$T(ttg^{+}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	1.21
101	$T(ttg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}t)$	-1233.35	1.27
102	$T(ttg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}g^{\pm})$	-1233.35	1.32
103	$T(tg^{+}g^{-}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{-}tg^{\mp})$	-1233.35	1.45
104	$T(ttg^{+}t)G^{\pm}(tg^{-}tt)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	1.52
105	$T(tg^{+}g^{-}t)G^{\pm}(tg^{-}tt)G^{\pm}(ttg^{+}t)$	-1233.35	1.58
106	$T(ttg^{+}t)G^{\pm}(tg^{+}g^{-}t)G^{\pm}(tg^{-}tg^{\mp})$	-1233.35	1.59
107	$T(ttg^{+}t)G^{\pm}(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	1.63
108	$T(tg^{+}g^{-}g^{\mp})G^{\pm}(ttg^{+}t)G^{\pm}(tg^{-}tg^{\mp})$	-1233.35	1.63
109	$T(tg^{+}g^{-}t)G^{\pm}(tg^{-}tg^{\mp})G^{\pm}(tg^{-}tg^{\mp})$	-1233.35	1.65
110	$T(tg^{+}g^{-}g^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(tg^{-}tg^{\mp})$	-1233.35	1.67
111	$T(tg^{+}g^{-}t)G^{\pm}(ttg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.35	1.70
112	$T(ttg^{+}t)G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.35	1.73
113	$T(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{-}tt)G^{\pm}(g^{\pm}tg^{+}t)$	-1233.35	1.73
114	$T(tg^{+}g^{-}g^{\mp})G^{\pm}(g^{\pm}tg^{+}t)G^{\pm}(ttg^{+}t)$	-1233.35	1.75
115	$T(tg^{+}g^{-}t)G^{\pm}(tg^{-}tt)G^{\pm}(g^{\pm}tg^{+}t)$	-1233.35	1.76
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118	$T(ttg^{+}t)G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	1.81
119	$T(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})G^{\pm}(tg^{+}g^{-}g^{\mp})$	-1233.35	1.86

120	$T(tg^+g^-g^+)G^+(tg^+g^-t)G^+(tg^+g^-t)$	-1233.35	1.90
121	$T(ttg^+t)G^+(g^+tg^+t)G^+(tg^-tg^+)$	-1233.35	1.91
122	$T(tg^+g^-g^+)G^+(tg^+g^-t)G^+(ttg^+t)$	-1233.35	1.95
123	$T(tg^+g^-t)G^+(tg^+g^-t)G^+(tg^+g^-g^+)$	-1233.35	1.96
124	$T(ttg^+t)G^+(tg^+g^-t)G^+(g^+tg^+t)$	-1233.35	1.98
125	$T(tg^+g^-g^+)G^+(tg^-tt)G^+(ttg^+t)$	-1233.35	2.01
126	$T(tg^+g^-t)G^+(tg^-tt)G^+(tg^+g^-g^+)$	-1233.35	2.04
127	$T(tg^+g^-t)G^+(ttg^+t)G^+(ttg^+g^+)$	-1233.35	2.08
128	$T(tg^+g^-t)G^+(tg^-tt)G^+(tg^+g^-t)$	-1233.35	2.10
129	$T(tg^+g^-g^+)G^+(ttg^+t)G^+(ttg^+g^+)$	-1233.35	2.12
130	$T(tg^+g^-t)G^+(tg^+g^-t)G^+(ttg^+t)$	-1233.35	2.14
131	$T(tg^+g^-t)G^+(tg^+g^-t)G^+(tg^-tg^+)$	-1233.35	2.17
132	$T(tg^+g^-g^+)G^+(tg^+g^-t)G^+(ttg^+g^+)$	-1233.35	2.20
133	$T(ttg^+t)G^+(tg^-tt)G^+(ttg^+g^+)$	-1233.35	2.27
134	$T(ttg^+t)G^+(ttg^+g^+)G^+(tg^-tg^+)$	-1233.35	2.27
135	$T(tg^+g^-g^+)G^+(ttg^+t)G^+(tg^+g^-g^+)$	-1233.35	2.28
136	$T(tg^+g^-g^+)G^+(tg^+g^-t)G^+(tg^+g^-g^+)$	-1233.35	2.30
137	$T(ttg^+t)G^+(g^+tg^+t)G^+(g^+tg^+t)$	-1233.35	2.37
138	$T(tg^+g^-g^+)G^+(tg^-tt)G^+(tg^+g^-g^+)$	-1233.35	2.38
139	$T(tg^+g^-g^+)G^+(tg^-tg^+)G^+(tg^+g^-g^+)$	-1233.35	2.39
140	$T(tg^+g^-t)G^+(tg^-tg^+)G^+(tg^+g^-g^+)$	-1233.35	2.42
141	$T(tg^+g^-t)G^+(tg^+g^-g^+)G^+(tg^+g^-g^+)$	-1233.35	2.48
142	$T(tg^+g^-g^+)G^+(tg^-tt)G^+(tg^+g^-t)$	-1233.35	2.60
143	$T(tg^+g^-t)G^+(g^+tg^+t)G^+(tg^+g^-g^+)$	-1233.35	2.60
144	$T(tg^+g^-t)G^+(tg^+g^-t)G^+(ttg^+g^+)$	-1233.35	2.62
145	$T(ttg^+t)G^+(tg^+g^-t)G^+(tg^+g^-t)$	-1233.35	-2.76
146	$T(tg^+g^-g^+)G^+(tg^+g^-t)G^+(tg^-tg^+)$	-1233.35	2.79
147	$T(tg^+g^-t)G^+(tg^+g^-t)G^+(tg^+g^-t)$	-1233.35	2.79
148	$T(tg^+g^-t)G^+(ttg^+t)G^+(tg^+g^-g^+)$	-1233.35	2.80
149	$T(tg^+g^-t)G^+(g^+tg^+t)G^+(g^+tg^+t)$	-1233.35	2.80
150	$T(ttg^+t)G^+(g^+tg^+t)G^+(ttg^+g^+)$	-1233.35	2.88
151	$T(tg^+g^-t)G^+(tg^-tt)G^+(ttg^+g^+)$	-1233.35	2.82
152	$T(tg^+g^-g^+)G^+(tg^-tt)G^+(ttg^+g^+)$	-1233.35	2.92
153	$T(ttg^+t)G^+(g^+tg^+t)G^+(tg^+g^-g^+)$	-1233.35	2.94
154	$T(tg^+g^-g^+)G^+(g^+tg^+t)G^+(tg^+g^-g^+)$	-1233.35	3.03
155	$T(tg^+g^-t)G^+(ttg^+g^+)G^+(tg^-tg^+)$	-1233.35	3.09
156	$T(tg^+g^-g^+)G^+(tg^+g^-t)G^+(g^+tg^+t)$	-1233.35	3.15
157	$T(ttg^+t)G^+(tg^+g^-t)G^+(ttg^+g^+)$	-1233.35	3.33
158	$T(tg^+g^-t)G^+(tg^+g^-t)G^+(g^+tg^+t)$	-1233.35	3.33
159	$T(tg^+g^-g^+)G^+(ttg^+g^+)G^+(tg^-tg^+)$	-1233.35	3.33
160	$T(tg^+g^-g^+)G^+(g^+tg^+t)G^+(ttg^+g^+)$	-1233.34	3.42

161	$T(tg^+g^-t)G^\pm(g^\pm tg^+t)G^\pm(ttg^+g^\pm)$	-1233.34	3.47
162	$T(tg^+g^-g^\mp)G^\pm(g^\pm tg^+t)G^\pm(g^\pm tg^+t)$	-1233.34	3.48
163	$T(ttg^+t)G^\pm(ttg^+g^\pm)G^\pm(ttg^+g^\pm)$	-1233.34	3.50
164	$T(tg^+g^-g^\mp)G^\pm(ttg^+g^\pm)G^\pm(tg^+g^-g^\mp)$	-1233.34	3.51
165	$T(ttg^+t)G^\pm(ttg^+g^\pm)G^\pm(tg^+g^-g^\mp)$	-1233.34	3.56
166	$T(tg^+g^-t)G^\pm(ttg^+g^\pm)G^\pm(ttg^+g^\pm)$	-1233.34	3.60
167	$T(tg^+g^-t)G^\pm(ttg^+g^\pm)G^\pm(tg^+g^-g^\mp)$	-1233.34	3.60
168	$T(tg^+g^-g^\mp)G^\pm(ttg^+g^\pm)G^\pm(ttg^+g^\pm)$	-1233.34	3.77

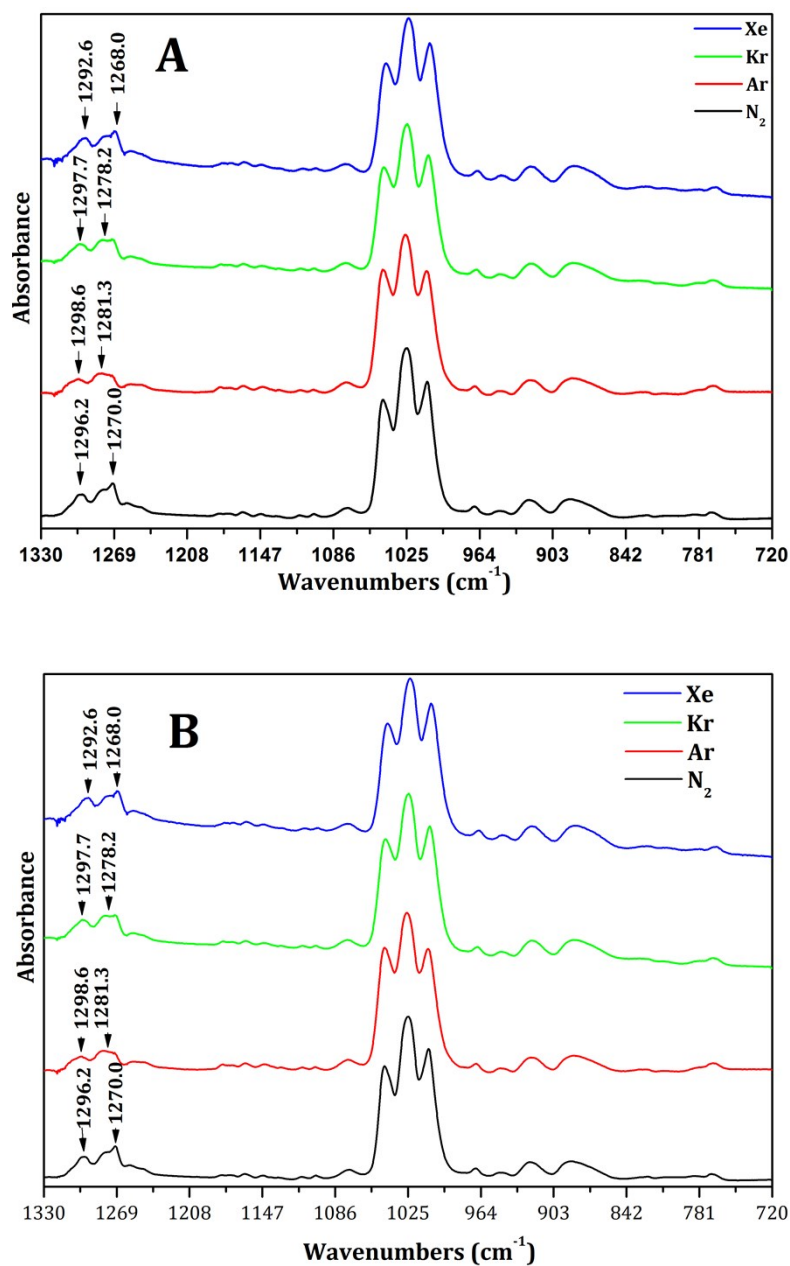


Figure S1. The full range infrared spectra in 1330-720 cm^{-1} range for T2MBP in different matrixes. Grid 'A' corresponds to infrared spectra recorded immediately after deposition at 12 K and Grid 'B' corresponds to the spectra recorded after annealing the different matrixes for 15 minutes and recooling back to 12 K. Annealing Temperature of N_2 : 32 K, Ar: 35 K, Kr: 50 K and Xe: 50 K.

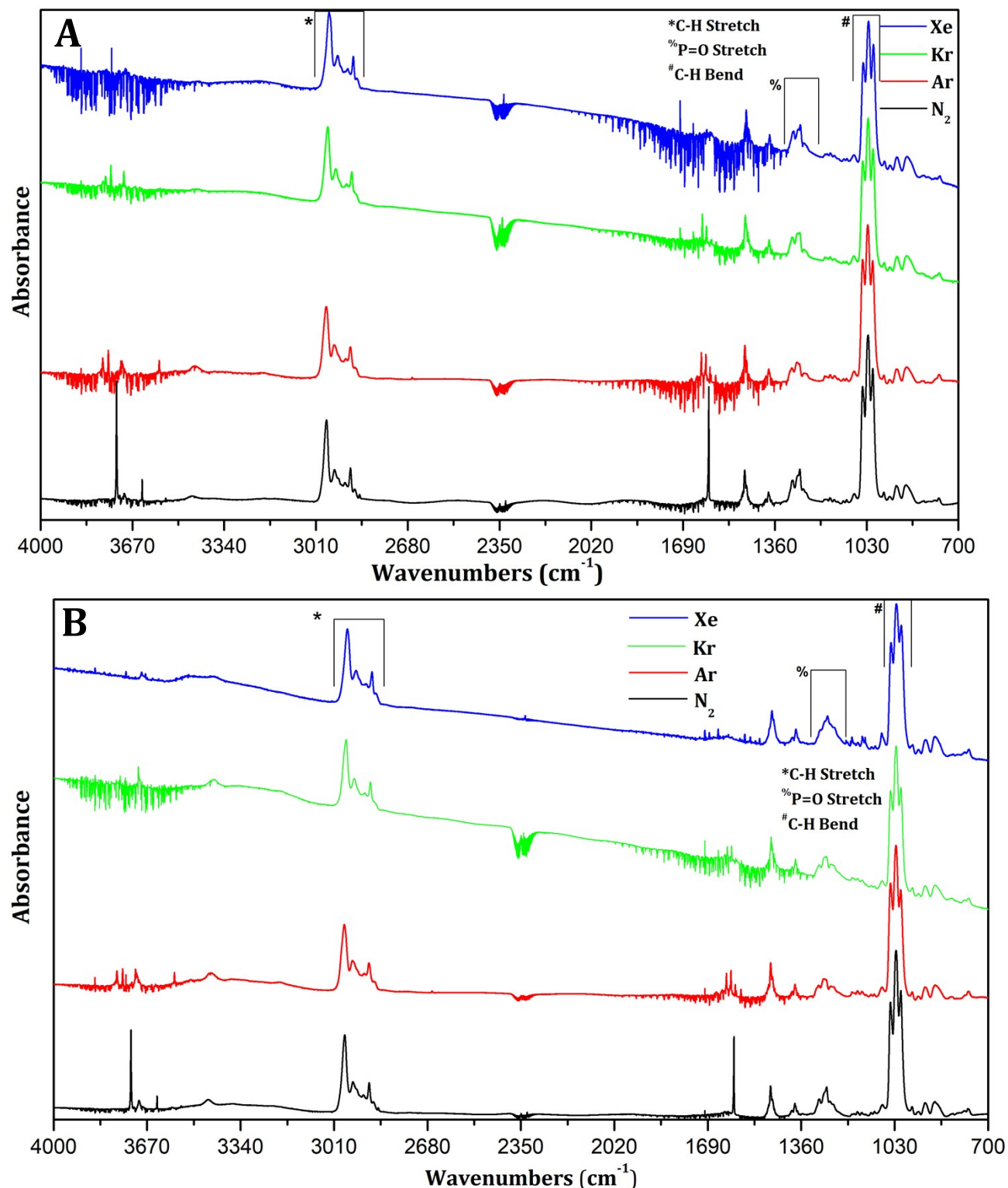


Figure S2. Plots of absorbance data across the full range (4000 to 700 cm^{-1}), from spectral recordings of the as deposited (Grid A) and annealed (Grid B) matrixes. The region beyond 700 cm^{-1} upto 400 cm^{-1} has been omitted owing to the poor S/N ratio, since no characteristic absorbance features of T2MBP fall at this range.

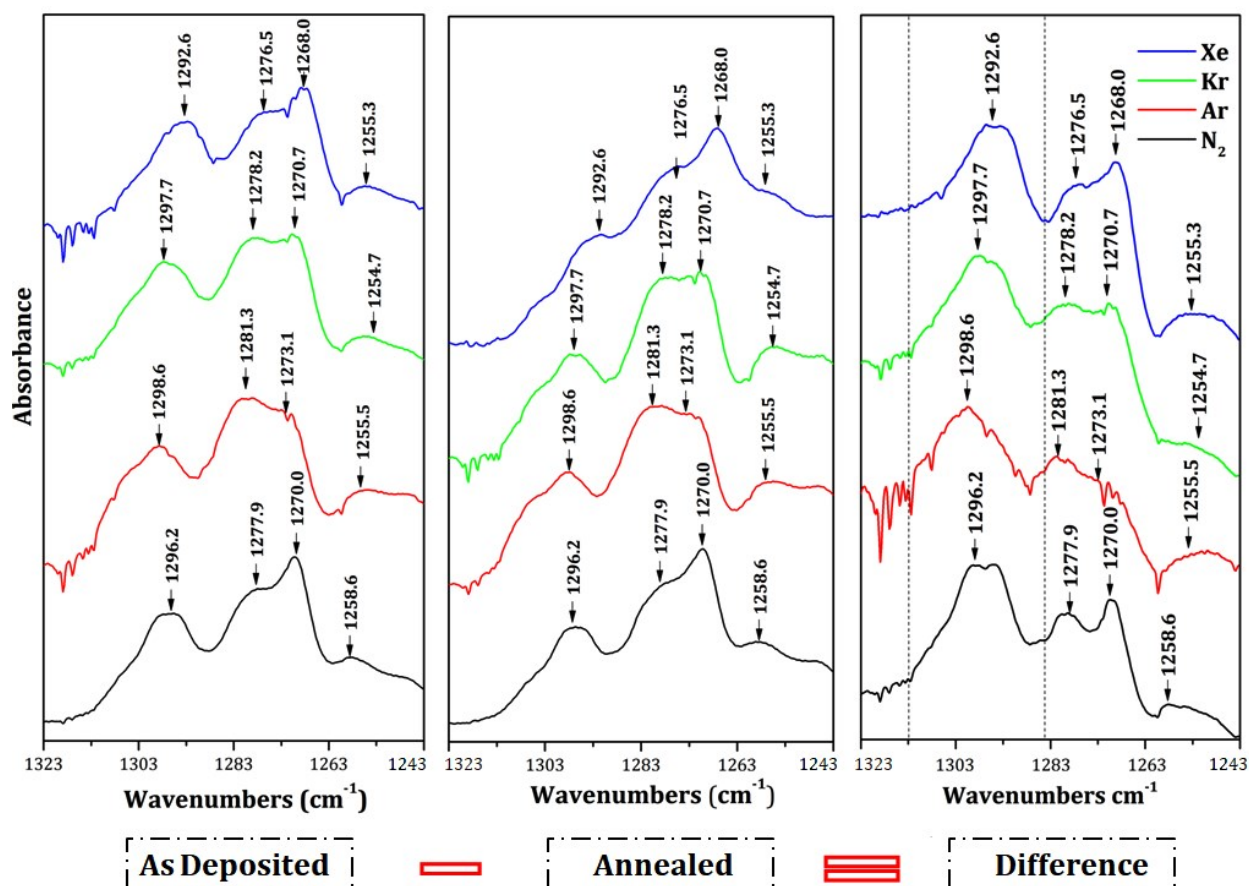


Figure S3. The difference spectra obtained by subtracting the annealed spectra from the respective as deposited spectra, conveying the lowered population of Trans conformer and the enhanced population of Gauche conformer in the annealed spectrum. (An intense feature in the annealed spectrum would cause the depletion of its intensity in the difference spectrum.)

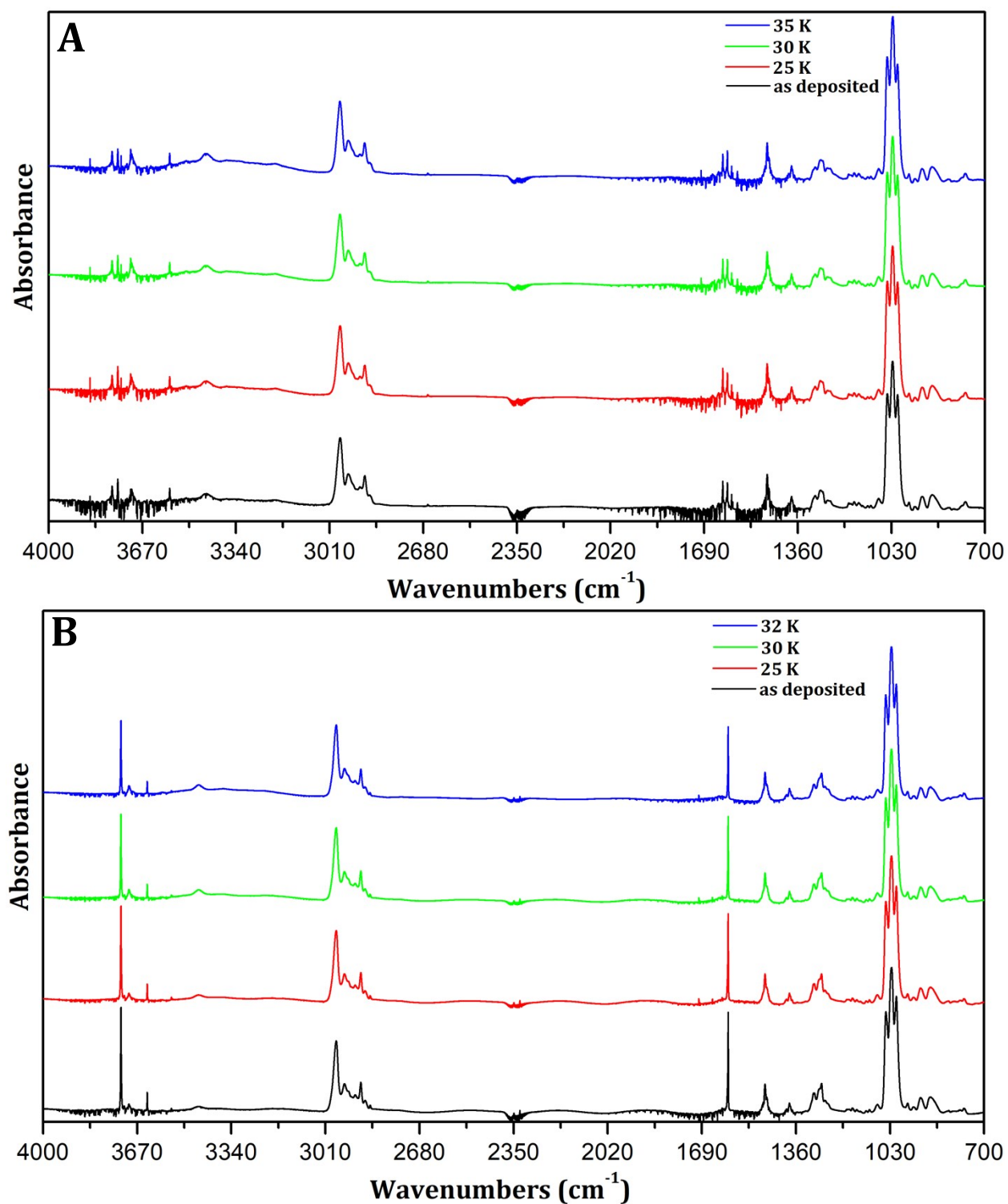


Figure S4. Full range plots of absorbance data from the IR spectral recordings of the N₂ (Grid A) and Ar (Grid B) in the as deposited and annealed states.

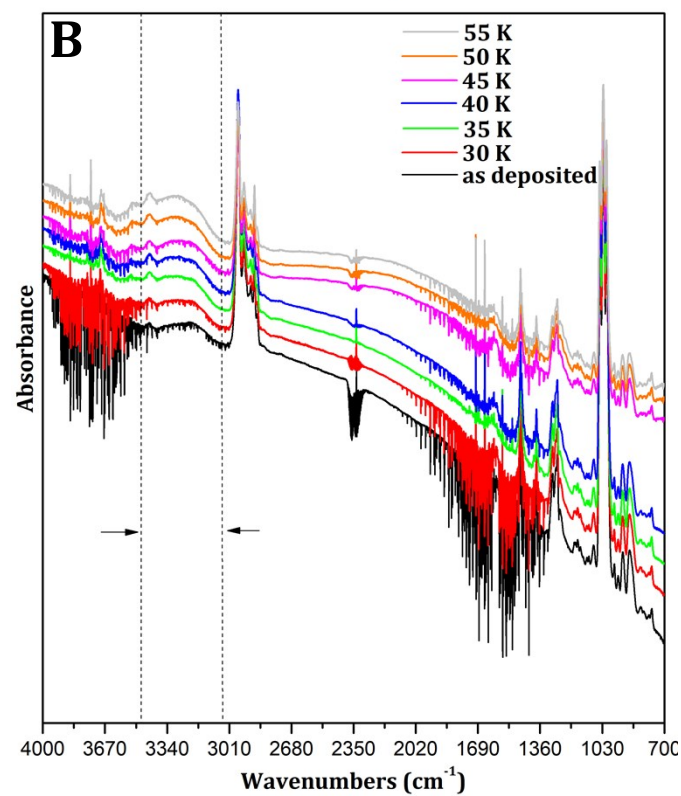
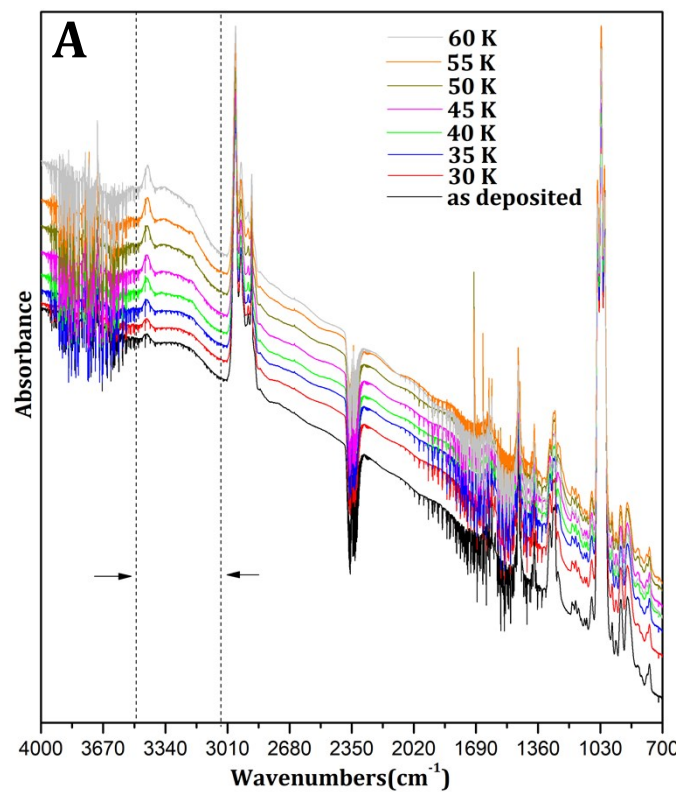


Figure S5. Full range plots of absorbance data from the IR spectral recordings of the Kr (Grid A) and Xe (Grid B) in the as deposited and annealed states.

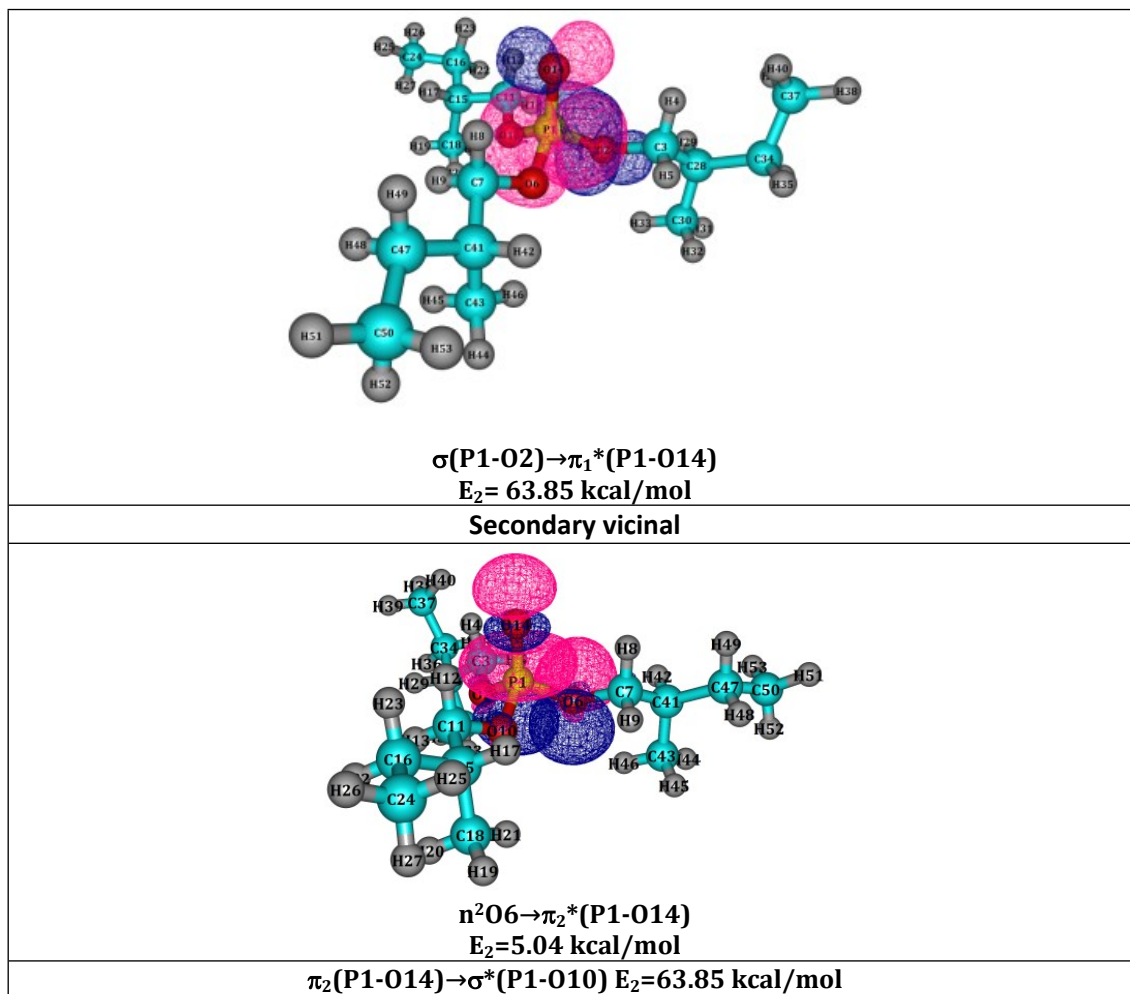


Figure S6. Sample primary and secondary vicinal and geminal hyperconjugative interactions along with their E_2 energies in the $G^\pm(\text{tg}^-\text{tg}^+)G^\pm(\text{tg}^-\text{tt})G^\pm(\text{tg}^-\text{tt})$ conformers of T2MBP.

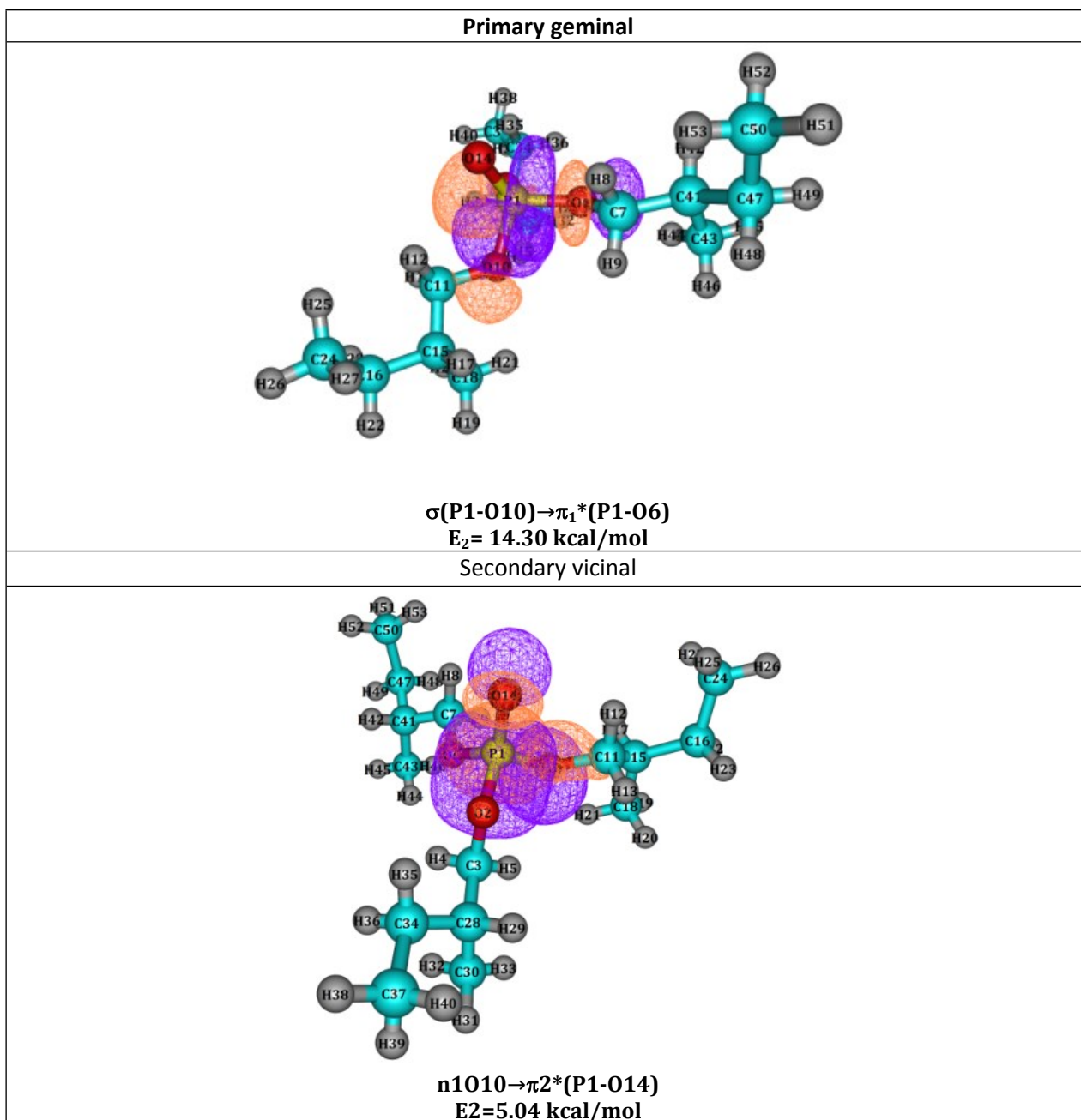


Figure S7. Sample primary and secondary vicinal and geminal hyperconjugative interactions along with their E_2 energies in the $G^\pm(\text{tg}^-\text{tg}^+)$, $G^\pm(\text{tg}^-\text{tt})$, $G^\pm(\text{tg}^+\text{tt})$ conformers of T2MBP.

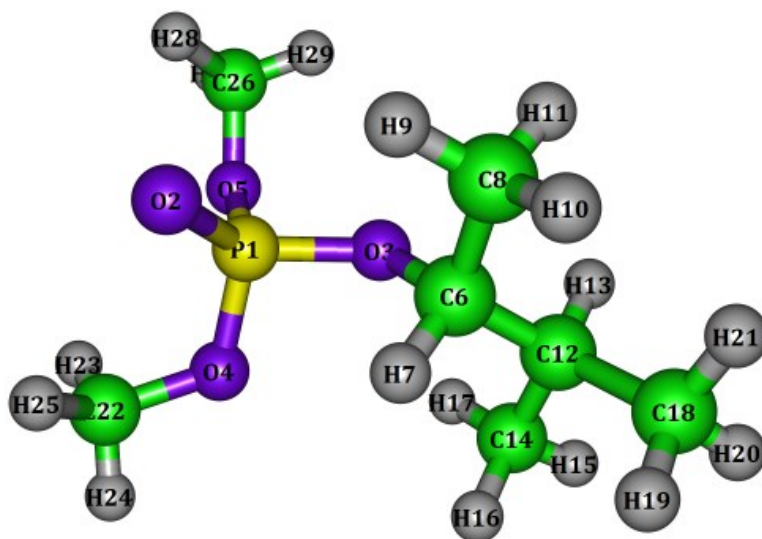


Figure S8. The structure of ground state $G^+(g^+tg^+t)G^+G^+$ conformer of DMDMPP.