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Nucleus-nucleus potentials in the scattering of tightly and weakly bound systems

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Fusion reactions play an important role in nucleosynthesis and in applications to society. Yet they remain challenging to model. From the theoretical point of view there are different ways of modelling it. In coupled channels perspective, the imaginary part of the interaction does the main role since fusion corresponds to a fraction of the entrance flux absorption. However, poor fusion estimation can occur when overestimated due to absorption from long-range imaginary potentials, which take into account other mechanisms not included in the CC scheme. In this work, we investigate the features of the nucleus-nucleus potentials that describe fusion cross sections and compare with those needed for realistic calculations of elastic scattering and other direct-reaction cross sections.

Altas energias

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