

BEAM OPTICS STUDIES FOR A FACILITY FOR RARE ISOTOPE BEAMS

Laura L. Bandura^{1,2}, Bela Erdelyi^{1,2}, and Jerry Nolen²

¹Northern Illinois University, Physics Department,
DeKalb, IL 60115; ²Physics Division, Argonne National
Laboratory, 9700 South Cass Avenue, Argonne, IL 60439

INTRODUCTION

A facility for rare isotope beams (FRIB) has been proposed for the Argonne site. Such a facility would produce high intensity, unstable atomic beams that can be used for direct study or may subsequently react to form more exotic isotopes. In order to produce an exotic beam, high energy, heavy ion driver accelerators are used to collide an unstable radioactive beam with a thin target. The resulting exotic beam is produced via projectile fragmentation and fission.

RESULTS

At this stage, a fragment separator is used to capture, separate and transport the beam. For some studies, the exotic isotope must be stopped in a gas cell. To collect all or most of the exotic beam produced, complex, high-order optical systems with energy absorbers must be developed.

CONCLUSION

Here we show the optics of the gas cell branch of the fragment separator and the results of the monochromatization studies performed.