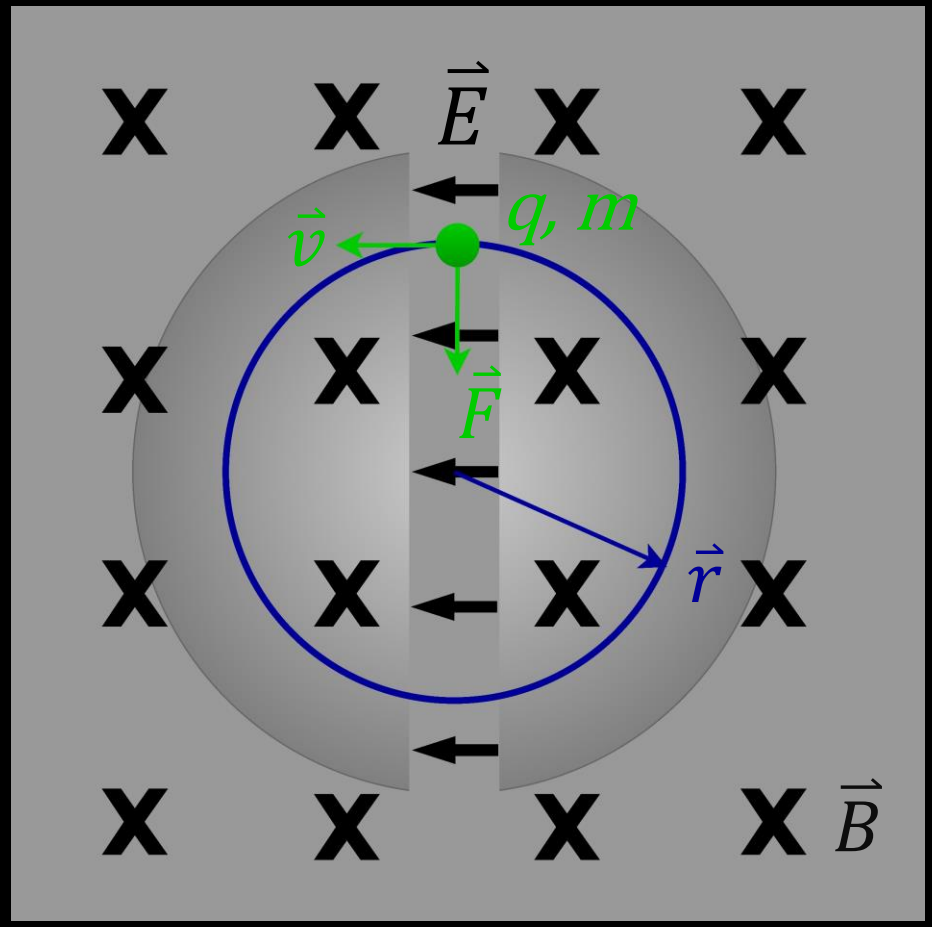
DEUTERIUM-DEUTERIUM FUSION REACTIONS IN THE HOUGHTON COLLEGE CYCLOTRON

Joshua Bowman

Houghton College

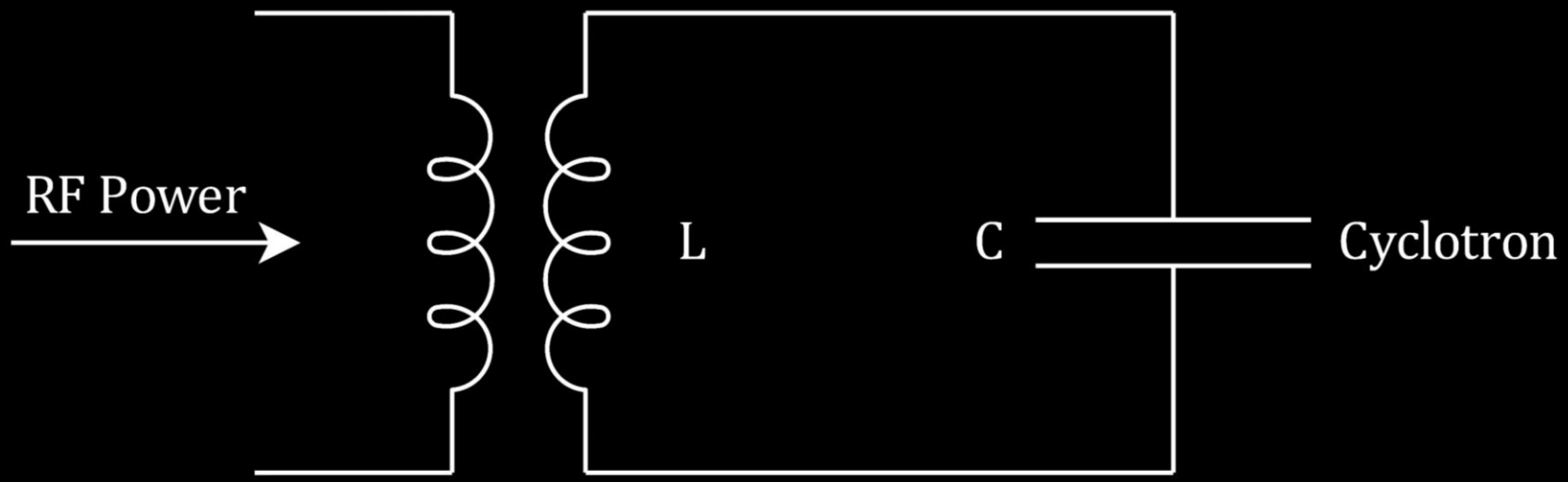
Basic Operating Principles

- $\vec{F} = q\vec{v} \times \vec{B} = \frac{mv^2}{r}\hat{r}$
- $f = \frac{v}{2\pi r} = \frac{qB}{2\pi m}$
- $T = \frac{1}{2}mv^2 = \frac{1}{2}\frac{q^2}{m}B^2R^2$

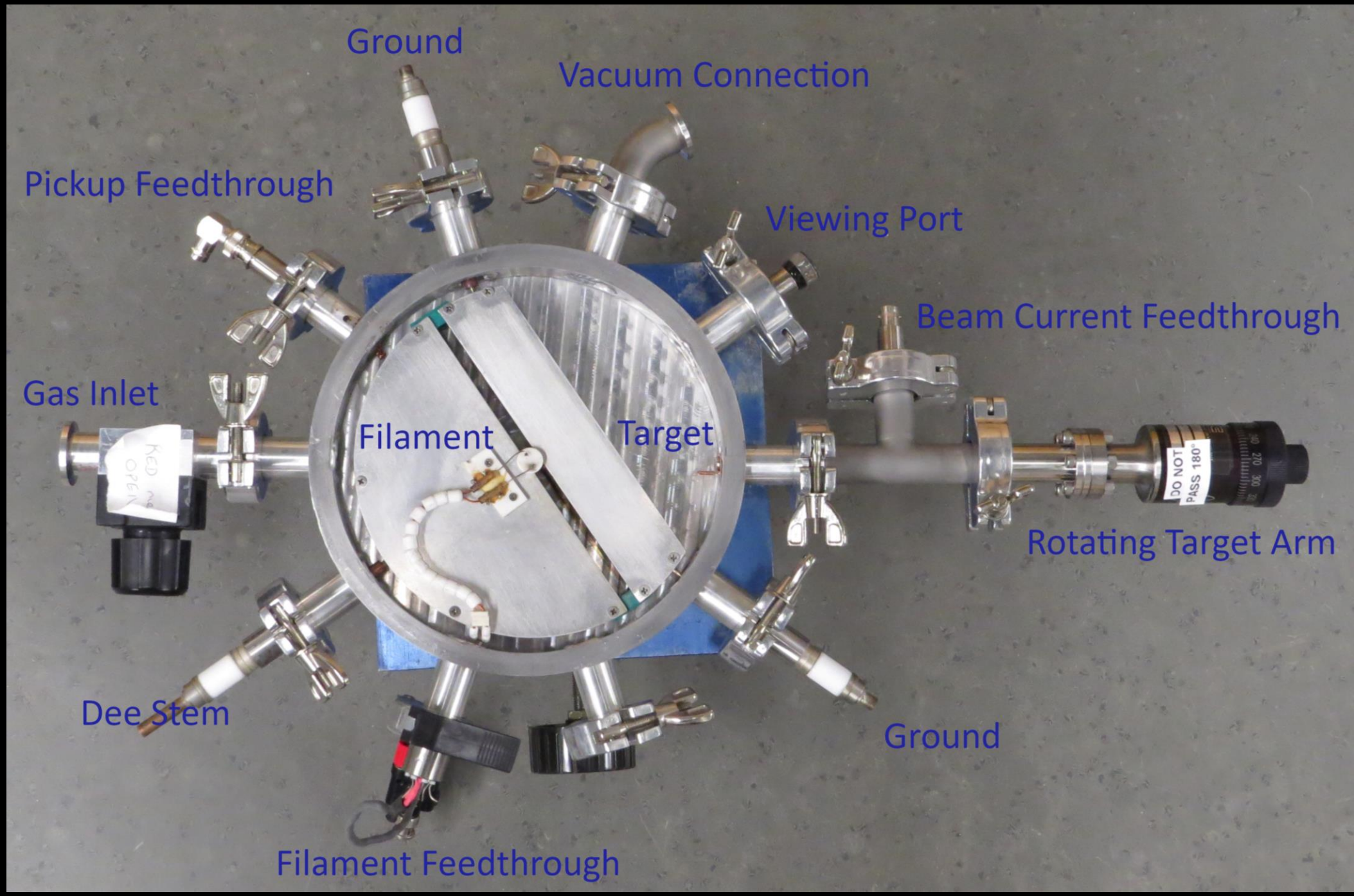


LC Circuit

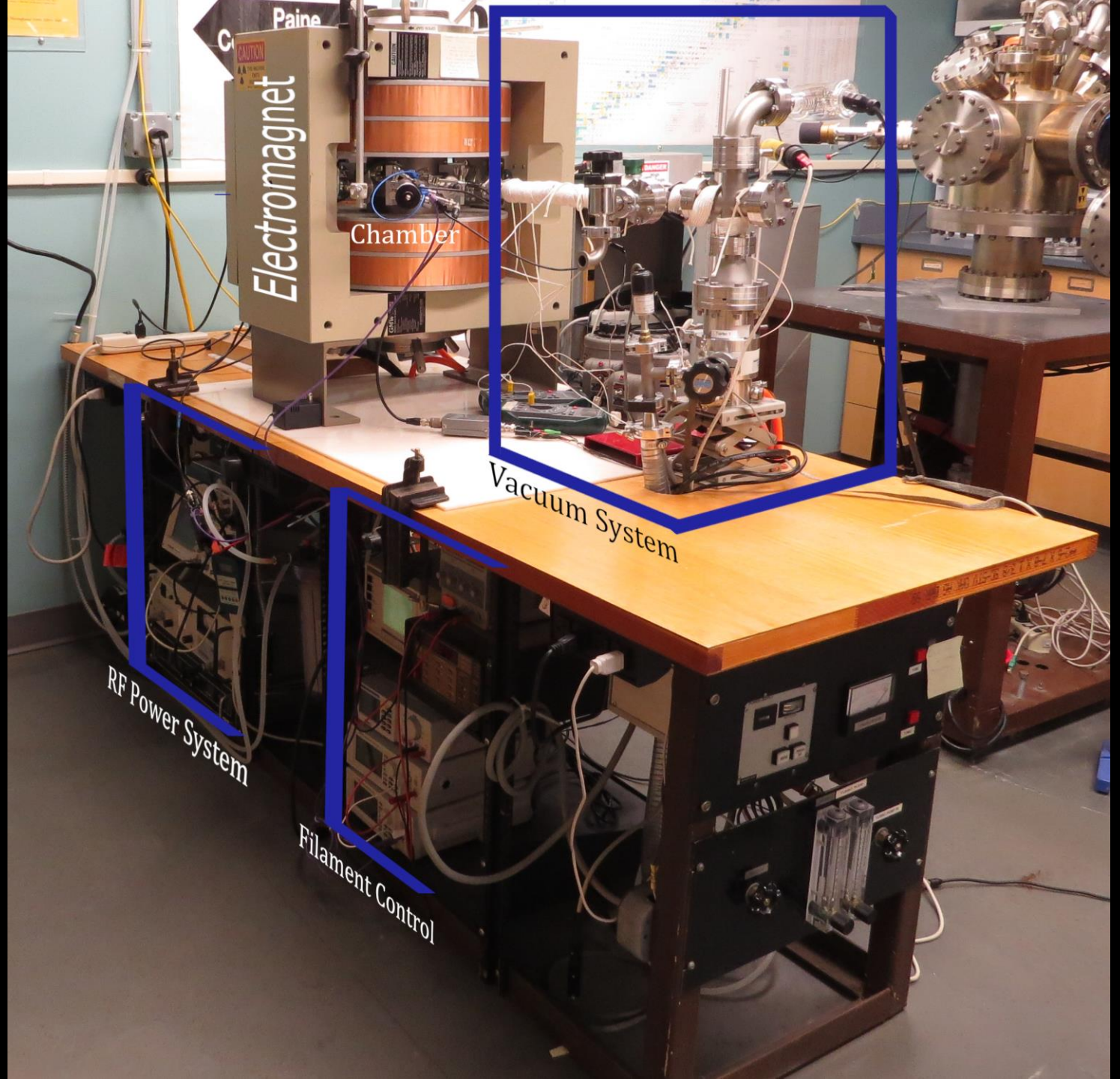
- $f = \frac{1}{\sqrt{LC}}$



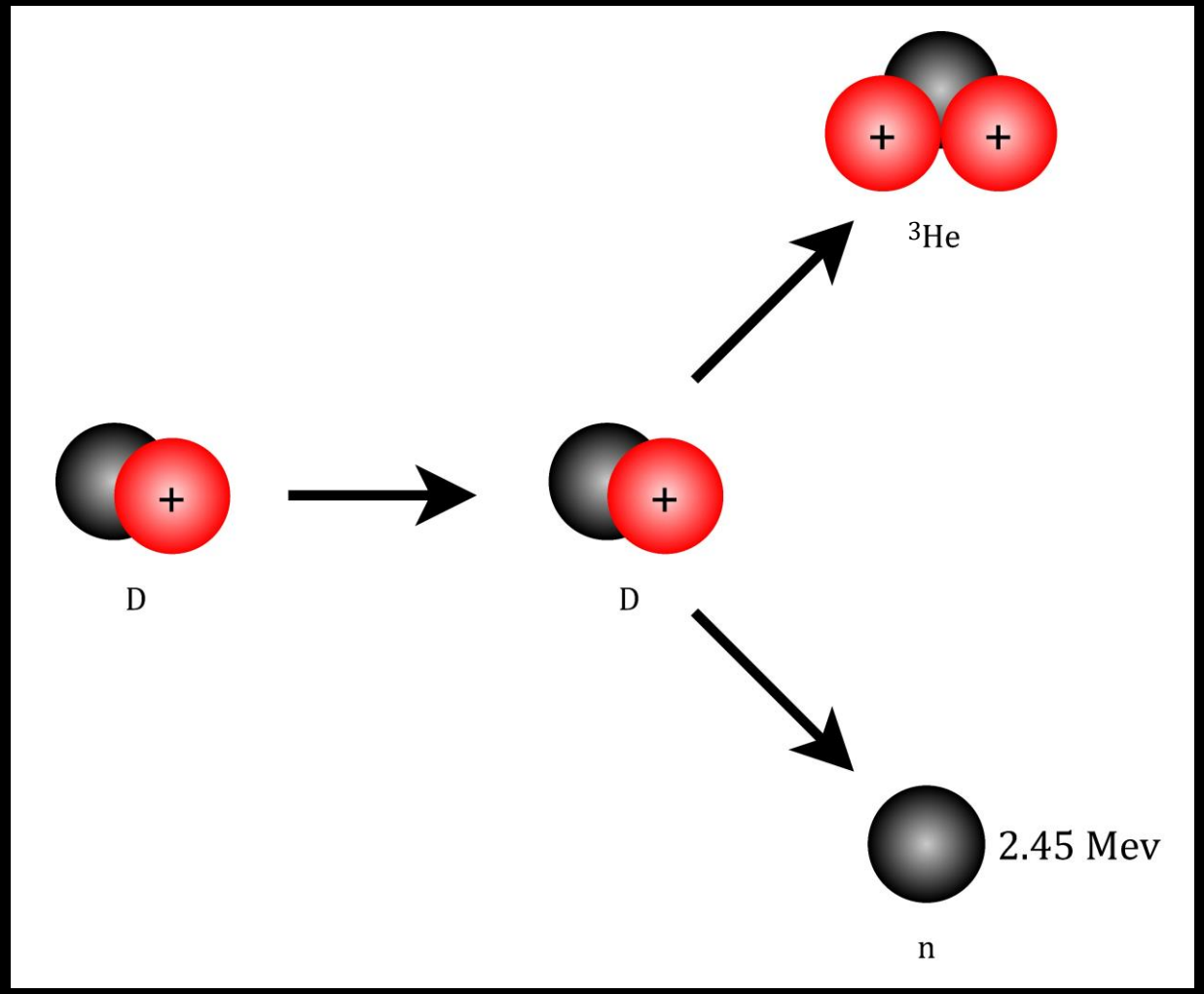
Houghton Cyclotron Chamber



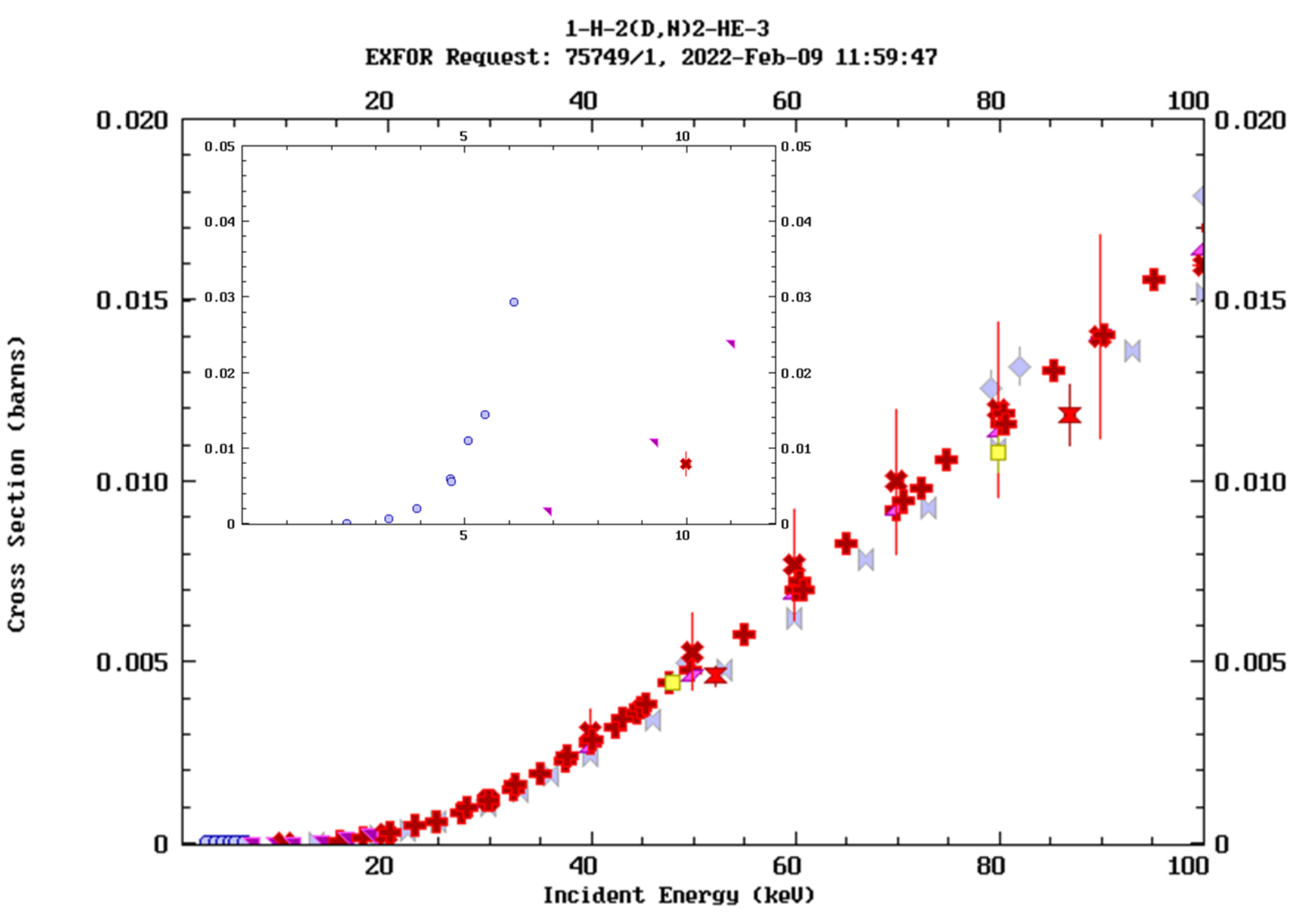
Houghton College Cyclotron



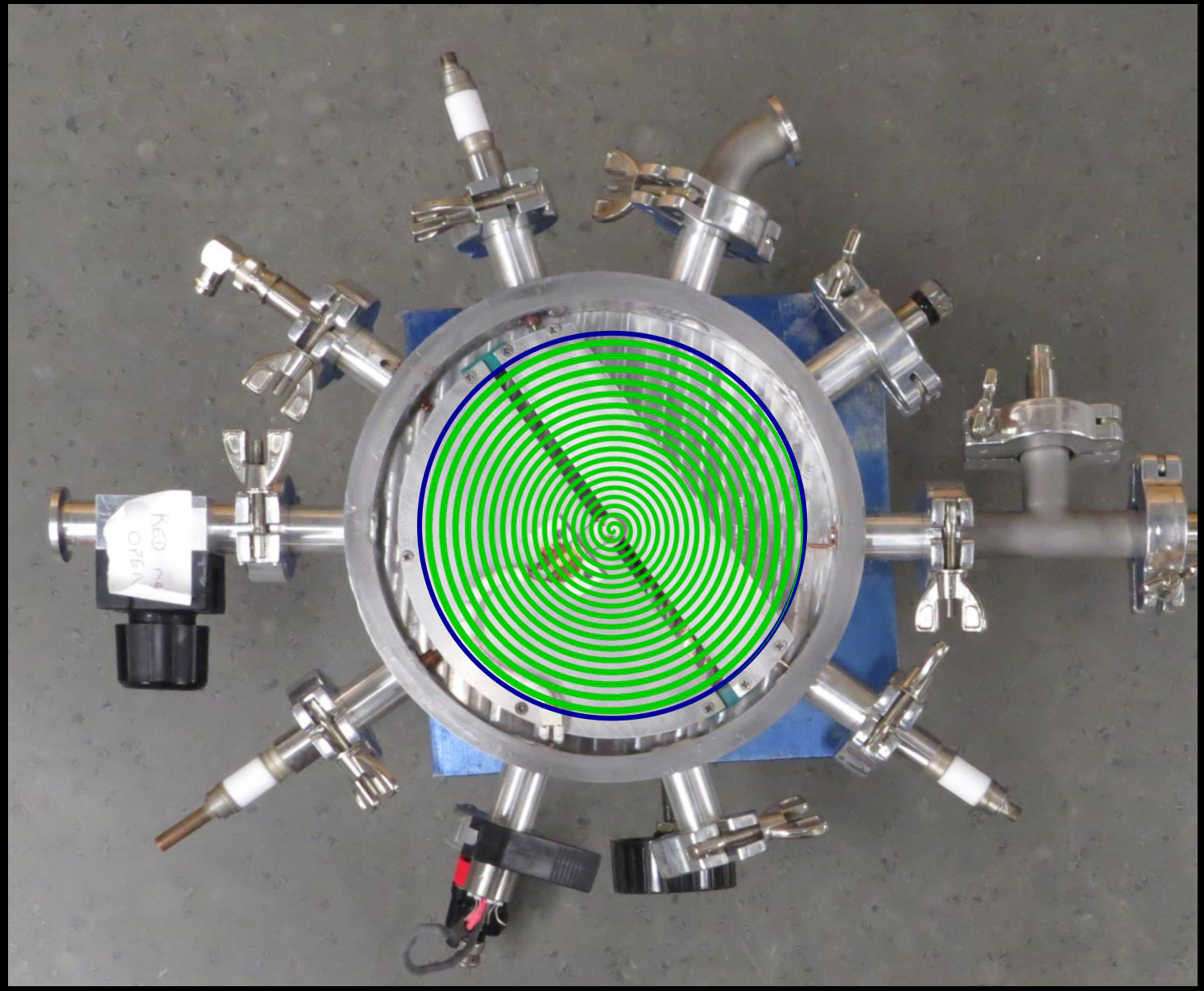
The D(d,n)^{3}He Reaction



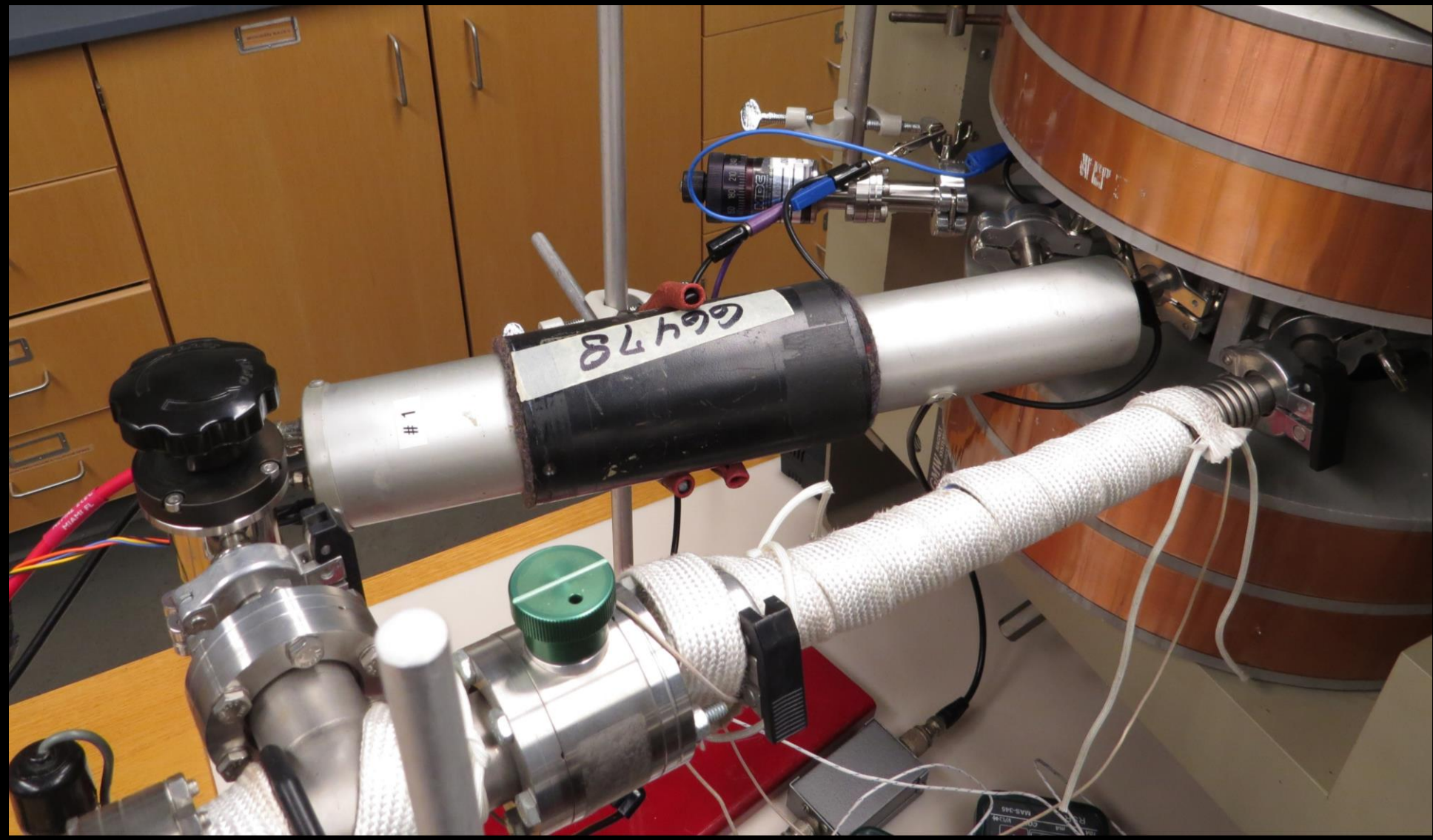
Cross-Section



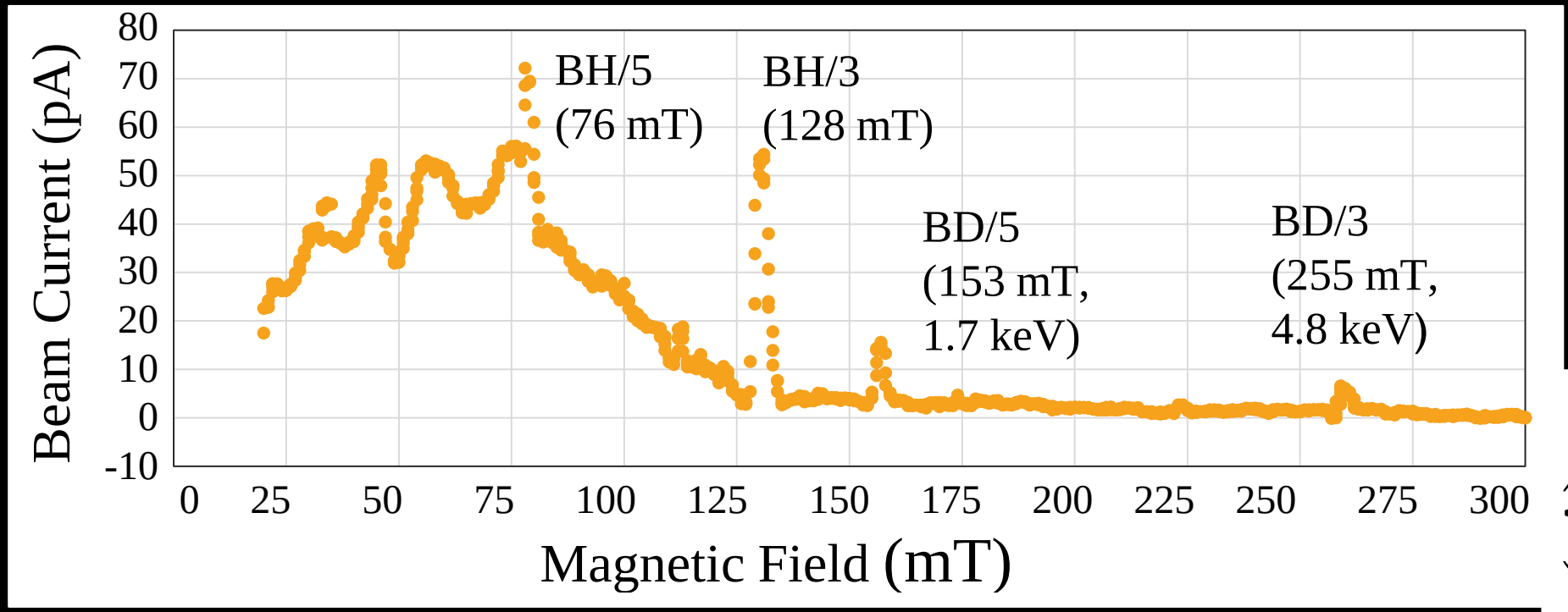
Path to Hit Target

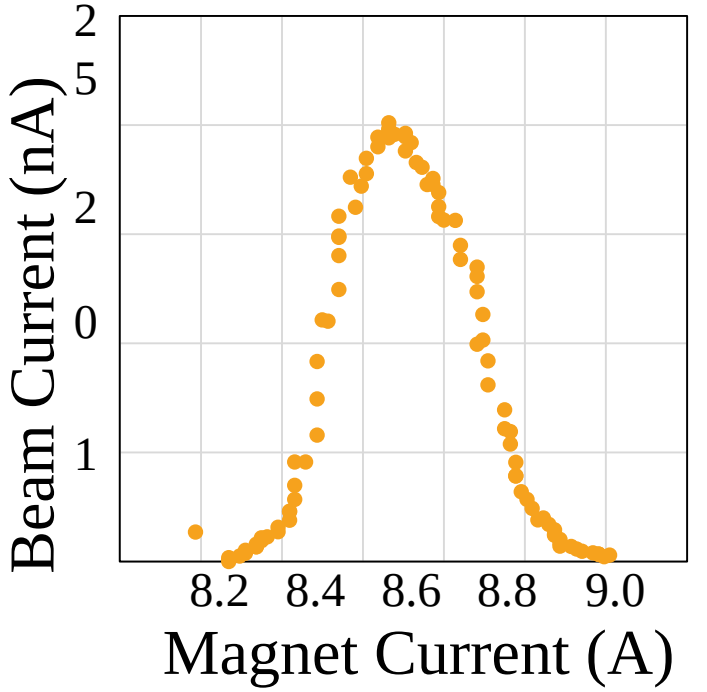


Radiation Detector



Analysis





- 7913 ± 587 counts

Future Work