Nuclear Physics Seminar

MONDAY

NOVEMBER 23

4:00 P.M.

RM 124 NSH

β-Oslo method: A technique to determine the (n, γ) cross sections

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Neutron-capture reaction rates are one of the key components in predicting the path of astrophysical rapid neutron-capture process (r-process). Due to the short half-lives of the nuclei involved in r-process, experimental data on the neutron-capture cross sections on these nuclei is very scarce. A new technique called the β-Oslo method has been developed to extract the nuclear level density and γ-strength function in neutron-rich nuclei. The (n, γ) cross sections are then constrained using the inputs from the measurement and Hauser-Feshback approach. The experiment focusing on the Co isotopes relevant for the weak r-process was performed at the National Superconducting Cyclotron laboratory (NSCL). The γ-summing technique was employed using the Summing NaI (SuN) detector from NSCL. Results from the first measurement on the neutron-rich nuclei and their astrophysical implication will be discussed.