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Applications of R-matrix Methods to Light Nuclei

Thursday, 11 July 2024 09:00 (50 minutes)

This talk will discuss the application of phenomenological R-matrix methods to problems in light nuclei. An overview of the theoretical approaches will be presented and contemporary computer codes will be reviewed. Included here will be a discussion why R-matrix methods are often the method of choice for nuclear cross section evaluations in light nuclei. Examples of current interest to nuclear astrophysics and other applications, such as the ^{16}O and ^{17}O compound-nuclear systems, will be discussed. Recent progress in R-matrix methodology, including the introduction of Bayesian techniques, will be discussed. Finally, the I will comment on several open questions in this field, such as the treatment of photon channels, the inclusion of three-body channels, and the challenges of extending R-matrix methods to higher energies.

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