Friday, November 3rd At 3:30pm

Exploration of the ^{60}Ca Region

Abstract:
Increased beam intensities at NSCL, RIKEN, and new facilities like FRIB in the future, coupled with advances in experimental techniques, such as the use of a two-stage separator, will allow observation of many new nuclei along the neutron drip-line. In a recent experiment production cross sections for a large number of neutron-rich nuclei produced from the fragmentation of ^{48}Ca (140 and 345 MeV/u), ^{76}Ge (130 MeV/u), ^{82}Se (139 MeV/u), and ^{70}Zn (345 MeV/u), beams were measured in RIKEN and NSCL. These experiments identified more than 30 new isotopes of the elements $11 \le Z \le 26$. Systematic trends observed in the production cross sections changes in the nuclear mass surface, that can be explained with a shell model that predicts a subshell closure at N=34 around Z=20. This talk will present:

- Results from the recent experiment at RIKEN using a ^{70}Zn beam aimed at the search for new isotopes in the ^{60}Ca region.
- Secondary reactions in the production target may be significant contributors. Results from different experiments on secondary reactions will be presented.
- Evidence that trends in production cross sections near the driplines can be modeled by new dBE production cross section systematics, which can be based on predicted binding energies.

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Refreshments will be served at 3:15pm