

Cyclotron Colloquium on Tuesday, October 12, 2010 at 3:45 pm

"RF Carpet Development at the NSCL"

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ABSTRACT:

The slowing down and thermalizing of nuclear reaction products from projectile fragmentation processes is essential for allowing the study of rare isotopes in low-energy precision experiments. Current methods of stopping fast beams rely on gas filled linear chambers equipped with electrodes using DC and/or RF electric fields to transport the ions towards an extraction orifice. However, present systems have exhibited a sharp degradation of extraction efficiency with increasing incident beam rate due to space charge buildup. At the National Superconducting Cyclotron Laboratory (NSCL) at Michigan State University (MSU), RF-guiding techniques in the form of RF carpets are currently being developed to alleviate this problem by discriminating against the ions created during the slowing down process with a mass-selective transport system. Current transport results with alkali ions will be presented with RF carpet prototypes for linear and concentric circle geometries over a range of applicable parameters for linear gas stoppers & a cyclotron gas stopper and will be compared to present experimental stopping systems.

** Gregory K. Pang is a Postdoc candidate in the heavy element group.