## **DREB2022** - Direct Reactions with Exotic Beams



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## Bound-to-continuum potential model for nucleon radiative capture reaction in nuclear astrophysics

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The nucleon radiative capture reactions in which the nucleon is absorbed by the target nucleus, and the gamma radiation is then detected are important in pure and applied nuclear physics, especially in nuclear astrophysics. Radiative capture cross sections at very low energies are inaccessible by experiments, but are important for astrophysical studies. In our work, the keV-nucleon radiative capture reactions were studied using the bound-to-continuum potential model in which both scattering and bound states are based on the Skyrme Hartree-Fock calculation. The obtained results are shown to be in good agreement with the available experimental data, and the extrapolation at very low energies near 0 keV is reliable. The properties of the single-particle states of the residual nuclei are also discussed.

## Topic

Theory

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