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Nuclear Spin-Dependent Parity Violation in Light Polyatomic Molecules ERIC NORRGARD, DANIEL BARKER, University of Maryland, JQI, NIST, STEPHEN ECKEL, JAMES FEDCHAK, NIKOLAI KLIMOV, JULIA SCHERSCHLIGHT, NIST, YONGLIANG HAO, ANASTASIA BORSCHEVSKY, University of Groningen — Linear polyatomic molecules are highly sensitive probes of nuclear spin-dependent parity violation (NSDPV). Measurements in these systems will enable experimental determination of poorly known electroweak coupling parameters. To date, measurements have focused on heavy nuclei where the NSDPV effect is enhanced by relativistic and collective nuclear effects. However, cold trapped polyatomic molecules should allow for the NSDPV effect to be measured to 10% uncertainty in nuclei as light as Be. We focus on four light species: Be and Mg cyanide and isocyanide. Importantly, molecular and nuclear calculations are highly accurate for these light systems, allowing experiment to directly test Standard Model predictions.

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