Optimization of a Gallium Target

X. Ding, UCLA
Target Studies, Nov. 29, 2011
Meson Productions at 6 and 8 GeV
(All using the same geometry as Hg case)
Optimized Target Parameters at $z=-37.5\,\text{cm}$

The mercury jet target geometry. The proton beam and mercury jet cross at $z=-37.5\,\text{cm}$.

New optimization procedure with Study-2a Geometry and fieldmap, (beam below the HG jet exactly at $z=-37.5\,\text{cm}$ and project beam back to $z=-75\,\text{cm}$.)

1) Vary jet radius
2) Vary beam/jet crossing angle while keeping jet fixed - always project beam back to $z=-75\,\text{cm}$
3) Vary jet angle-always keep crossing angle constant-both jet and beam must be rotated about intersection point together always project beam back to $z=-75\,\text{cm}$. 
Target Radius (cm) vs. Proton Kinetic Energy (GeV) for GA, cycle 1 and GA, cycle 2.
BACKUP
MARS Results by J. Back

Useful pion/muon yields for different Z’s and beam energies (J. Back)

- Study 2 NF geometry and B-map
- Acceptance probability histogram used at z=6m (based on ICOOL)