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Probing nuclear structure via hyperfine splittings in Yb-173

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Atomic hyperfine structure provides a window into the structure of nuclei. High-precision atomic theory is essential for extracting model-independent nuclear observables from hyperfine measurements –permitting the interrogation of nuclear models. Such studies also allow the testing of atomic structure theory in the nuclear vicinity, which is needed for low-energy searches for new physics beyond the Standard Model.

I will present the results of a collaboration with atomic clock experimentalists at the German national metrology institute, Physikalisch-Technische Bundesanstalt (PTB), where unparalleled experimental precision, in conjunction with state-of-the-art atomic theory, allows the extraction of higher-order nuclear moments of Yb-173 for the first time.

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