

SEMINÁŘ OTF ÚJF, ŘEŽ

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Impact of resonances of the weakly bound nucleus ${}^6\text{Li}$ on elastic scattering and fusion cross sections for reactions with spherical targets

Abstrakt

Converged CDCC calculations of elastic-scattering and total fusion cross sections for reactions induced by the weakly bound ${}^6\text{Li}$ projectile on Sm isotopes at energies around the Coulomb barrier are presented. The impact of the low-lying alpha-deuteron resonant states in ${}^6\text{Li}$ ($l = 2$, $J^\pi = 3^+$, 2^+ , 1^+) on elastic angular distributions and fusion processes is quantified. This is performed by following two types of calculations, namely, (a) by omitting from the continuum energy spectrum all states where the resonances are constructed in the discretization process, and (b) by considering only the resonance discretized space. Dynamical polarization potentials are used to interpret the effects of resonance and non-resonance continuum couplings. For elastic scattering, it is found that resonant couplings play a more significant role than non-resonance ones at back-scattering angles and at incident energies below the Coulomb barrier. However, their effect becomes weaker as the incident energy increases above the barrier energy. Fusion cross sections are calculated with short range potentials for the α -d fragments. The calculations for resonance couplings show a less significant enhancement than non-resonance ones respect to the full fusion calculations with all continuum couplings.

**Seminář se koná v pondělí 18. 4. 2016 v 10:30 hod.
v seminární místnosti OTF ÚJF v Řeži**

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