

Abstract Submitted
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Nonperturbative renormalization of the chiral nucleon-nucleon interaction up to next-to-next-to-leading order¹ EHAB MARJI, College of Western Idaho, Nampa, Idaho 83653, USA, AMRAH CANUL, QUINN MACPHERSON, REBECCA WINZER, Department of Physics, University of Idaho, Moscow, Idaho 83844, USA, CHRISTOPHER ZEOLI, Department of Physics, Florida State University, Tallahassee, Florida 32306, USA, DAVID ENTEM, Universidad de Salamanca, E-37008 Salamanca, Spain, RUPRECHT MACHLEIDT, Department of Physics, University of Idaho, Moscow, Idaho 83844, USA — We study the nonperturbative renormalization of the nucleon-nucleon (NN) interaction at next to-leading order (NLO) and next-to-next-to-leading order (NNLO) of chiral effective field theory. A systematic variation of the cutoff parameter is performed for values below the chiral symmetry breaking scale of about 1 GeV. The accuracy of the predictions is determined by calculating the χ^2 for the reproduction of the NN data for energy intervals below pion-production threshold. At NLO , NN data are described well up to about 100 MeV laboratory energy and, at NNLO, up to about 200 MeV—with, essentially, cutoff independence for cutoffs between about 450 and 850 MeV.

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