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



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## Measurements of the neutron-removal cross sections of neutron-rich Sn isotopes at R3B setup.

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The equation of state (EoS) plays a key role in many different aspects of modern physics, being fundamental for understanding the structure of nuclear matter, the properties of neutron stars, core-collapse supernova explosions, and the synthesis of heavy elements. While the properties of proton-neutron symmetric matter are relatively well known, the study of asymmetric matter via properties of neutron-rich nuclei became a current focus of investigation. The asymmetry part of the nuclear EoS is expressed by the symmetry energy at saturation J and its slope L. Constraining these parameters is one of the central issues in nuclear physics, especially since the slope parameter L has not yet been constrained well experimentally. It has been identified that a precise determination of the neutron removal cross section of neutron-rich nuclei, which is directly related to the neutron skin, would provide a much better constraint on L. To this end, the experiment was performed with the neutron-rich tin isotopes in the mass range A=124-134 on carbon targets at the R3B setup at the GSI/FAIR facility in inverse kinematics with very large acceptance. The goal of which is to constrain the L parameter from the accurate measurement of the neutron removal cross section by comparison to density functional theory.

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## Topic

Experiment

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