Abstract Submitted
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Measurements in the Quasi-Continuum[1] MATHIS WIEDEKING, Lawrence Livermore National Laboratory — The density of energy levels in nuclei increases rapidly as the excitation energy increases towards the particle separation energy, creating a quasi-continuum. The density of states (entropy) in a given system depends on excitations across shell gaps and the number of broken nucleon pairs. It is not possible to identify all energy levels in this quasi-continuum experimentally. Instead, average quantities such as the entropy and γ-ray strength functions are used to describe "gross" nuclear properties, critical in calculating nuclear reaction rates in astrophysical processes. I will discuss experimental efforts underway to measure feeding and lifetimes of quasi-continuum states using (d,p) transfer reactions. The protons and γ-rays from the reactions are detected using the STARS-LIBERACE detector array. Particle energies of detected charged particles will be used to infer the "entrance" excitation energy of the residual nucleus. These "entrance" energies are used to study feeding to discrete states and lifetimes of regions in the quasi-continuum.

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