PROSPECTS FOR FUNDAMENTAL SYMMETRY TESTS WITH POLYATOMIC MOLECULES

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Special features of polyatomic molecules make them attractive candidates for search for violation of fundamental symmetries and variation of fundamental constants [1, 2]. We discuss the possibility of searching for nuclear spin-dependent space-parity violating ($\mathcal{NSD}-\mathcal{PV}$) interaction in closed-shell and open-shell polyatomic molecules. The parameter $W_{\rm a}$ of the effective molecular spin-rotational Hamiltonian characterising the strength of $\mathcal{NSD}-\mathcal{PV}$ interaction in open-shell linear molecules is discussed and approaches for its calculation outlined. In addition, possibilities for detecting $\mathcal{NSD}-\mathcal{PV}$ in chiral molecules via NMR and MW spectroscopy are presented.

REFERENCES:

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2. J. Bagdonaite et al, Science, 339 (6115), 2013.