

R-matrix and Jost function analysis of experimental nuclear scattering data.

Monday 23 June 2025 15:30 (30 minutes)

In the analysis of nuclear scattering data to determine resonance parameters (among other scattering variables), both the well-known R -matrix and Jost function methods of analysis can be used. Each method has benefits and disadvantages. A new method for fitting non-relativistic binary-scattering data and for extracting the parameters of possible quantum resonances in the compound system that is formed during the collision, is proposed. This method combines the R -matrix approach with the analysis based on the semi-analytic representation of the Jost functions. In this presentation, the R -matrix method, Jost method and new method will be discussed, with reference to the benefits and disadvantages of each method. Furthermore, results from testing the efficiency and accuracy of the proposed new method are presented.

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Session Classification: Monday