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Why correlated effective field theory uncertainties matter: nuclear symmetry energy[1] CHRISTIAN DRISCHLER, Department of Physics, University of California, Berkeley, RICHARD J. FURNSTAHL, JORDAN A. MELENDEZ, Department of Physics, The Ohio State University, DANIEL R. PHILLIPS, Department of Physics and Astronomy and Institute of Nuclear and Particle Physics, Ohio University — In this talk, I report on the BUQEYE collaboration's [1] recent statistical analysis of correlated truncation errors in the nuclear-matter equation of state (EOS) derived from chiral effective field theory (EFT) [2,3]. Gaussian Processes with physics-based hyperparameters allow us to efficiently quantify and propagate theoretical uncertainties of the EOS to derived quantities. Specifically, I will discuss the nuclear symmetry energy to emphasize the importance of correlations between different densities and observables for robust uncertainty quantification of the EOS.

1) https://buqeye.github.io/

2) Drischler, Furnstahl, Melendez, and Phillips, arXiv:2004.07232

3) Drischler, Melendez, Furnstahl, and Phillips, arXiv:2004.07805

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