Bayesian parameter estimation for effective field theories SARAH WESOLOWSKI, The Ohio State University, NATALIE KLCO, University of Washington, RICHARD FURNSTAHL, The Ohio State University, DANIEL PHILLIPS, ARBIN THAPILAYA, Ohio University — We present a procedure based on Bayesian statistics for effective field theory (EFT) parameter estimation from experimental or lattice data. The extraction of low-energy constants (LECs) is guided by physical principles such as naturalness in a quantifiable way and various sources of uncertainty are included by the specification of Bayesian priors. Special issues for EFT parameter estimation are demonstrated using representative model problems, and a set of diagnostics is developed to isolate and resolve these issues. We apply the framework to the extraction of the LECs of the nucleon mass expansion in SU(2) chiral perturbation theory from synthetic lattice data.

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