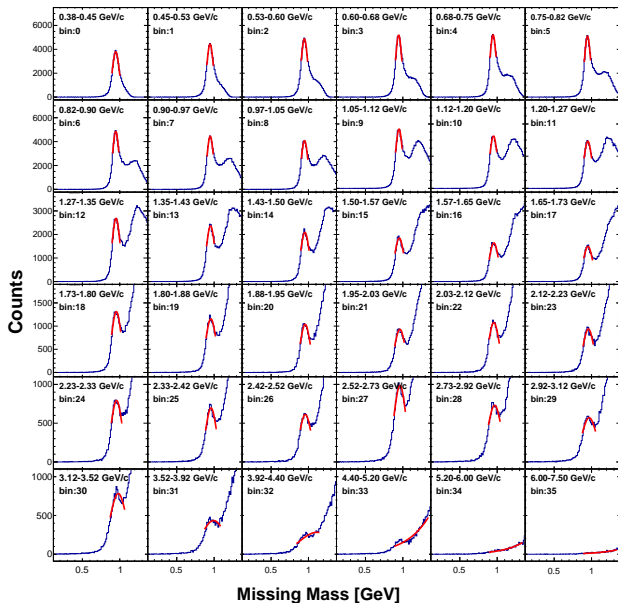


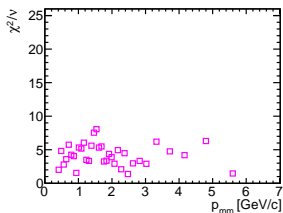
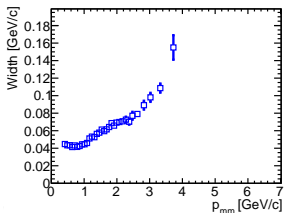
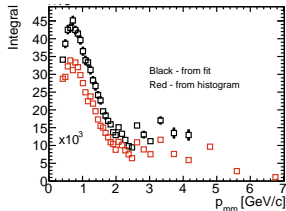
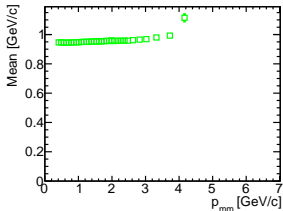
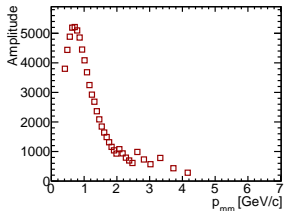
# Fit the 'Cores' (Expected neutrons)

1



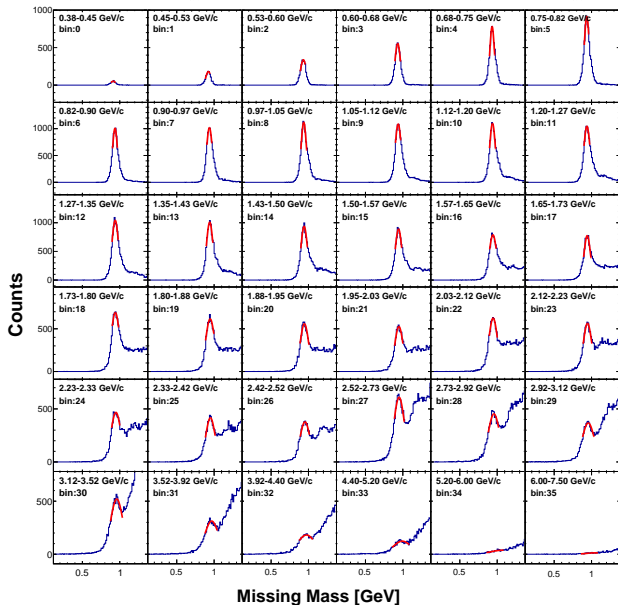
Data file:  
data10p6nosidiscutv4.root

Histograms:  
expMM\_Pmmbin



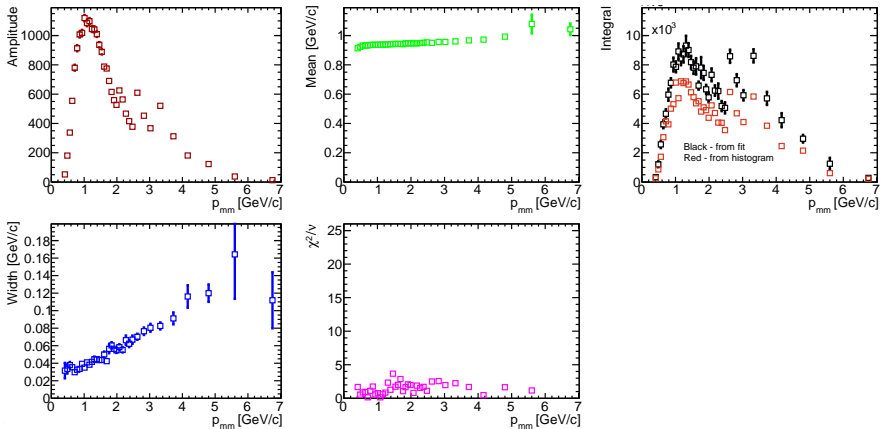
# Fit the 'Cores' (Detected neutrons)

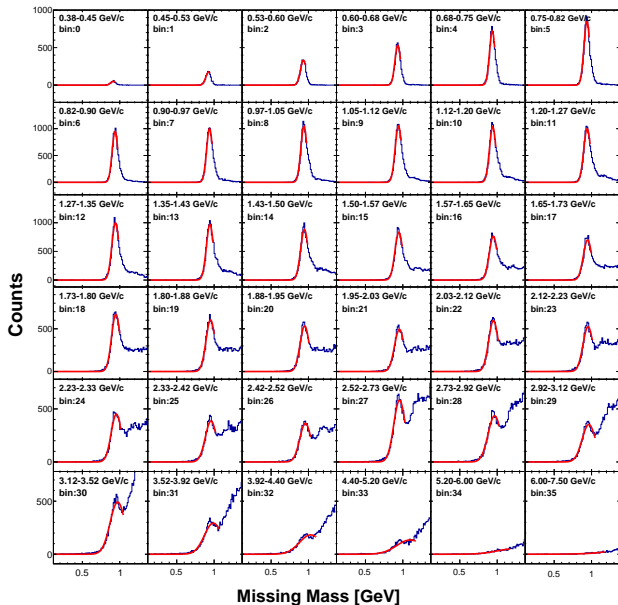
3



Data file:  
data10p6nosidiscutv4.root

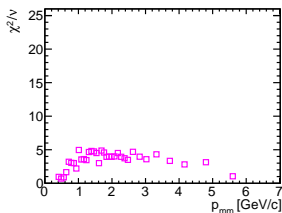
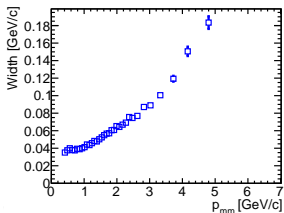
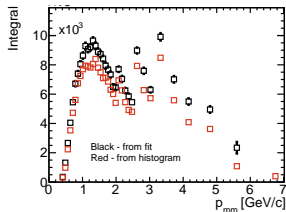
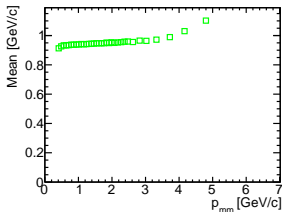
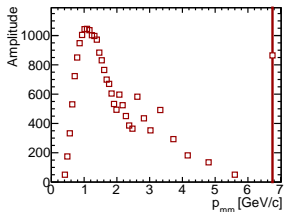
Histograms:  
detMM\_passdcxcyMass2Rmncut\_Pmmbin

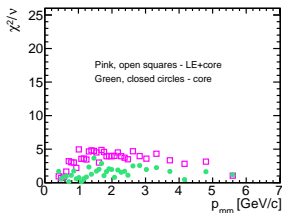
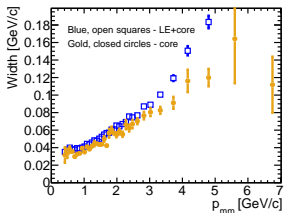
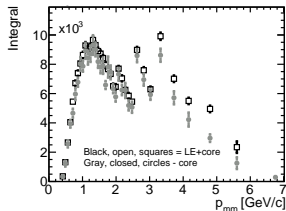
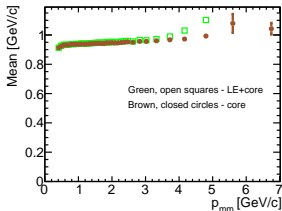
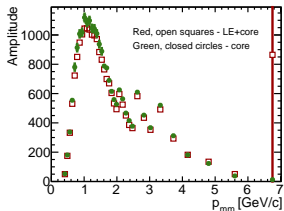




Data file:  
data10p6nosidiscutv4.root

Histograms:  
detMM\_passdcxcycyMass2Rmncut\_Pmmbin





The Crystal Ball function is given by:

$$f(x; \alpha, n, \bar{x}, \sigma) = N \cdot \begin{cases} \exp\left(-\frac{(x-\bar{x})^2}{2\sigma^2}\right), & \text{for } \frac{x-\bar{x}}{\sigma} > -\alpha \\ A \cdot \left(B - \frac{x-\bar{x}}{\sigma}\right)^{-n}, & \text{for } \frac{x-\bar{x}}{\sigma} \leq -\alpha \end{cases}$$

where

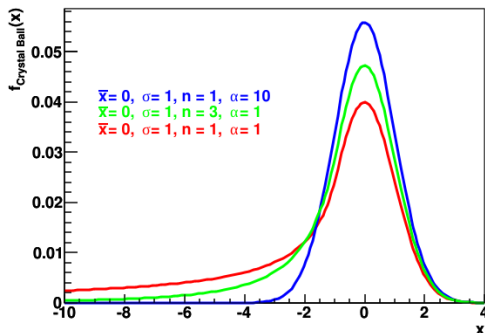
$$A = \left(\frac{n}{|\alpha|}\right)^n \cdot \exp\left(-\frac{|\alpha|^2}{2}\right),$$

$$B = \frac{n}{|\alpha|} - |\alpha|,$$

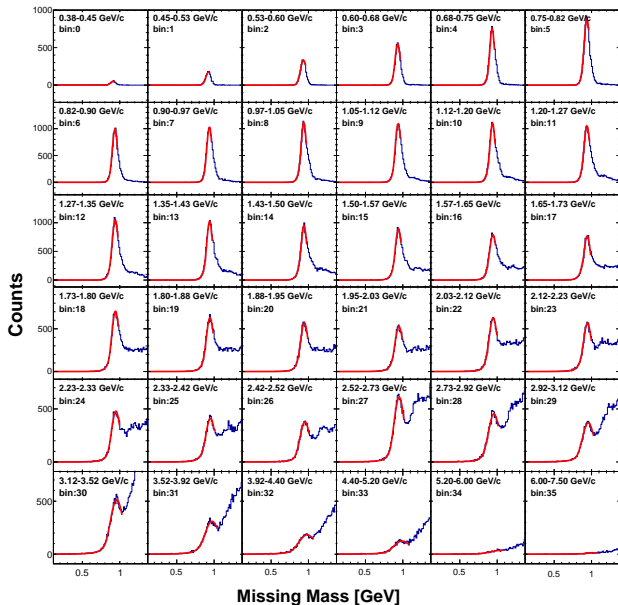
$$N = \frac{1}{\sigma(C+D)},$$

$$C = \frac{n}{|\alpha|} \cdot \frac{1}{n-1} \cdot \exp\left(-\frac{|\alpha|^2}{2}\right),$$

$$D = \sqrt{\frac{\pi}{2}} \left(1 + \operatorname{erf}\left(\frac{|\alpha|}{\sqrt{2}}\right)\right).$$

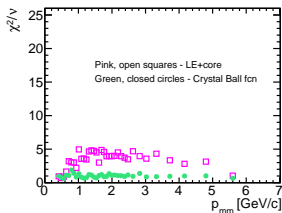
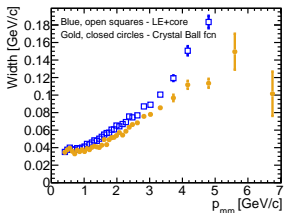
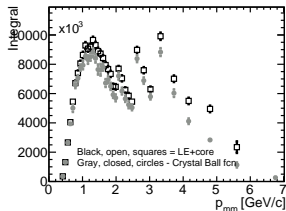
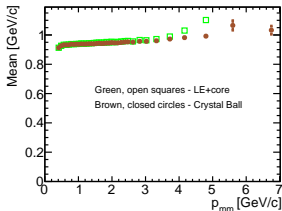
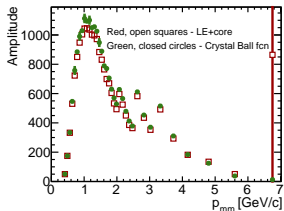


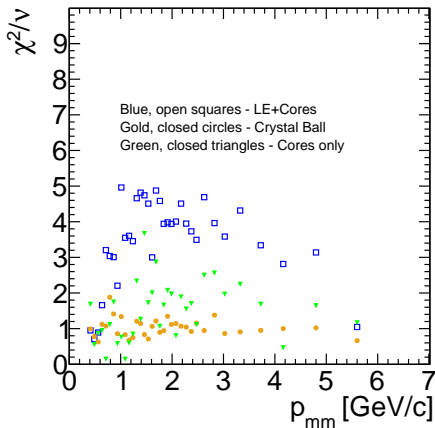
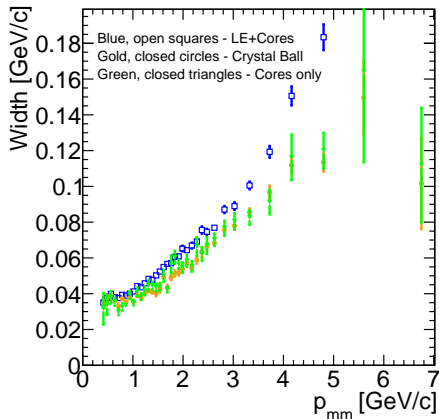




Data file:  
data10p6nosidiscutv4.root

Histograms:  
detMM\_passdcxcycyMass2Rmncut\_Pmmbin





- 1 Compare core fits with lower limit of fit range extended.
- 2 Compare integrated yield from detected and expected core fits.
- 3 Study impact of other fit functions (Crystal Ball, Voigt,...).
- 4 Refit the expected neutron missing mass distributions with a fixed width and/or centroid from the detected neutron distributions.
- 5 Study different choices of fitting function for the full distribution (i.e. Raue function) over a limited range. Full range?
- 6 Use SIDIS simulation results to validate what we've done so far.