عنوان مقاله:

Three-Body force effects on breakup and formation of ۶Li nuclei

محل انتشار:

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خلاصه مقاله:

During helium transforms into heavier elements, both of ۶Li radiative capture reaction and its breakup occur in the stars. ۶Li radiative capture reaction and its inverse have been studied using Effective Field Theory (EFT), up to next to leading order (NLO). The deuteron-alpha reaction and the photodisintegration rates of the ۶Li(γ,α)d reaction have been calculated. Alpha particle was assumed to be structureless and coulomb effects considered between the charged particles. The inverse reaction rate has been estimated for E۱ and E۲ transitions by adding the three-body forces, up to NLO. The scattering amplitude are calculated at the initial P-wave states of deuteron-alpha for the sum of both E۱ and E۲ multipole transitions. The obtained results are in good agreement with the available experimental data and those of other theoretical models, at the energies relevant to the Big-Bang Nucleosynthesis (BBN). The ۶Li(γ,α)d reaction rate is also found to be acceptable in comparison with the other theoretical results.

کلمات کلیدی:

deuteron-alpha radiative capture, effective field theory, three-body force, Astrophysical reaction rate