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Quantifying truncation errors in effective field theory[1] R.J. FURNSTAHL, Ohio State University, N. KLCO, D.R. PHILLIPS, Ohio University, S. WESOLOWSKI, Ohio State University — Bayesian procedures designed to quantify truncation errors in perturbative calculations of QCD observables are adapted to expansions in effective field theory (EFT). In the Bayesian approach, such truncation errors are derived from degree-of-belief (DOB) intervals for EFT predictions. Computation of these intervals requires specification of prior probability distributions ("priors") for the expansion coefficients. By encoding expectations about the naturalness of these coefficients, this framework provides a statistical interpretation of the standard EFT procedure where truncation errors are estimated using the order-by-order convergence of the expansion. It also permits exploration of the ways in which such error bars are, and are not, sensitive to assumptions about EFT-coefficient naturalness. We demonstrate the calculation of Bayesian DOB intervals for the EFT truncation error in some representative cases and explore several methods by which the convergence properties of the EFT for a set of observables may be used to check the statistical consistency of the EFT expansion parameter.

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