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Renormalization of Chiral Effective Field Theory in the Nucleon-Nucleon Sector

Thursday 28 October 2021 13:50 (20 minutes)

Chiral effective field theory (χ EFT) promises a link between the underlying theory of the strong nuclear force – quantum chromodynamics (QCD) – and nuclear forces. The χ EFT of low energy nuclear physics is formally parameterized by an infinite number of interaction diagrams, with accompanying undetermined interaction strengths called low-energy constants. To get a predictive theory at each order in the χ EFT a power-counting procedure must be established. A sound power-counting procedure is also necessary for ensuring RG invariant predictions. I will present preliminary results from a Bayesian analysis of an RG invariant formulation of χ EFT at leading order. This talk will try to illuminate the strengths and challenges of the ab initio χ EFT approach to nuclear forces and how it can be used to increase our knowledge about the physics of nuclear systems.

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