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**Two case studies in a Bayesian approach to estimating the parameters of nucleon-nucleon interactions in chiral effective field theory**[1] SARAH WESOLOWSKI, Salisbury University, RICHARD FURNSTAHL, Ohio State University, DANIEL PHILLIPS, Ohio University — We apply our previously developed Bayesian framework for effective field theory (EFT) parameter estimation to the semi-local nucleon-nucleon (NN) interactions of Epelbaum, Krebs, and Meiner (EKM) as a test case. The main output of Bayesian parameter estimation is a posterior probability distribution function (pdf) for those parameters, the so-called low-energy constants (LECs), and this pdf contains all the necessary correlation and uncertainty information needed for propagation of LEC uncertainty to observable calculations. We discuss two case studies where information about the physics of the interaction can be gleaned from the behavior of the posterior: first, an operator redundancy is detected in the s-waves at fourth order in the interactions; and second, we assess the impact of including truncation uncertainties consistently on the extracted parameters as a function of the amount of high-energy data included.

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