

Tritium Analysis meeting

04/19/2016

Summary work

- Target density study
- Simulation
- $x > 2$ data analysis

Motivation

Experiment E08014:

Yield as a function of current and vertex position show:

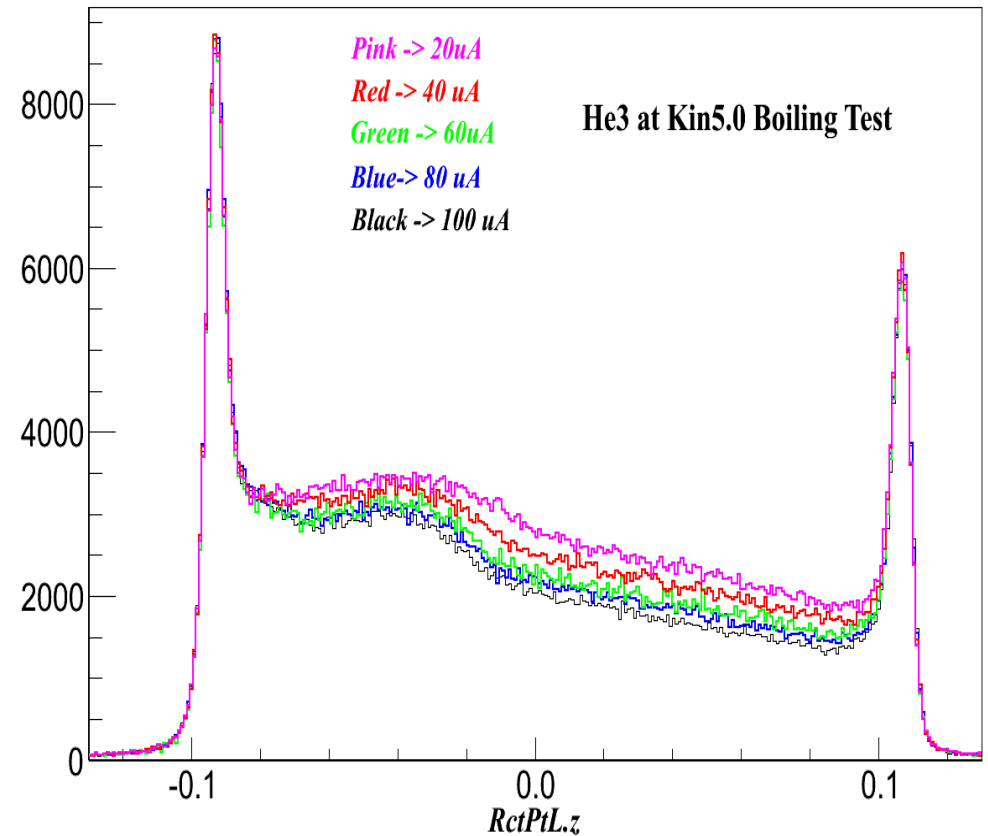
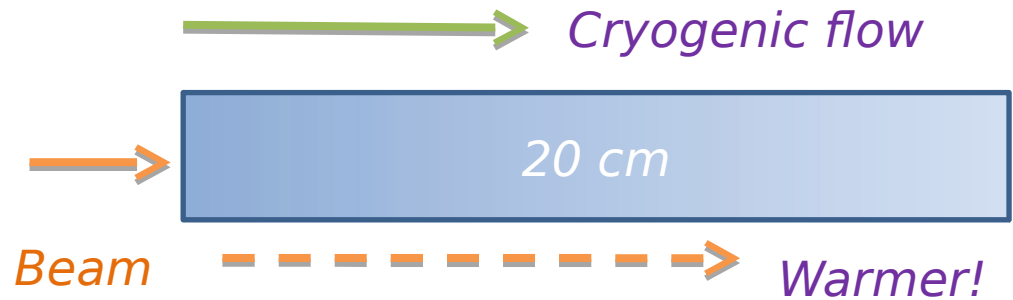
- Large target density fluctuations along target cell.
- Fluctuations depend on current.

Problem:

- Hard to determine the absolute thickness of the target

But:

- We need this absolute thickness to extract the cross section



It is possible to extract the absolute thickness from measurement of the elastics cross section in $x > 2$ experiment

$$Yield = \frac{d\sigma}{d\Omega} * Ne * T * \Delta\Omega$$



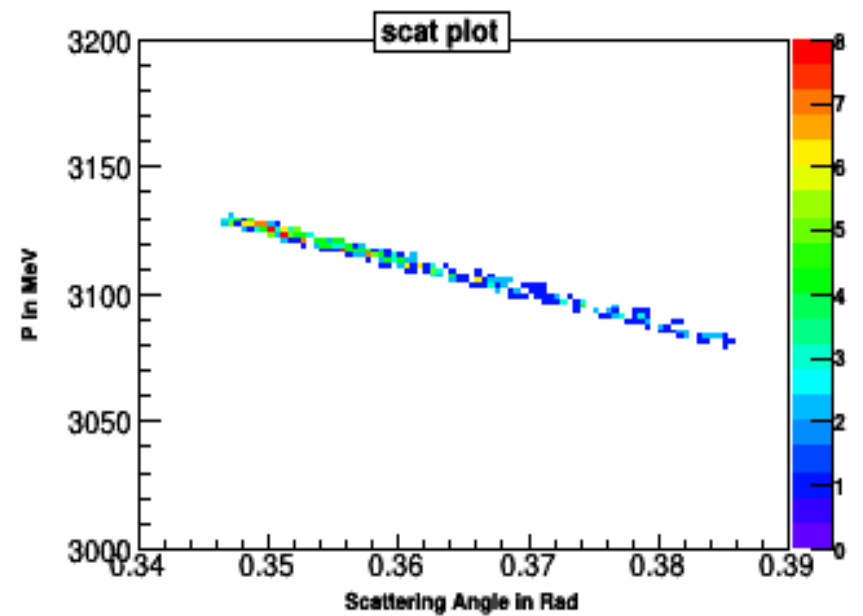
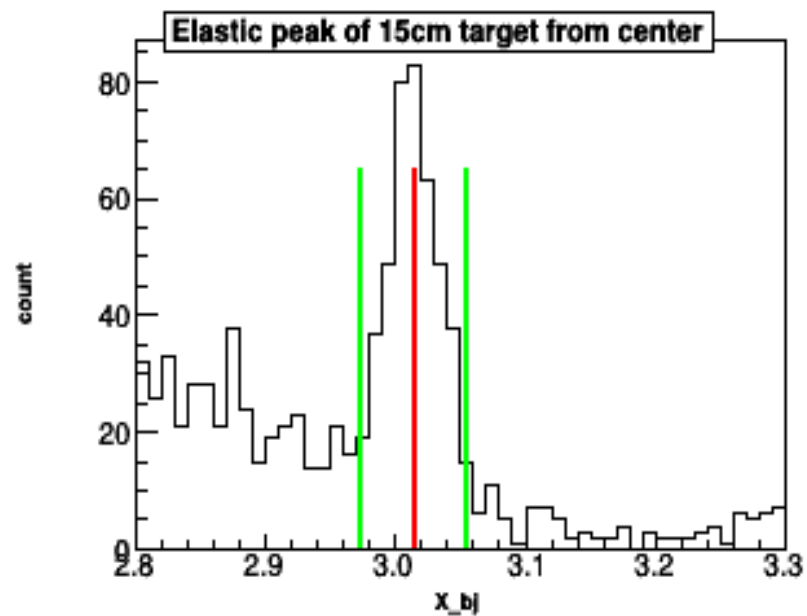
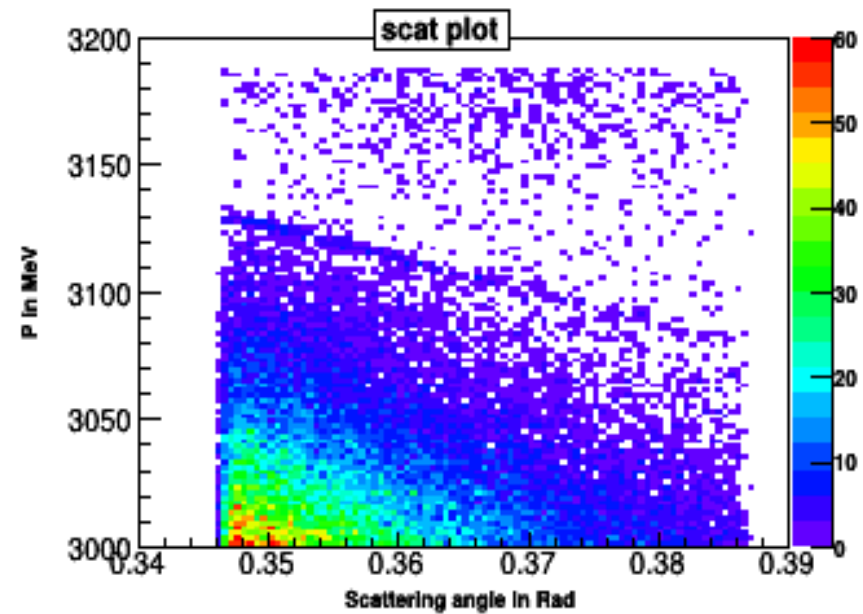
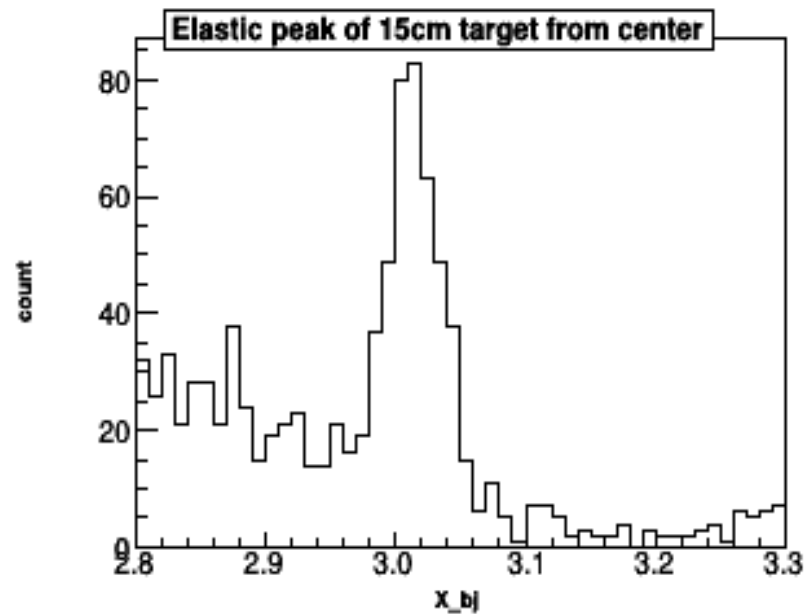
$$T = Yield / \left(\frac{d\sigma}{d\Omega} * Ne * \Delta\Omega \right)$$

Application:

- We will use sealed target for tritium experiment. This method is using elastic scattering to get absolute thickness can be used. For run time ~1hour and E= 2.2 GeV, Q²~ 0.32 GeV²

Target	theta1	theta2	Y1	Y2	error1 (%)	error2 (%)
³ He	12	15	3 e6	1.7 e5	0.05	0.16
³ H	12	15	4 e5	2 e4	0.24	0.72

Elastic data studying for $x > 2$ experiment



Simulation: RC and cross section study

