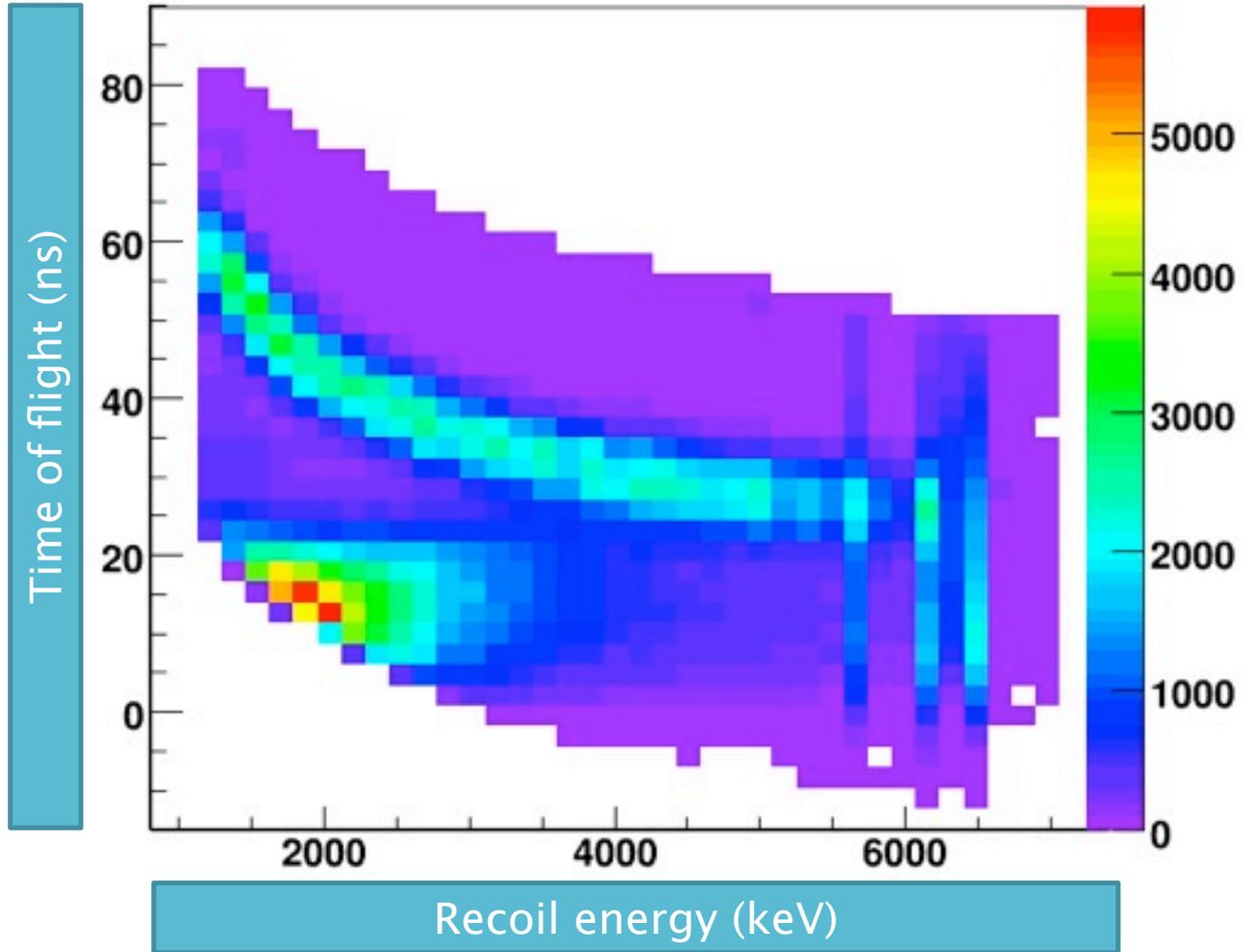
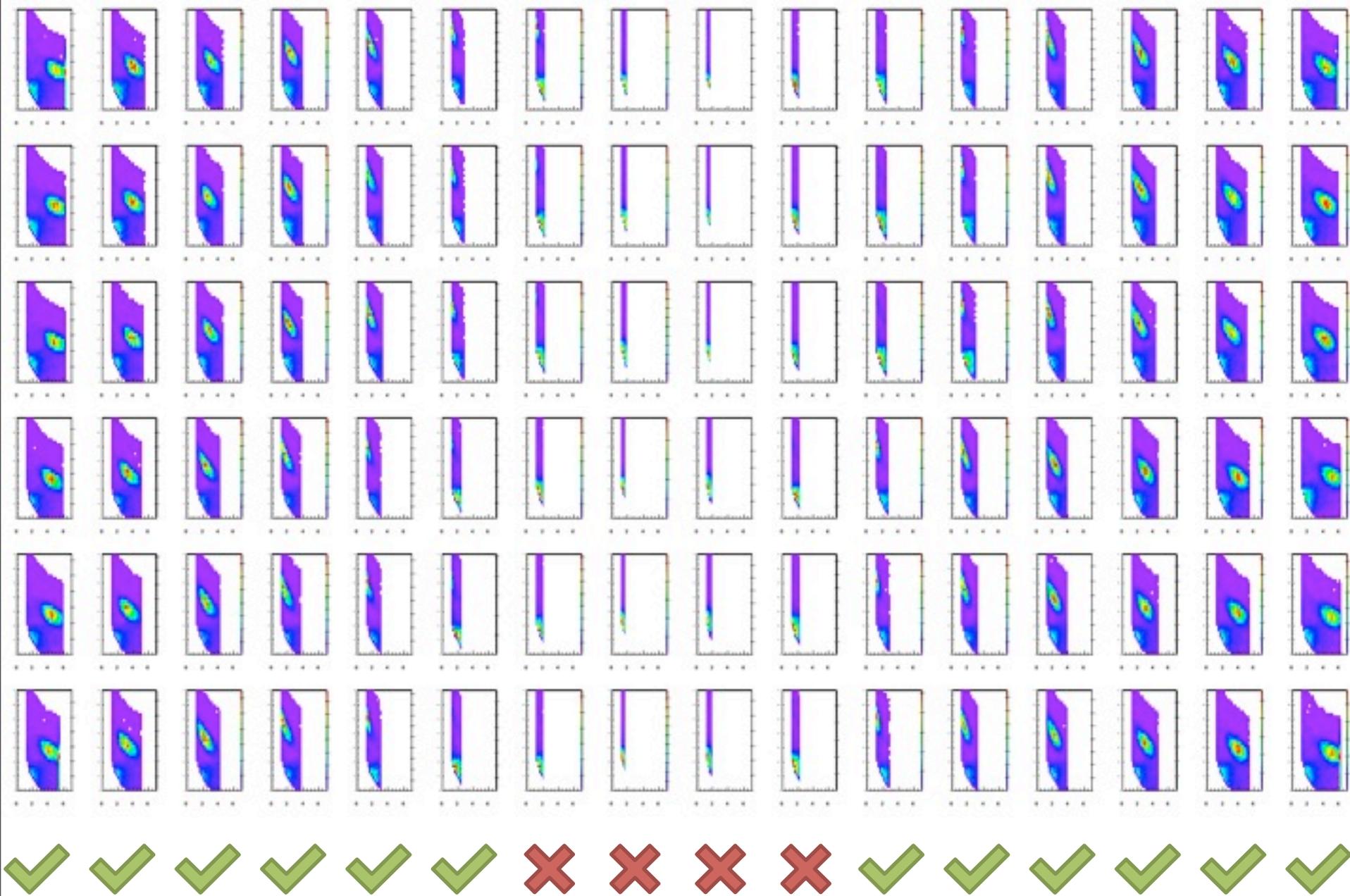
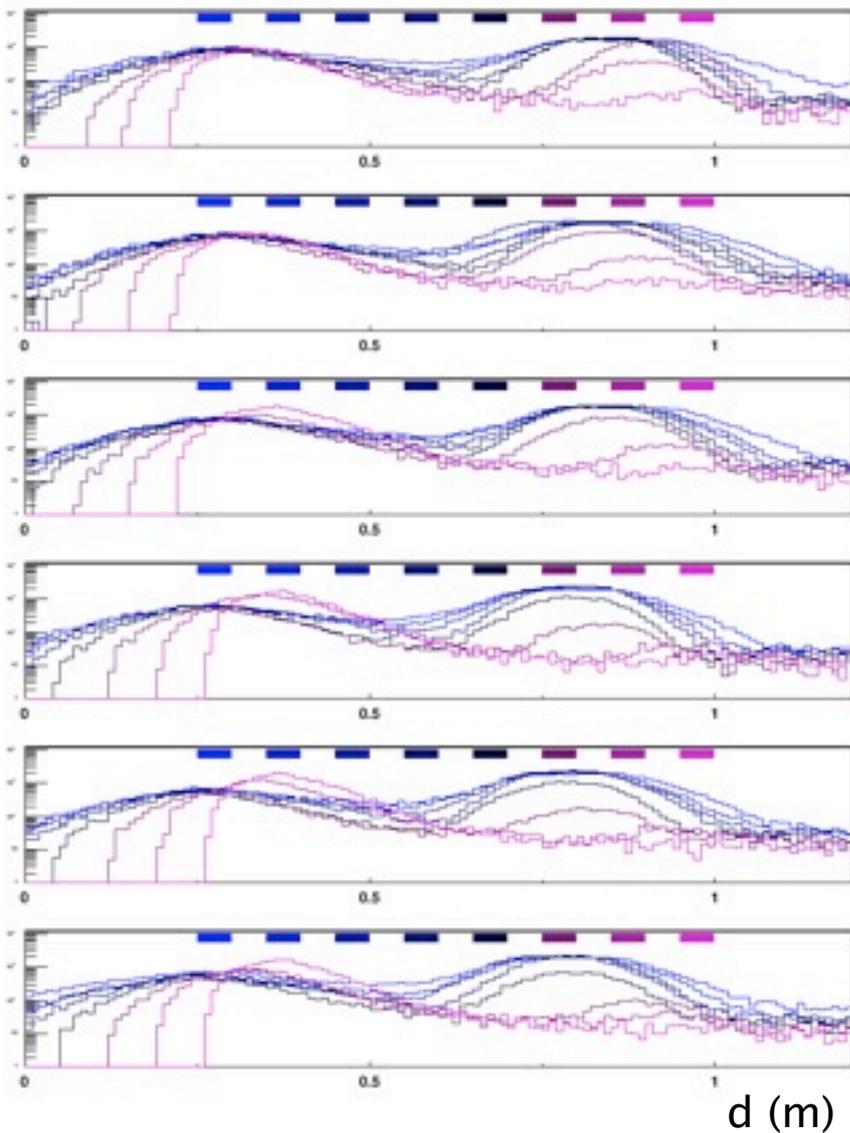


Disclaimer: all plots are from fill 16475 – just because it was the largest data file...





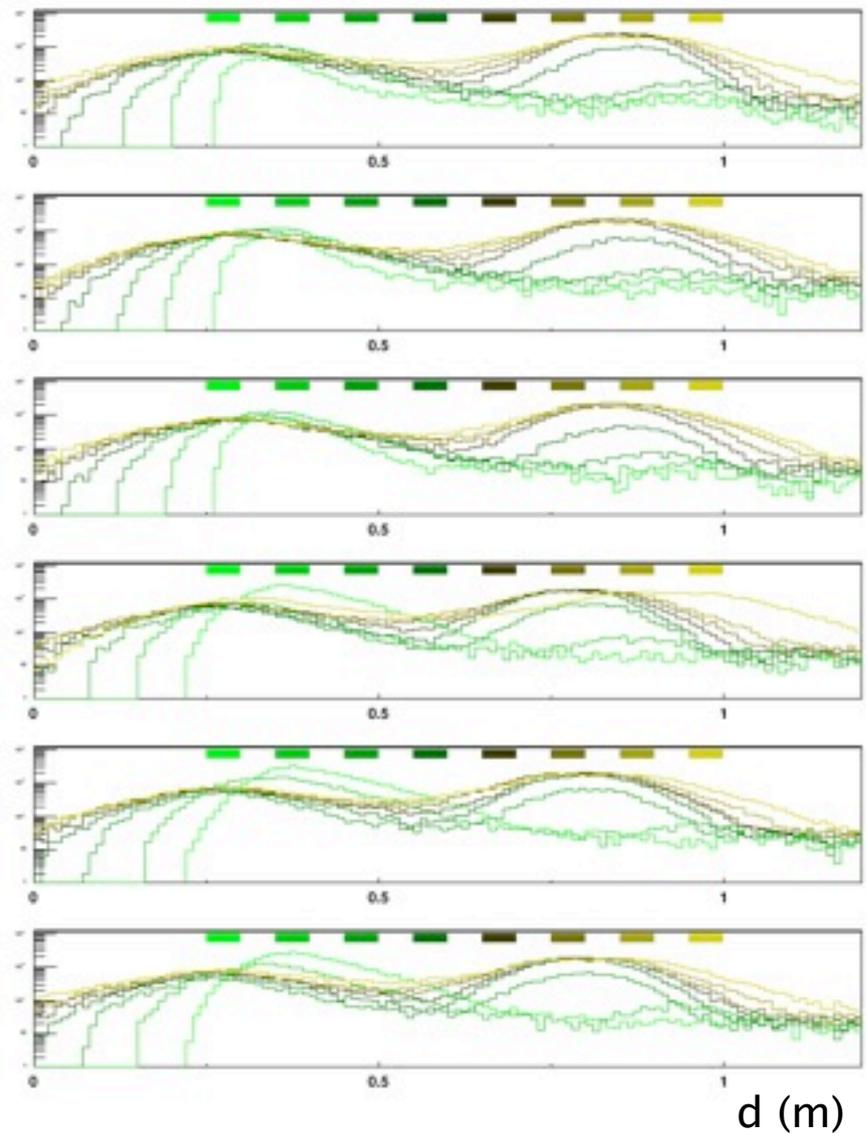
$1.5 \text{ MeV} < T_R < 5.0 \text{ MeV}$



d (m)

downstream

$$d = t_{of} \sqrt{\frac{2T_R}{m_P}}$$

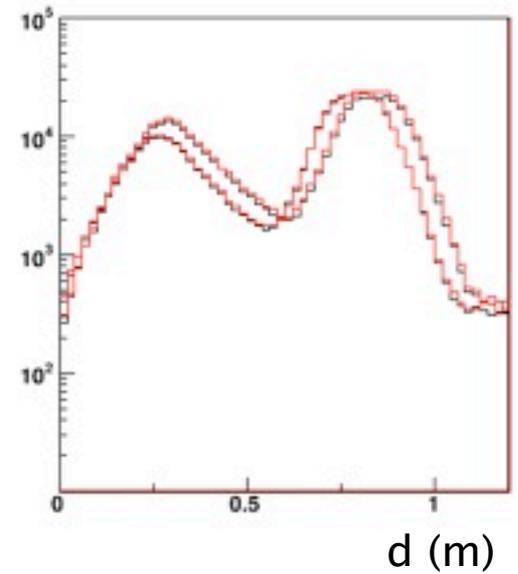
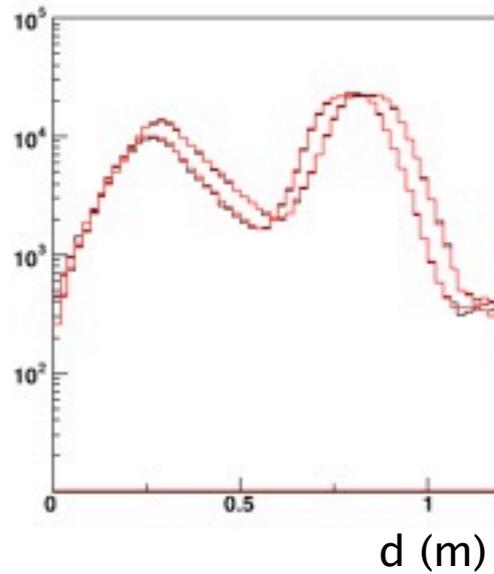
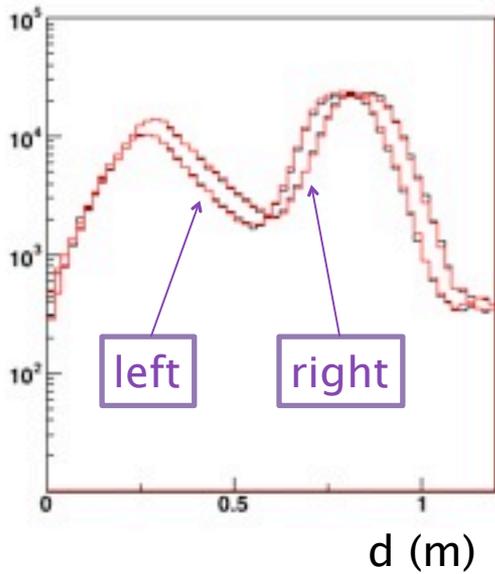


d (m)

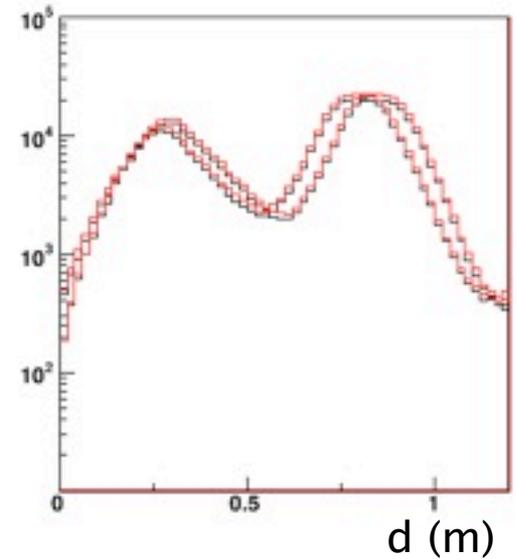
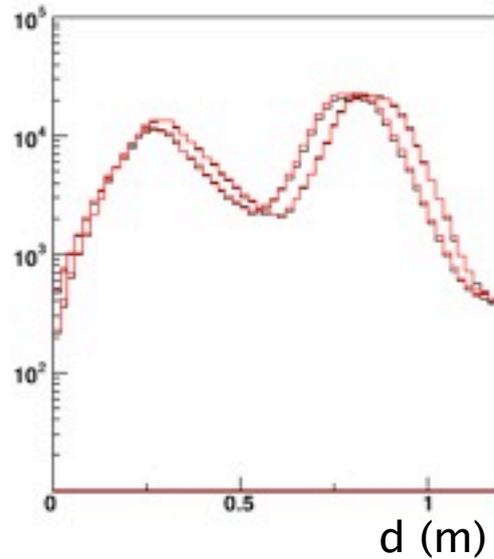
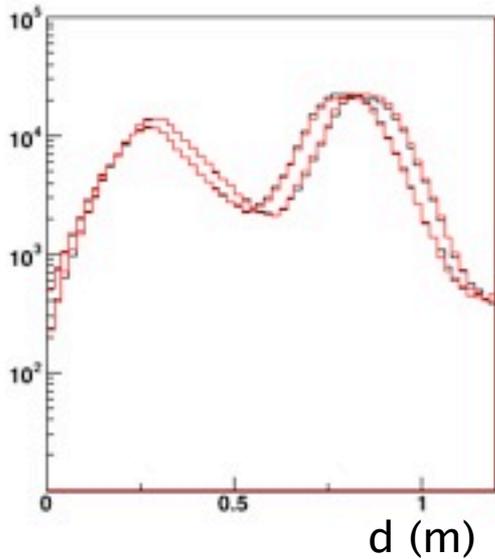
upstream

right

left



downstream



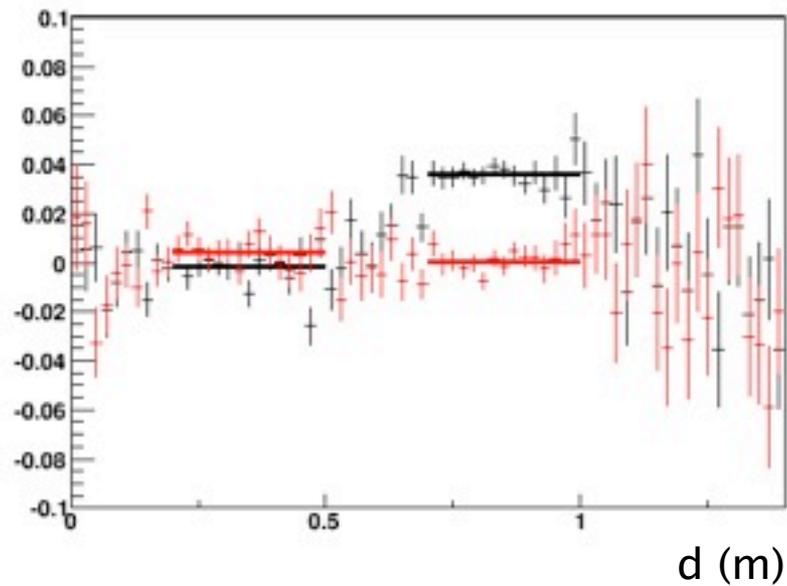
upstream

target

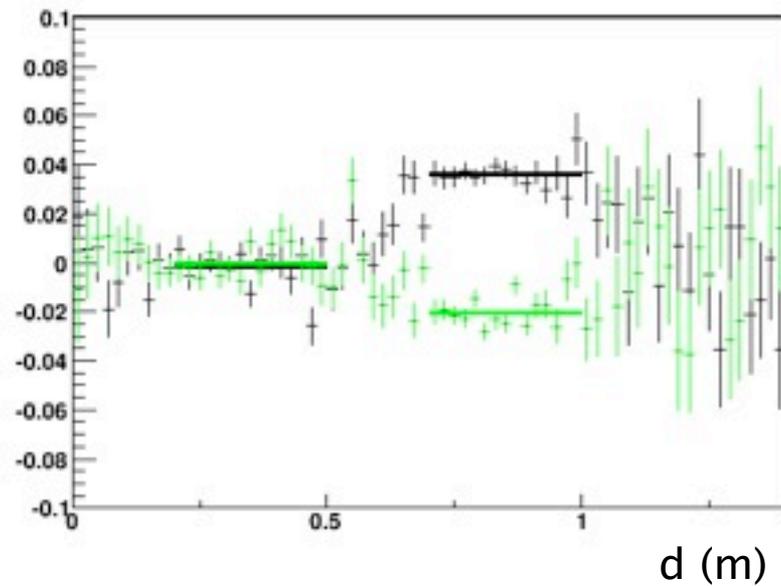
beam 1

beam 2

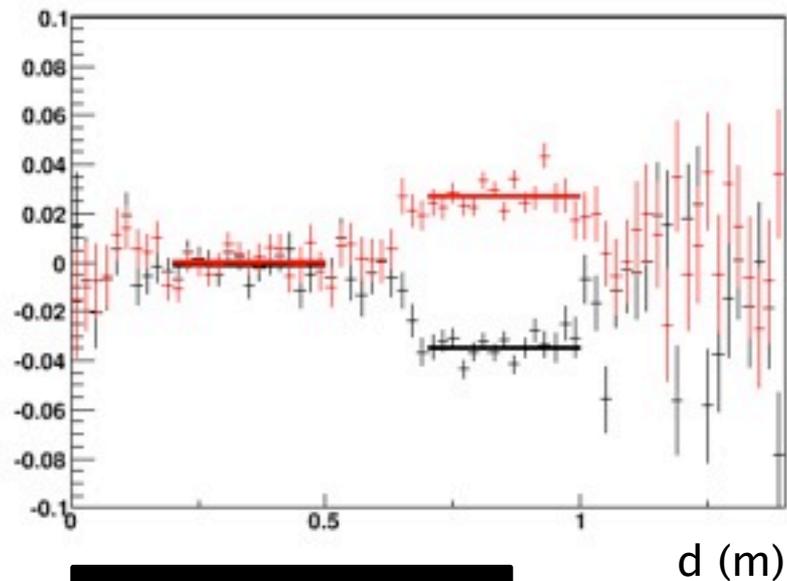
Summed over three detectors per side (polarization up / polarization down)



$d$  (m)



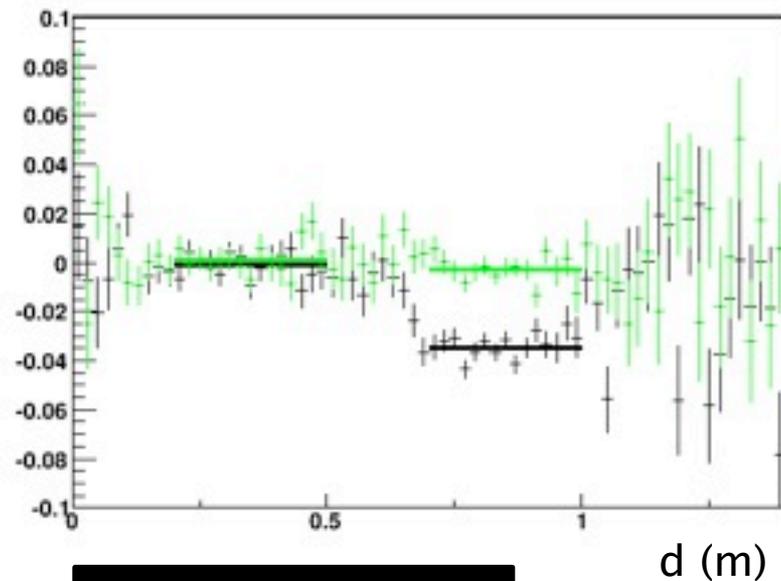
$d$  (m)



$d$  (m)

target

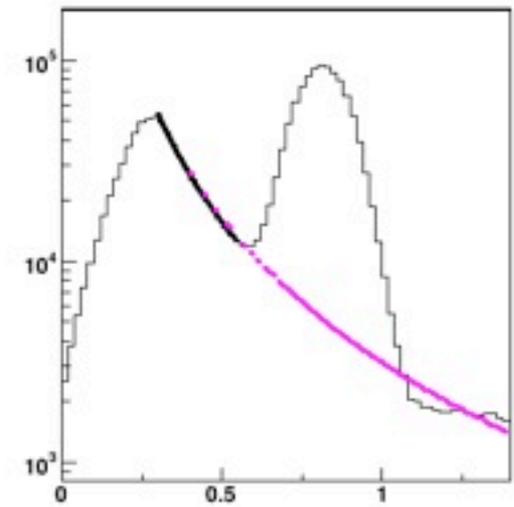
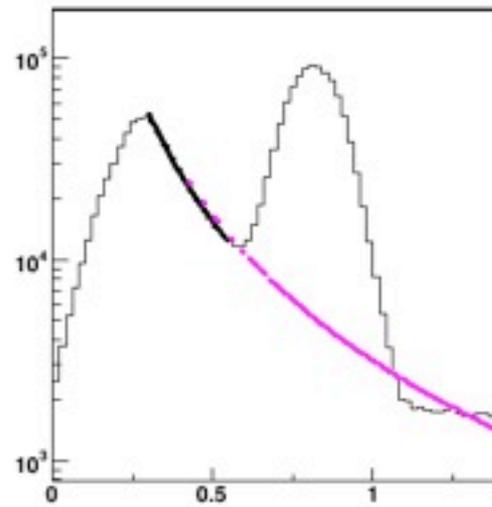
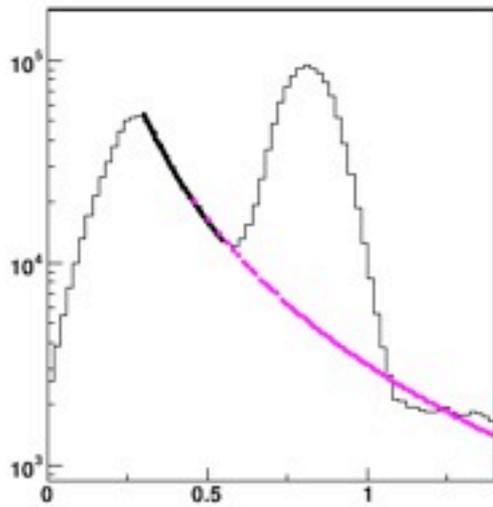
beam 1



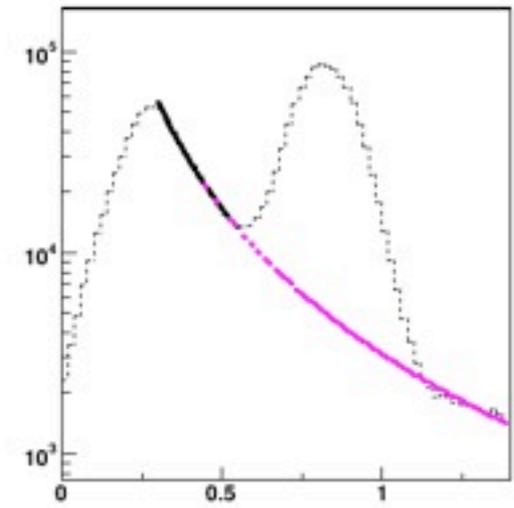
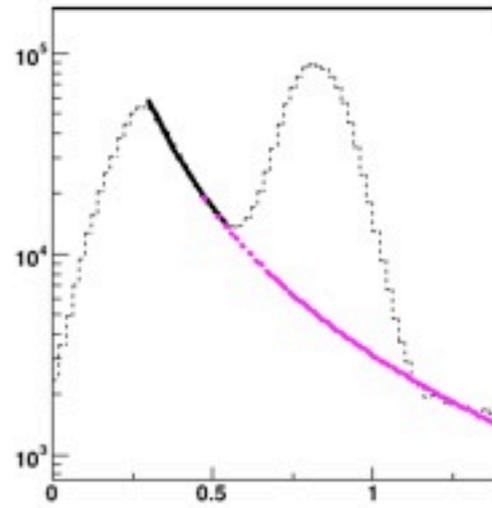
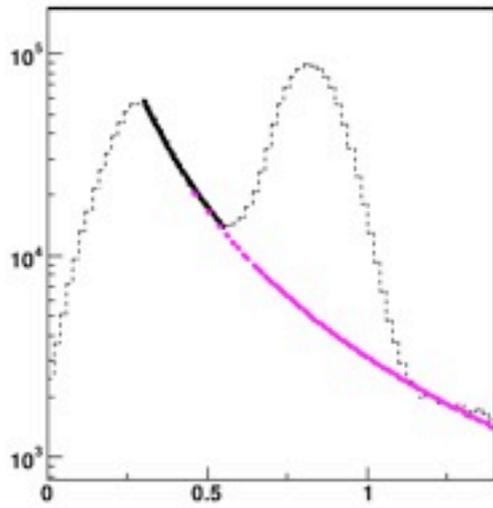
$d$  (m)

target

beam 2



downstream



upstream

target

beam 1

beam 2

Background range  $0.3 < d < 0.5$  // Signal range  $0.7 < d < 1.0$

	Detector	Background	Elastic	BG
Target	downstream	$-0.0014 \pm 0.00$	$-0.0358 \pm 0.00$	0.076
Target	upstream	$-0.0010 \pm 0.00$	$-0.0347 \pm 0.00$	0.084
Beam 1	downstream	$0.0045 \pm 0.001$	$0.0003 \pm 0.001$	0.073
Beam 1	upstream	$0.0003 \pm 0.001$	$0.0272 \pm 0.001$	0.081
Beam 2	downstream	$-0.0004 \pm 0.00$	$-0.0205 \pm 0.00$	0.073
Beam 2	upstream	$0.0009 \pm 0.001$	$-0.0032 \pm 0.00$	0.081

- Asymmetries in background region
  - Should be consistent between both detector halves
  - Can be corrected with background fraction
- Backward asymmetry in elastic region
  - Cross check with abort gaps
  - Could be corrected with non-signal strips in limited energy range

$$\epsilon = \frac{N_+ - N_-}{N_+ + N_-}$$

$$\epsilon^T = \frac{N_+^T - N_-^T}{N_+^T + N_-^T + 2N_{BG}}$$

$$\epsilon^B = \frac{N_+^B - N_-^B}{N_+^B + N_-^B + 2N_{BG}}$$

$$\epsilon^{sig} = \frac{N_+^{inc} - N_+^{bg} - N_-^{inc} + N_-^{bg}}{N_+^{inc} - N_+^{bg} + N_-^{inc} - N_-^{bg}} \cdot \frac{N_+^{inc} + N_-^{inc}}{N_+^{inc} + N_-^{inc}}$$

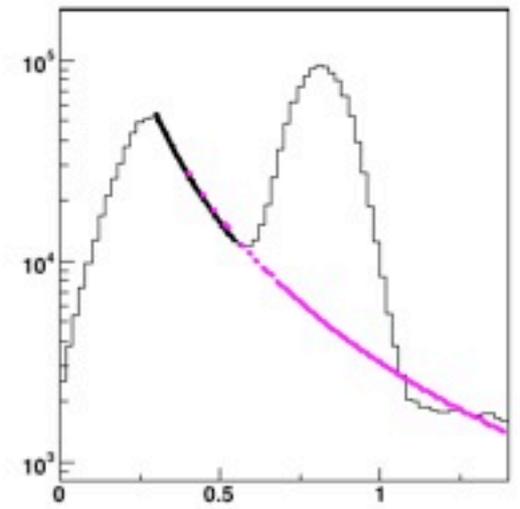
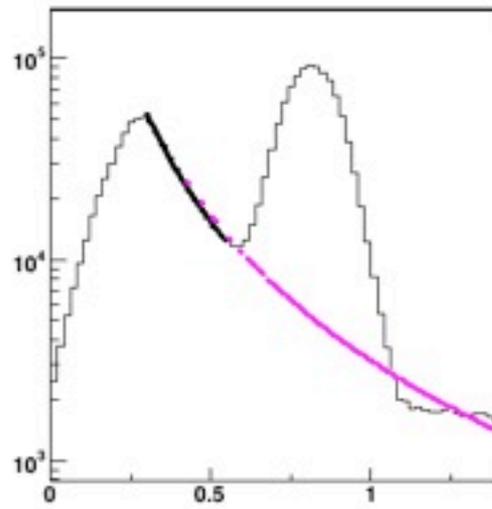
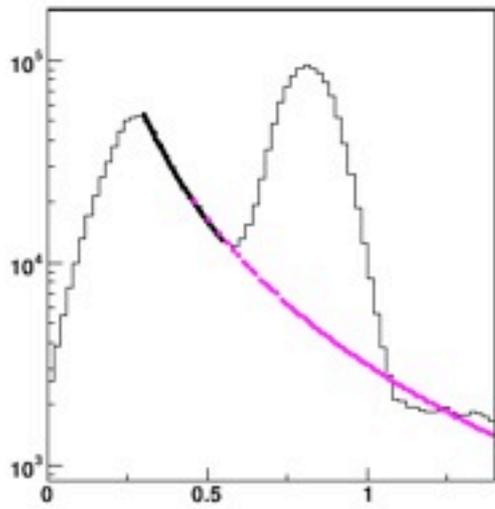
$$r = \frac{N_+^{bg} + N_-^{bg}}{N_+^{inc} + N_-^{inc}}$$

$$\epsilon^{sig} = \frac{1}{1-r} \cdot \left[ \frac{N_+^{inc} - N_-^{inc}}{N_+^{inc} + N_-^{inc}} - \frac{N_+^{bg} - N_-^{bg}}{N_+^{inc} + N_-^{inc}} \right]$$

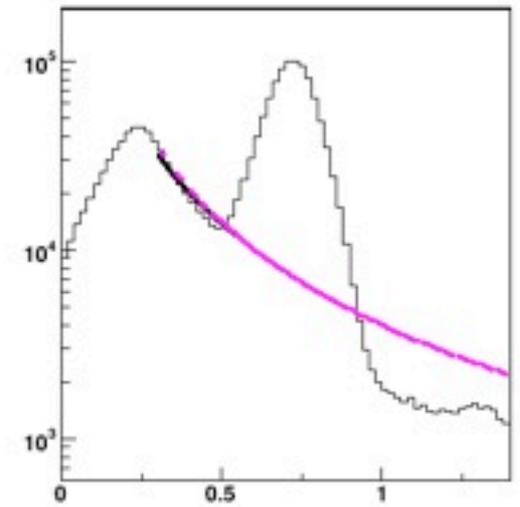
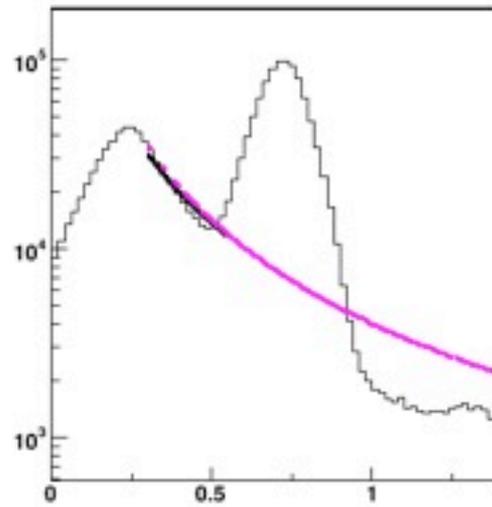
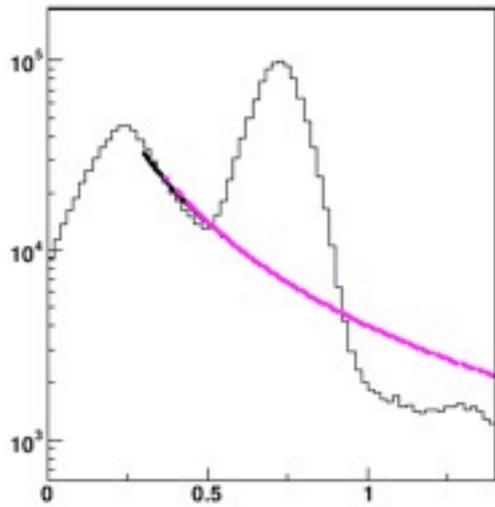
$$\epsilon^{sig} = \frac{\epsilon^{inc} - r \cdot \epsilon^{bg}}{1-r}$$

# Open Items

- Is an additional  $t_0$  calibration needed?
  - Difference between left and right detectors
- Event selection (reduce background fraction)
  - Energy
  - Missing mass
- Determine signal and background regions per fill
  - 16475 seems one of a few fills where  $t_0$  is increased
  - Power law works better with loose cuts



Fill 16475



Fill 16587