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Bayesian truncation errors in chiral effective field theory: model checking and accounting for correlations[1] JORDAN MELENDEZ, SARAH WESOLOWSKI, DICK FURNSTAHL, Ohio State Univ - Columbus — Chiral effective field theory (EFT) predictions are necessarily truncated at some order in the EFT expansion, which induces an error that must be quantified for robust statistical comparisons to experiment. A Bayesian model yields posterior probability distribution functions for these errors based on expectations of naturalness encoded in Bayesian priors and the observed order-by-order convergence pattern of the EFT [1]. As a general example of a statistical approach to truncation errors, the model was applied to chiral EFT for neutron-proton scattering using various semi-local potentials of Epelbaum, Krebs, and Meißner (EKM). Here we discuss how our model can learn correlation information from the data and how to perform Bayesian model checking to validate that the EFT is working as advertised. [1] arXiv:1704.03308 submitted to PRC (in press).

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Jordan Melendez
Ohio State Univ - Columbus

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