

Abstract Submitted
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The proton–deuteron scattering length in pionless EFT¹ SEBASTIAN KÖNIG, Department of Physics, The Ohio State University, HANS-WERNER HAMMER, Institut für Kernphysik, Technische Universität Darmstadt — We present a fully perturbative calculation of the quartet-channel proton–deuteron scattering length up to next-to-next-to-leading order (NNLO) in pionless effective field theory. In particular, we use a framework that consistently extracts the Coulomb-modified effective range function for a screened Coulomb potential in momentum space and allows for a clear linear extrapolation back to the physical limit without screening. We find a natural convergence pattern as we go to higher orders in the EFT expansion. Our NNLO result of (10.9 ± 0.4) fm agrees with older experimental determinations but deviates from more recent results around 14 fm. As a resolution of this discrepancy, we discuss the scheme dependence of Coulomb subtractions in a three-body system.

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