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Chiral potentials, perturbation theory, and the 1S_0 channel of NN scattering DEEPSHIKHA SHUKLA, The George Washington University — Nucleon-nucleon phase shifts obtained from experimental data and the chiral expansion for the long-distance part of the NN interaction are used to obtain information about the short-distance piece of the NN potential that is at work in the 1S_0 channel. The energy dependence produced by short-distance dynamics is well approximated by a two-term polynomial for $T_{lab} \leq 200$ MeV if the scale of separation between “long-” and “short-” distance physics is chosen to be less than 1.8 fm. A quantitative description of NN dynamics is possible, at least in this channel, by treating the long-distance parts of the chiral NN potential in perturbation theory.

Deepshikha Shukla
The George Washington University

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