

Abstract Submitted  
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**Neutron Capture Cross Sections for Radioactive Nuclei**<sup>1</sup> ANTON TONCHEV, PETER BEDROSSIAN, JUTTA ESCHER, NICHOLAS SCIELZO, Lawrence Livermore Natl Lab — Accurate neutron-capture cross sections for radioactive nuclei near or far away from the line of beta stability are crucial for understanding the nucleosynthesis of heavy elements. However, neutron-capture cross sections for short-lived radionuclides are difficult to measure due to the fact that the measurements require both highly radioactive samples and intense neutron sources. Essential ingredients for describing the  $\gamma$  decays following neutron capture are the  $\gamma$ -ray strength function and level densities. We will compare different indirect approaches for obtaining observables that can constrain Hauser-Feshbach statistical model calculations of capture cross sections. Specifically, we will consider photon scattering, transfer reactions, and beta-delayed neutron emission. Challenges that exist on the path to obtaining neutron-capture cross sections for reactions on isotopes far from stability will be discussed.

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