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Diatomic Molecules as Probes for Nuclear Anapole Moment Effect

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The nuclear anapole moment can be used to test low-energy quantum chromodynamics and parity nonconservation in nuclei. Diatomic molecules possess rich and varied spectra and nearly degenerate energy levels, which provide strong enhancements for nuclear anapole moment effects, making it possible to search for new physics beyond the standard model in a small experiment. In order to extract the magnitude of nuclear anapole moment from measurements, a P-odd interaction coefficient WA, which depend on molecular structure, needs to be calculated with high accuracy. In this presentation, the measurement principle is briefly introduced and the WA coefficients calculated within different methods for some diatomic molecules of interest are presented and discussed.

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