Electromagnetic-Jet A_N in FMS

Dataset run 17 p↑ + p collision at √s=510 GeV

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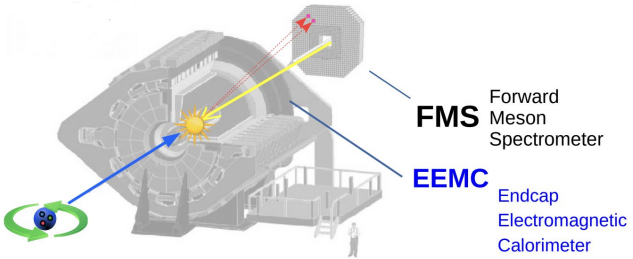
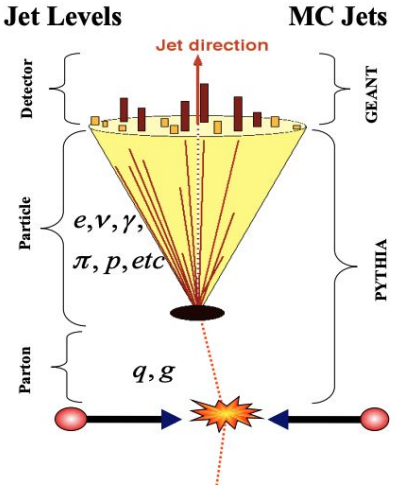
Run 17 Dataset

- Extract A_N as a function of EM-jet-$p_{T,}$ energy, and photon multiplicity ($p\uparrow + p \rightarrow$ EM-jet + X)
- Data-stream: FMS-stream
- Dataset: Run 17 ($\sqrt{s}$ = 510 GeV pp trans)
- Triggers: Small BS, Large BS and FMS-JP trigger
- Calibration from Minghui
- FMS hot channel masking before reconstruction
- Exclude highly bit-shifted FMS channels
- Production tag : P18ic



Jet Reconstruction

- Anti-k_T jet clustering algorithm with R= 0.7
- Eγ > 1.0 GeV
- -80 < z < 80 cm
- Jet p_T > 2.0 GeV/c
- 2.8 < η < 3.8
- No any trigger threshold cut
- No underlying event correction
- No energy correction (detector to particle level energy correction)



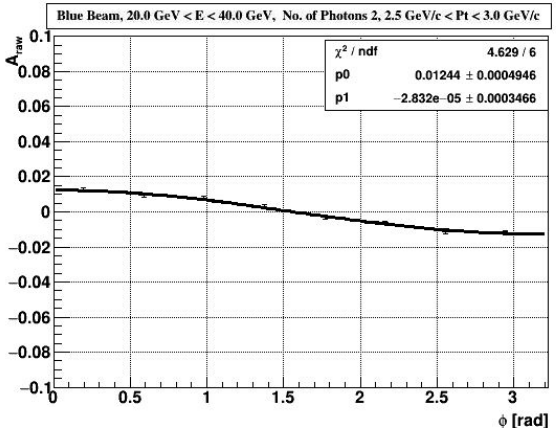
EM-Jet A_N Extraction

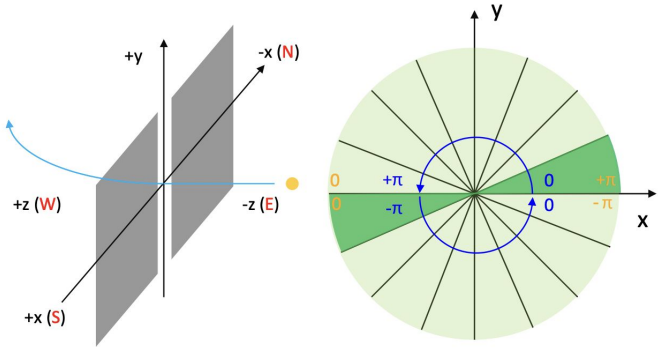
A_N as a function of EM-jet p_T, energy, and photon multiplicity (FMS data)

- Energy bins: [0-20] , [20 -40], [40 -60], [60 -80] , and [80 -100] GeV
- 16 equal Φ bins in the range - **π** to **π**
- 5 photon multiplicity bins
- Separately for $X_F>0$ and $X_F<0$
- Cross-ratio formula to calculate A_N
- Cancels systematics, such as luminosity and detector effects

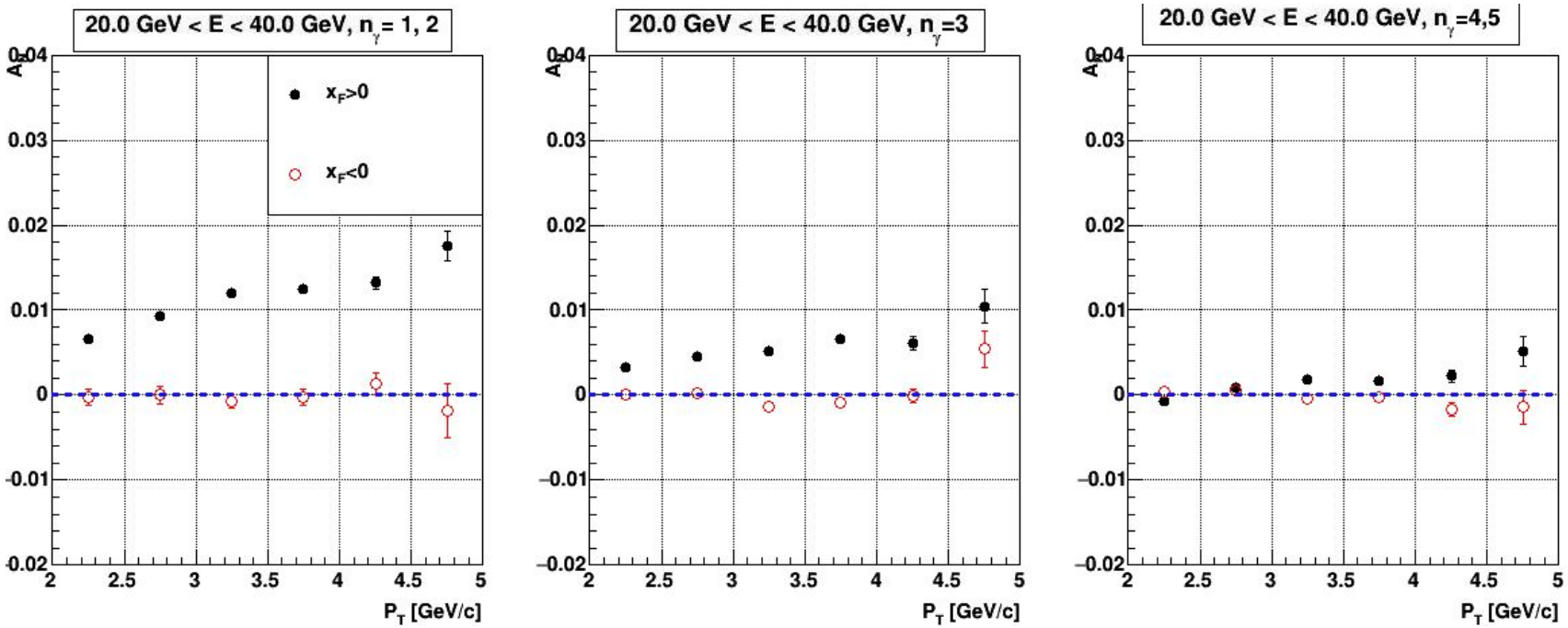
$$\epsilon = A_N \times P \times \cos(\phi)$$

$$\epsilon \approx \frac{\sqrt{N_\phi^\uparrow N_{\phi+\pi}^\downarrow} - \sqrt{N_{\phi+\pi}^\uparrow N_\phi^\downarrow}}{\sqrt{N_\phi^\uparrow N_{\phi+\pi}^\downarrow} + \sqrt{N_{\phi+\pi}^\uparrow N_\phi^\downarrow}}$$



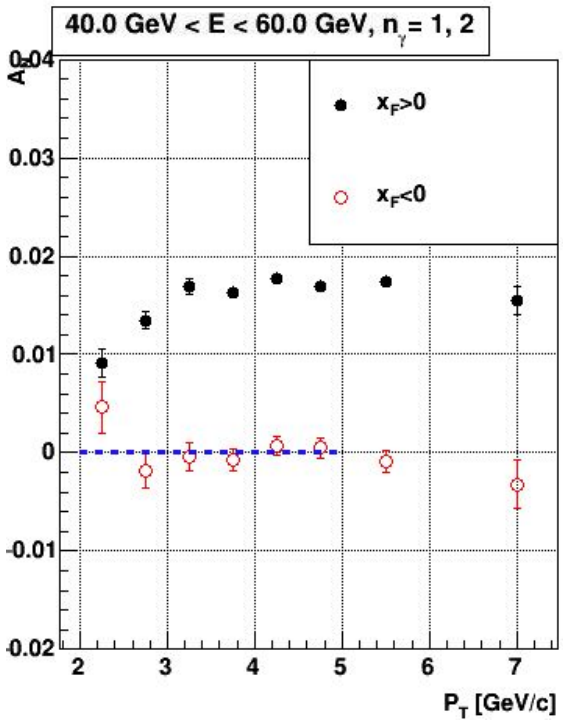


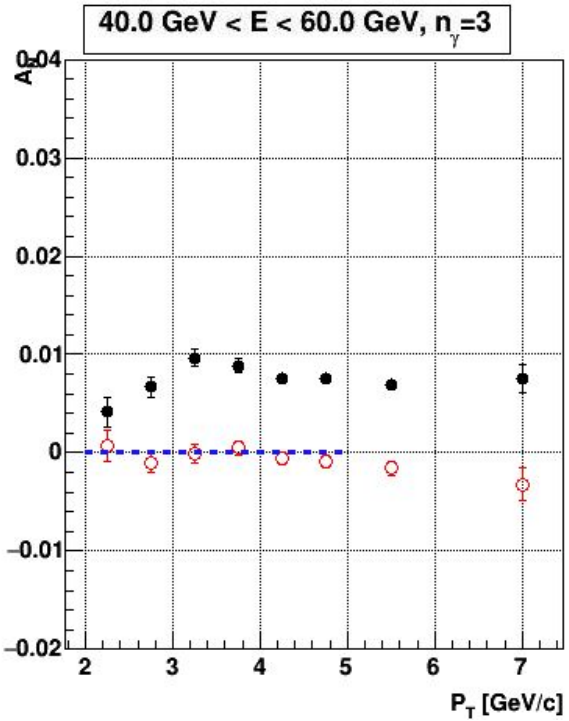
Run 17: Energy= [20 - 40] GeV

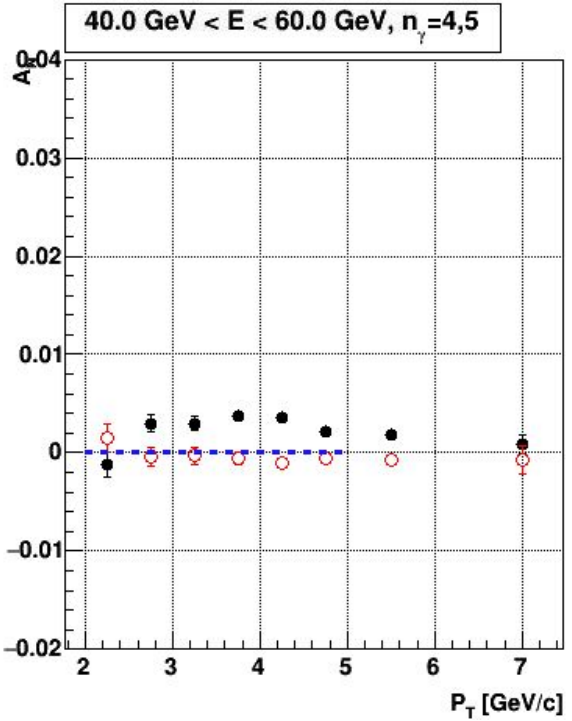


- A_N for 1 or 2 photons, 3 photons, and 4 or 5 photons
- Error bars statistical only
- A_N dependence on photon multiplicity
- A_N decreases as complexity increases (larger number of photons in EM-jet)

Run 17: Energy= [40 - 60] GeV

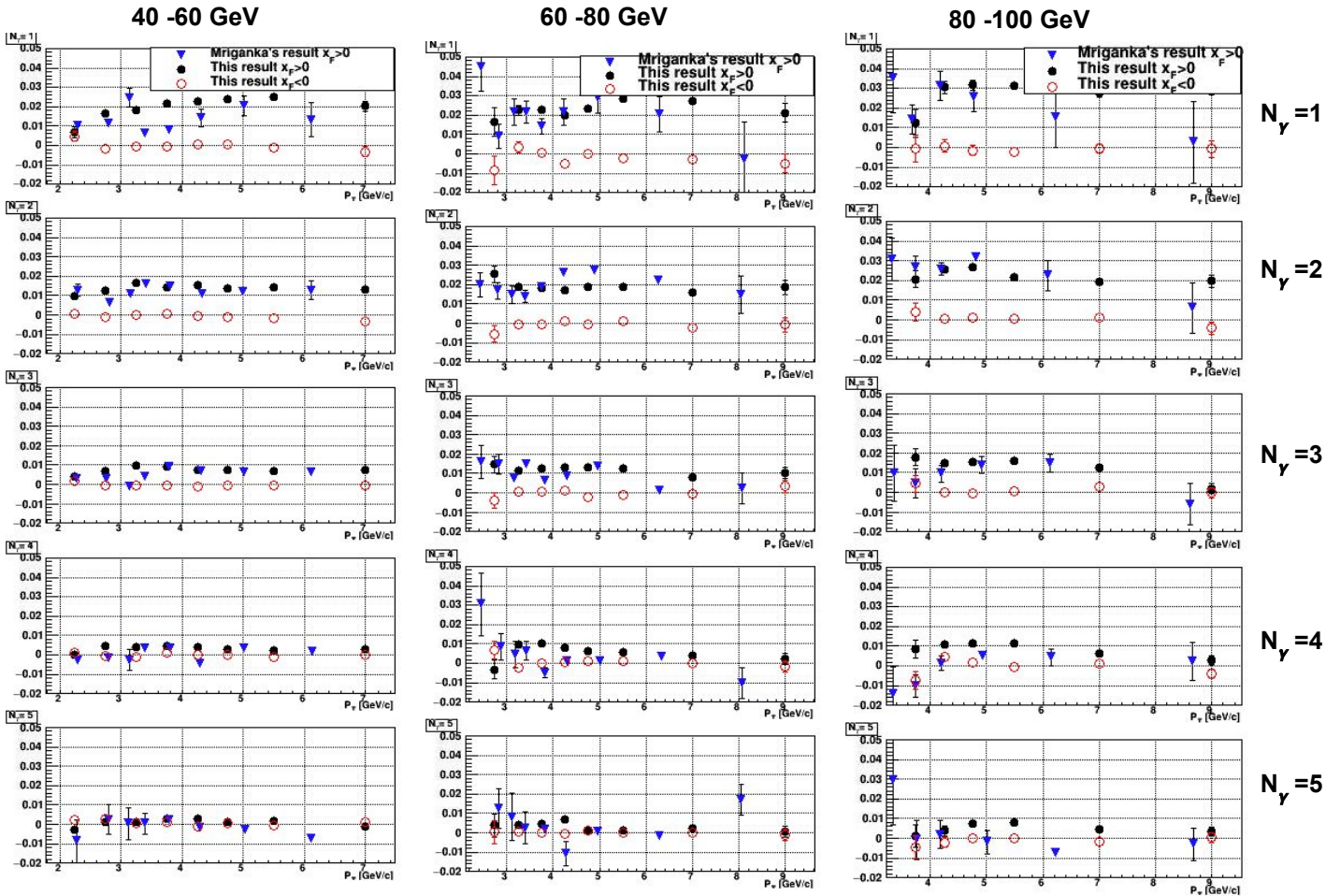






- A_N for 1 or 2 photons, 3 photons, and 4 or 5 photons
- Error bars statistical only
- A_N dependence on photon multiplicity
- A_N decreases as complexity increases (larger number of photons in EM-jet)

Comparing with existing results (Run 11 Mriganka Mouli Mondal)



- Different p_T binning
- Consistent with Run 11 data

Conclusion:

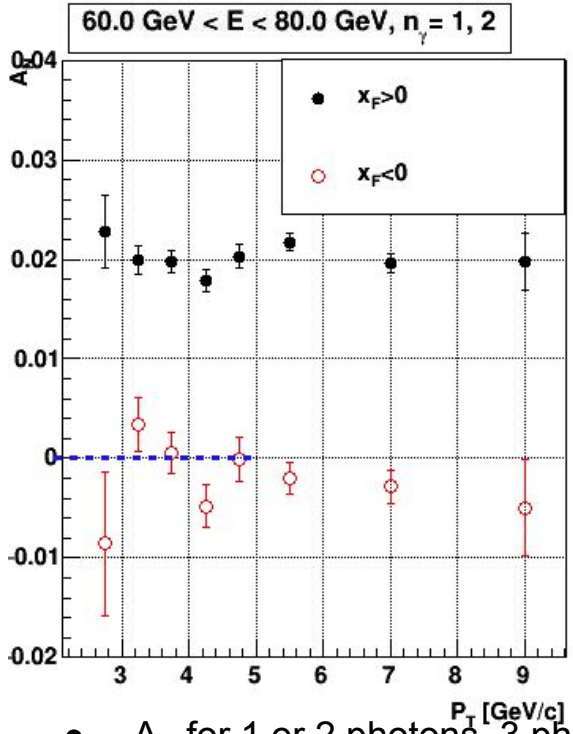
- Extracted A_N for run 17 FMS data as a function of EM-jet-$p_{T,}$ energy, and photon multiplicities
- No any trigger threshold cut, underlying event correction, no energy correction
- Result consistent with past result (Run 11)

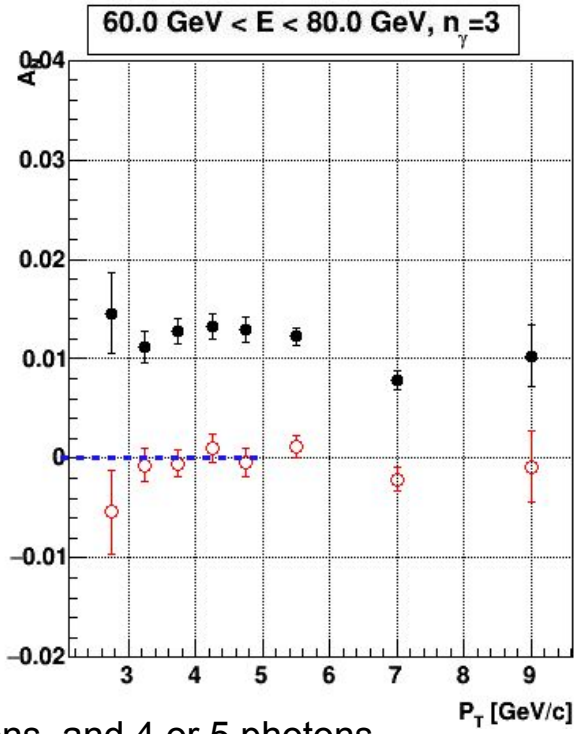
Outlook:

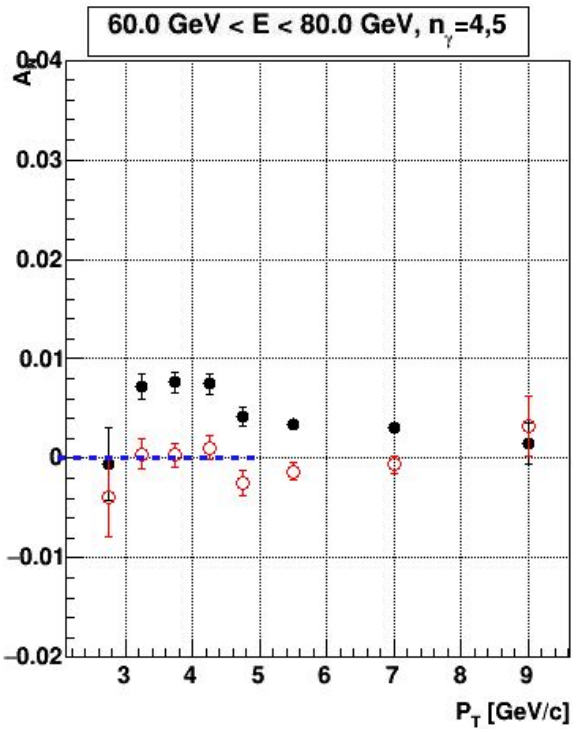
- Apply Correction
- Systematic error on the way

Back UP

Run 17: Energy= [60 - 80] GeV







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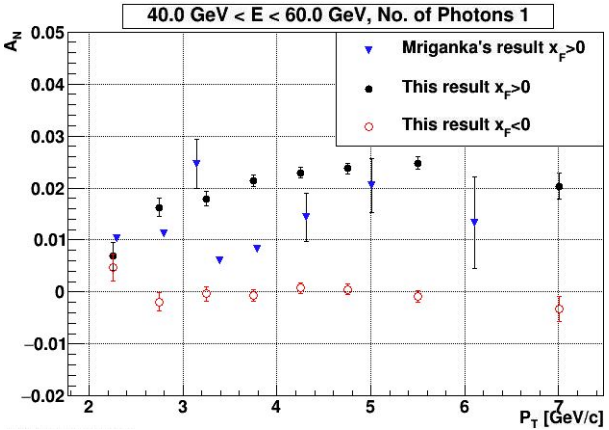
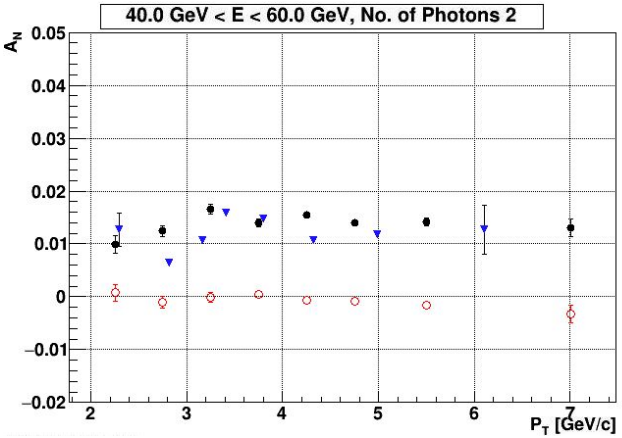
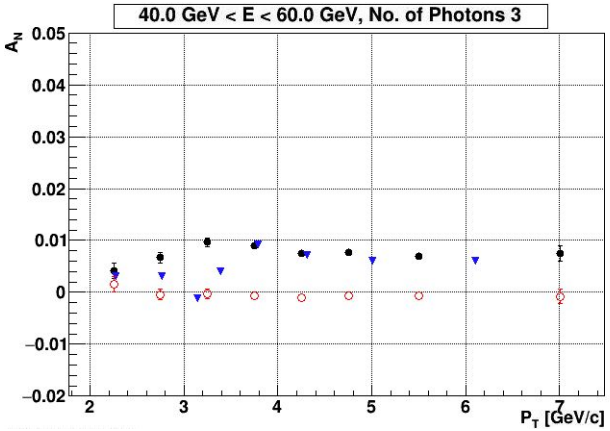
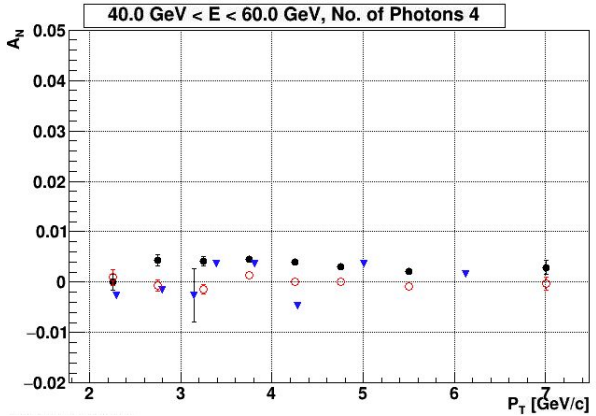
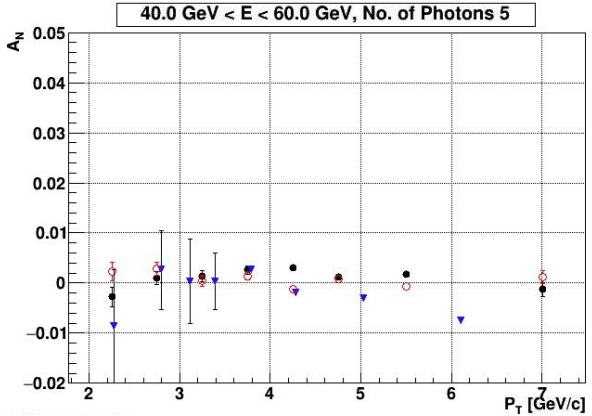
Comparing with existing results (Run 11 Mriganka Mouli Mondal)











Comparing with existing results (Run 11 Mriganka Mouli Mondal **)**