

Nuclei in the Cosmos (NIC XVII)



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S matrices of elastic α - ^{12}C scattering at low energies in cluster effective field theory

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The elastic α - ^{12}C scattering at low energies for $l = 0, 1, 2, 3, 4, 5, 6$ is studied in effective field theory. We discuss the construction of the S matrices of elastic α - ^{12}C scattering in terms of the amplitudes of sub-threshold bound and resonant states of ^{16}O , which are calculated from the effective Lagrangian. The parameters appearing in the S matrices are fitted to the phase shift data below the p - ^{15}N breakup threshold energy, and we find that the phase shifts are well described within the theory.

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