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Effect of ${}^6\text{Li}$ resonances on near-barrier elastic scattering for reactions with several spherical targets

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\begin{document}
% do not change the conference title
\noindent{\underline{The 12th International Conference on Nucleus-Nucleus Collisions, June 21-26, 2015, Catania, Italy}}

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\begin{center}
{\large \bf Effect of  ${}^6\text{Li}$  resonances on near-barrier elastic scattering
for reactions with several spherical targets}
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%
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% write your abstract here

Calculations of elastic scattering angular distributions for reactions of the weakly bound projectile ${}^6\text{Li}$ with targets ${}^{28}\text{Si}$, ${}^{58}\text{Ni}$, ${}^{144}\text{Sm}$ and ${}^{208}\text{Pb}$ at energies just above the Coulomb barrier are performed with the continuum-discretized coupled-channel calculation method. Ground, resonant and non-resonant continuum states of ${}^6\text{Li}$ are included in the convergent calculations. The effect of the resonances on elastic scattering angular distributions is studied, in an original procedure, by excluding from the continuum space those states corresponding to the resonances. When the resonances of ${}^6\text{Li}$ are considered, the calculated elastic scattering angular distributions are in good agreement with the measurements. The exclusion of the resonances produces a small effect for the light targets, however the effect increases for the heavier systems. Calculation of the polarization potentials associated with the resonances show that they have a repulsive character at the long range region, where scattering occurs. It is also confirmed that couplings to continuum states of ${}^6\text{Li}$ are essential to achieve agreement with the data.

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