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S-matrix solution of Lippmann-Schwinger equation for regular and singular potentials

Friday 30 September 2016 16:00 (35 minutes)

Summary

We have derived a new method based on S-matrix theory to solve the Lippmann-Schwinger equation in partial waves that can applied to both ordinary and singular potentials. A new integral equation derived from the Lippmann-Schwinger equation is found that allows one to calculate exactly the discontinuity of the T-matrix along the left-hand cut.
For an ordinary potential the method reproduces the standard results, while for singular potentials this new method
provides renormalized solutions that satisfy all the required analytical properties for a partial-wave amplitude. Applications of the method to regular and singular potentials in nucleon-nucleon scattering will be discussed.

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Session Classification: New ideas