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EFFECTS OF CLUSTER POLARIZATIONS ON THE RADIATIVE CAPTURE REACTIONS $^3He(\alpha,\gamma)^7Be$, $^3He(\alpha,\gamma)^7Li$, $^6Li(p,\gamma)^7Be$ AND $^6Li(n,\gamma)^7Li$

The microscopic three-cluster model, developed by the authors, was applied to study effects of cluster polarization on the capture reactions $^3He(\alpha,\gamma)^7Be$, $^3H(\alpha,\gamma)^7Li$, $^6Li(p,\gamma)^7Be$ and $^6Li(n,\gamma)^7Li$. These reactions are of great importance for the astrophysical applications. Thus main attention is devoted to the cross section (or astrophysical S factor) of the reactions at the low-energy range. We also study in detail correlations between astrophysical S factor of the reactions at zero energy and different quantities associated with the ground state of compound nucleus.

Keywords: three-cluster model, cluster polarization, capture reaction, astrophysical S factor.