Abstract Submitted
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Ab initio calculations of 10C → 10B super-allowed Fermi transition[1] MICHAEL GENNARI, PETR NAVRATIL, TRIUMF — Cabibbo-Kobayashi-Maskawa (CKM) matrix unitarity is one of the most sensitive probes for beyond standard model (BSM) physics. Extraction of the largest contributor to unitarity, the Vud matrix element, from super-allowed 0+ → 0+ Fermi beta decay transitions requires theoretical calculation of the isospin symmetry breaking correction δC. We apply the No-Core Shell Model with Continuum (NCSMC) [1], a method for describing both bound and unbound states in light nuclei in a unified way, to investigate the 10C → 10B super-allowed Fermi transition. With chiral two- and three-nucleon interactions as the only input, we are able to calculate the isospin breaking correction δC in a more robust way than in other approaches. We also discuss several intermediate and related results, in particular, the nuclear structure of 10C, 10B, and 10Be, as well as our plans to calculate δC for 14O→14N Fermi transition. [1] P. Navratil, S. Quaglioni, G. Hupin, C. Romero-Redondo, A. Calci, Physica Scripta 91, 053002 (2016).

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