Abstract Submitted
for the DNP08 Meeting of
The American Physical Society

Cyclotron gas stopper: simulations and predicted performance
C.M. CAMPBELL, S. CHOUHAN, C. GUENAUT, D. LAWTON, F. MARTI, J. OTTARSON, S. SCHWARZ, A.F. ZELLER, P. ZAVODSZKY, National Superconducting Cyclotron Laboratory, Michigan State University, East Lansing, MI, USA, G. BOLLEN, National Superconducting Cyclotron Laboratory and Department of Physics and Astronomy, Michigan State University, East Lansing, MI, USA, D.J. MORRISSEY, G. PANG, National Superconducting Cyclotron Laboratory and Department of Chemistry, Michigan State University, East Lansing, MI, USA —
Projectile fragmentation followed by in-flight separation provides fast, chemistry-independent access to a wide range of β-unstable nuclides. To optimize their use, these exotic beams should be available at energies from rest to several MeV/u. This can be achieved by stopping fast beams in a volume of helium, extracting the stopped ions, and reaccelerating them to the desired energy. A "cyclotron gas stopper" has been proposed to overcome the limitations of current and proposed linear gas stoppers. The current design of the NSCL cyclotron-stopper uses a 2 meter diameter superconducting spiral-sector magnet with ion-guiding carpets in the central region. Complete simulations have been performed starting with realistic beam properties for 17 projectile fragments ranging from ^{6}Li to ^{150}I. Details of the NSCL cyclotron-stopper and the simulation package developed to predict its performance will be presented.

Christopher Campbell
National Superconducting Cyclotron Laboratory,
Michigan State University, East Lansing, MI, USA

Date submitted: 01 Jul 2008 Electronic form version 1.4