

Abstract Submitted  
for the APR21 Meeting of  
The American Physical Society

**Uncertainty Quantification for Neutrinoless Double-Beta Decay Calculations**<sup>1</sup> EDUARDO COELLO PEREZ, Lawrence Livermore Natl Lab — Observation of the neutrinoless double-beta decay will unambiguously establish neutrinos as their own antiparticles, shed light on the mechanism giving them mass, and support leptogenesis scenarios for the matter-antimatter asymmetry in the universe. The uncertainty in the nuclear matrix element (NME) governing this process calculated with diverse nuclear models makes it difficult to plan next-generation experiments in search for the decay and to extract precise information from a potential observation. On the other hand, the computational cost of state-of-the art *ab-initio* calculations inhibits an assessment of the uncertainty in the resulting NME. Employing a surrogate model to describe the nuclei involved in the decay significantly reduces this computational cost, facilitating a study on how the uncertainties in the nuclear forces and transition operator propagate to the NME. The systematic construction of these ingredients in chiral effective field theory and Bayesian uncertainty quantification techniques allow us to access the theoretical uncertainty associated with *ab-initio* calculations of the NME.

<sup>1</sup>Prepared by LLNL under Contract DE-AC52-07NA27344 through LDRD 19-LW-039

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Date submitted: 11 Jan 2021

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