

**Table 3.3:**  $(\text{H}_2\text{O})_2$ 

method	$D_e^{\text{cpc}}$	BSSE	$D_0^{\text{h}}$	$r_{\text{O}\dots\text{O}}$	$\Delta r_{\text{O-H}}(\text{d})$	$\Delta\omega(\text{d})$
HF	16.31	0.83	7.80	3.0238	0.0041	-101
MP2	19.69	2.87	10.48	2.9021	0.0070	-163
B3LYP	20.10	1.93	10.83	2.9053	0.0081	-175
B97-1	21.72	1.75	12.50	2.9081	0.0081	-175
PBE0	21.86	1.77	12.47	2.8747	0.0091	-199
HCTH	12.31	1.84	4.05	3.0608	0.0059	-143
HCTH38	19.27	2.14	10.51	2.9517	0.0079	-181
BLYP	18.74	2.41	9.65	2.9283	0.0090	-187
PBE	22.49	2.38	13.22	2.8798	0.0109	-227
LDA	37.52	2.77	27.45	2.7154	0.0184	-351
Best <i>ab initio</i>	21.1 <sup>a</sup>		11.5 <sup>b</sup>	2.925 <sup>c</sup>	0.0065 <sup>d</sup>	-121 <sup>d</sup>

<sup>a</sup>estimation from the limit of the MP2 limit corrected CCSD(T)/aug-cc-pCVxZ series (frozen core, fixed dimer and monomer geometries) and from additional core correlation and geometry relaxation effects, [29].

<sup>b</sup> $D_e^{\text{cpc}}$  corrected by  $\Delta\text{ZPE}=9.6$  kJ/mol, MP4/VTZ(2df) on O and VTZ(2p) on H, [42].

<sup>c</sup>cp-corrected CCSD(T) PES, [43].

<sup>d</sup>MP4/VTZ(2df) on O and VTZ(2p) on H, [42].