MANTRA BES III

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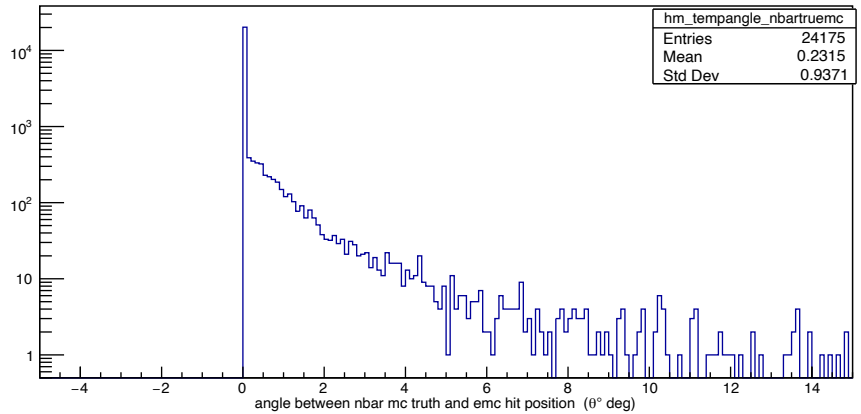
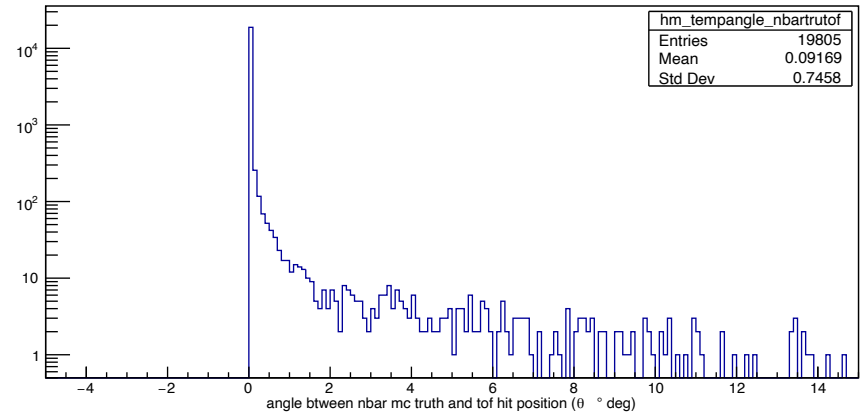
$\bar{n}$ MC Truth and TOF,EMC hit position angles

We measured the angle between $\bar{n}$ mc truth and tof hit, emc hit position. 25k events were simulated at p=1.0GeV/c.





possible reasons for small angles: the angle is very small since These hits are expected to lie close to the $\bar{n}$ flight direction. EMC hit positions are typically center of the hit crystal and $\bar{n}$ deposits energy in that crystal, it's aligned closely with its own direction, so small angle. Similarly, the angle between TOF hit position and the $\bar{n}$ momentum direction is small.

next steps

- Anti-neutron interacts with EMC crystals and produces large number of secondary particles.
- Secondary particles may fly back to hit TOF and collected as anti-neutron information
- The extrapolated path from EMC to TOF is shorter than the real path anti-neutron flying
- TOF neutrals idea is used in $J/\psi \to p\bar{n}\pi^-$