Charged pion analysis

Single Spin Asymmetry

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Alternate Averaging Methods (Square Root Formula)

inverse polarization weighted sum of the yields

$$N^{hybrid} = \sum_{Fill} N_{Fill}/P_{Fill}$$

luminosity weighted polarization

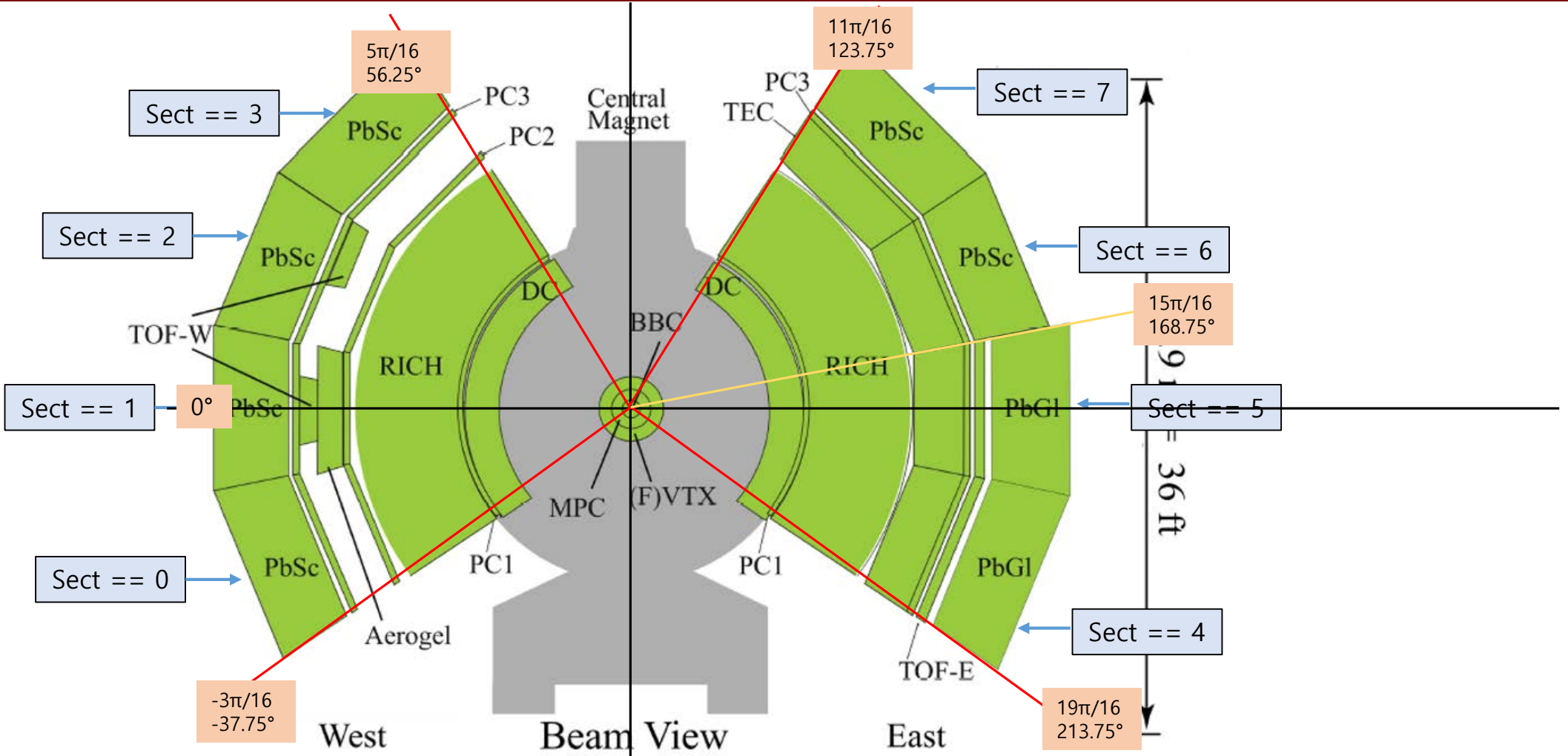
$$\langle P \rangle_L = \sum_{Fill} \mathcal{L}_{Fill} P_{Fill} / \sum_{Fill} \mathcal{L}_{Fill}$$

$$A_N^{hybrid} = \frac{\sqrt{N_L^{\uparrow,hybrid} N_R^{\downarrow,hybrid}} - \sqrt{N_R^{\uparrow,hybrid} N_L^{\downarrow,hybrid}}}{\sqrt{N_L^{\uparrow,simple} N_R^{\downarrow,simple}} + \sqrt{N_R^{\uparrow,simple} N_L^{\downarrow,simple}}}$$

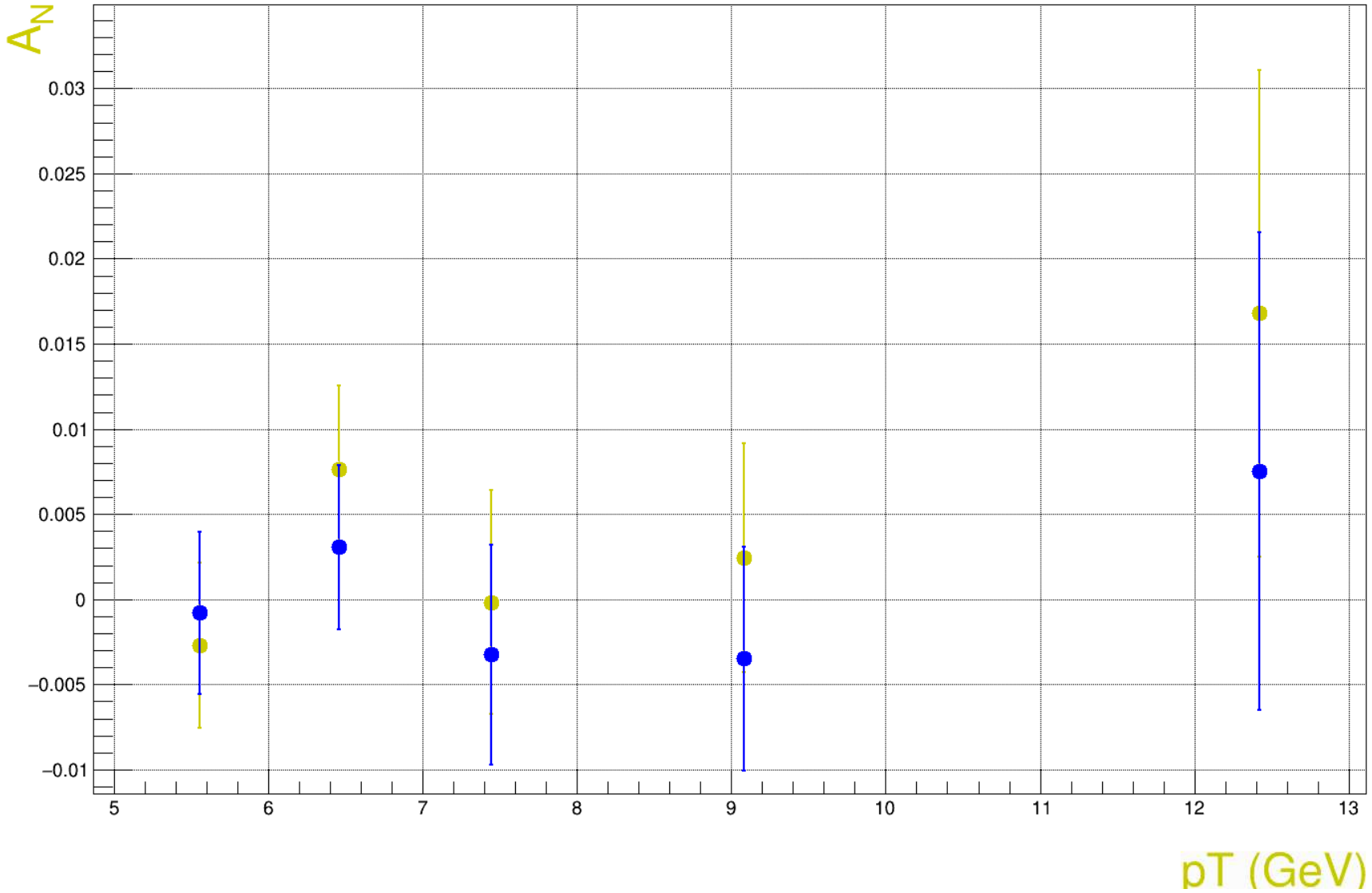
error bars

$$\delta A_N = \frac{1}{\sqrt{N}\langle P \rangle_L}$$

$$A_N = \frac{\epsilon}{P_y \langle |cos(\phi)| \rangle}$$

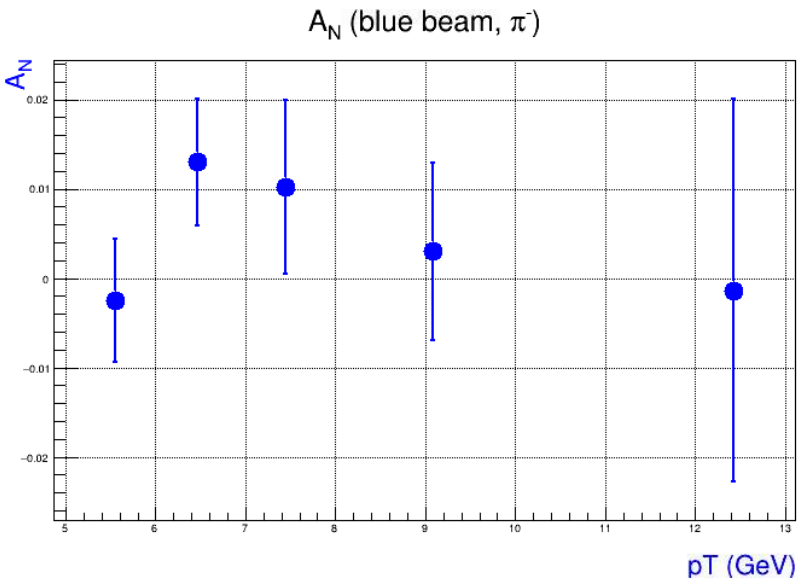

5π/16
56.25°
11π/16
123.75°
Sect == 3
Sect == 7
Sect == 2
Sect == 6
15π/16
168.75°
Sect == 1
0°
Sect == 5
Sect == 0
Sect == 4
-3π/16
-37.75°
19π/16
213.75°
PbSc
PC3
PC2
Central Magnet
TEC
DC
BBC
TOF-W
RICH
PbGl
MPC
(F)VTX
PC1
Aerogel
TOF-E
West
Beam View
East
36 ft

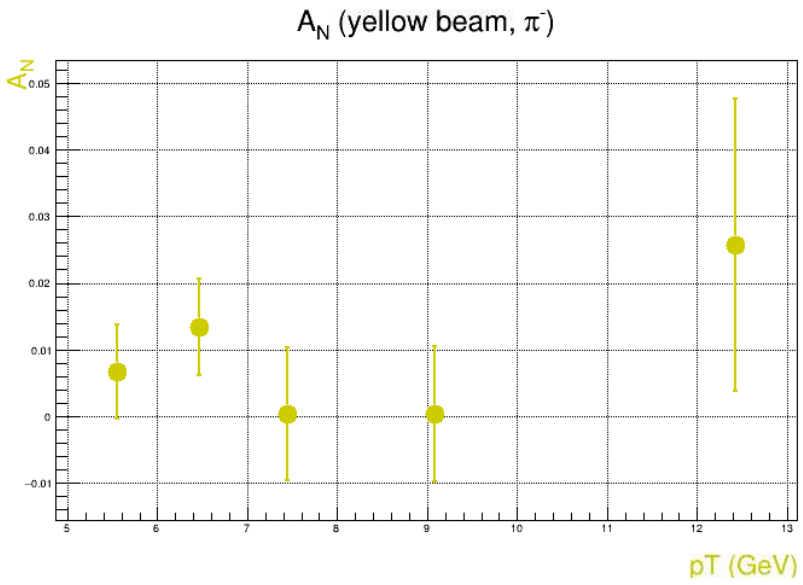
Single Spin Asymmetry(Beam)

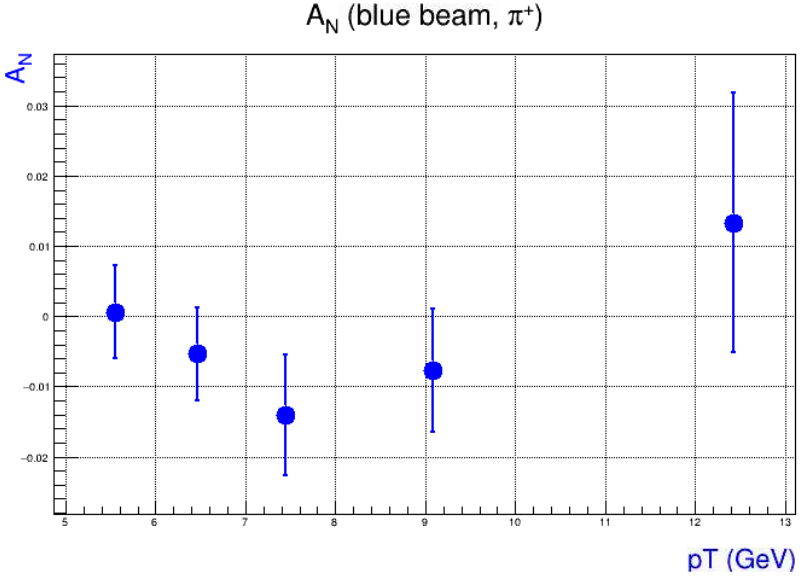


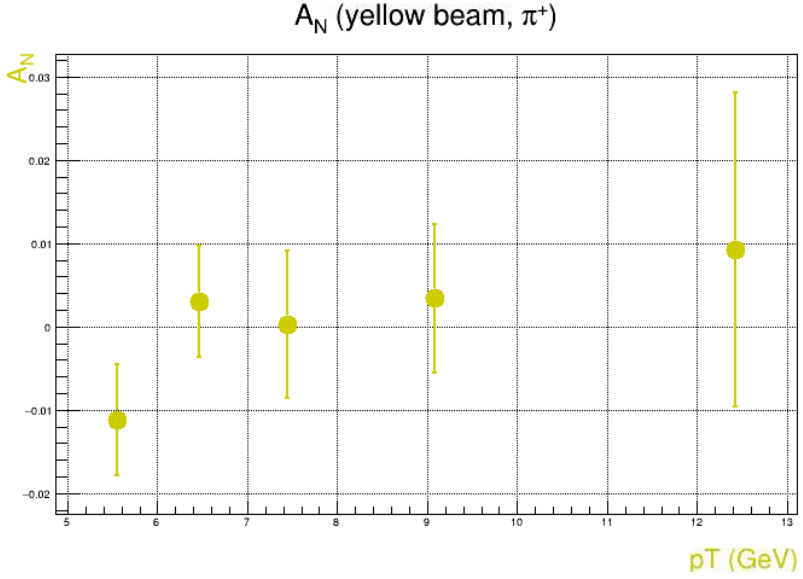
No systematic errors

Single Spin Asymmetry(Beam, charge)





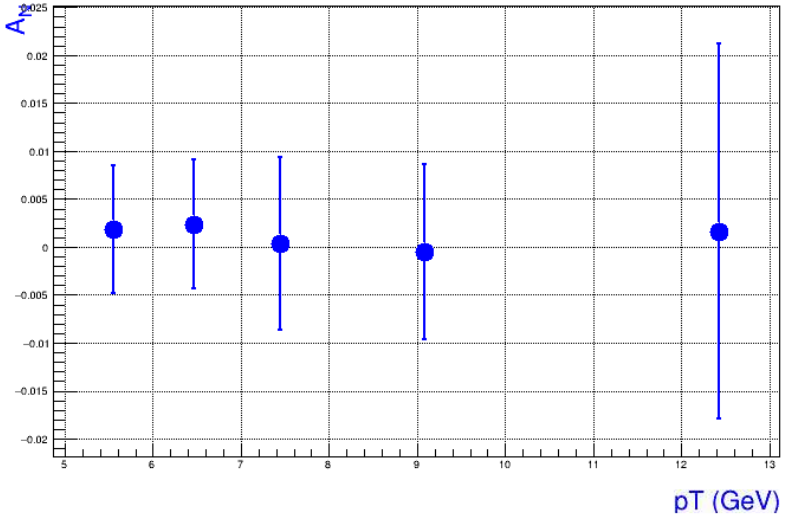




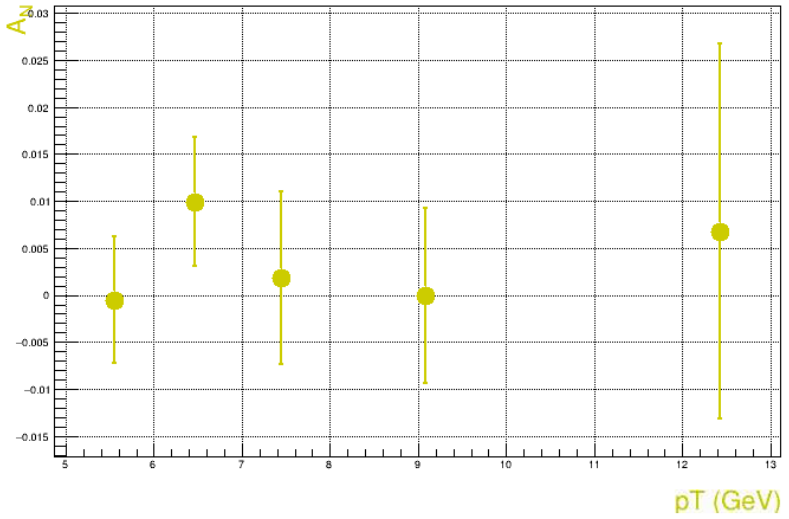
No systematic errors

Single Spin Asymmetry(Beam, EO crossing)

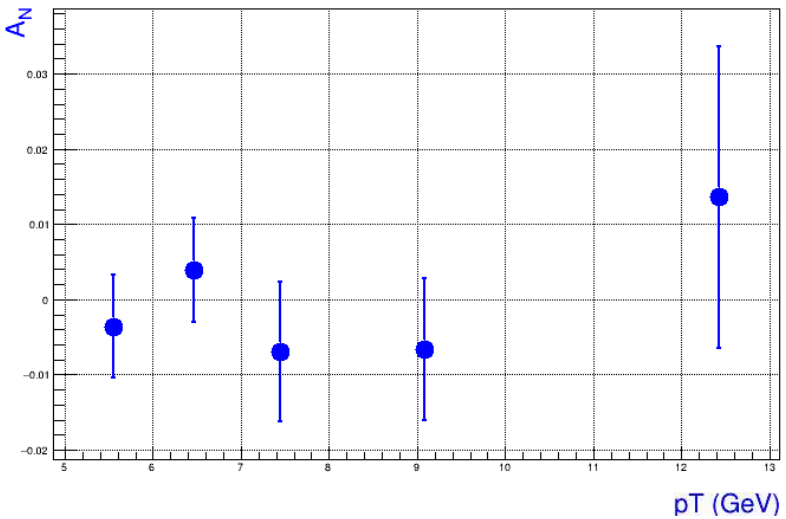
A_N (blue beam, Even crossing)



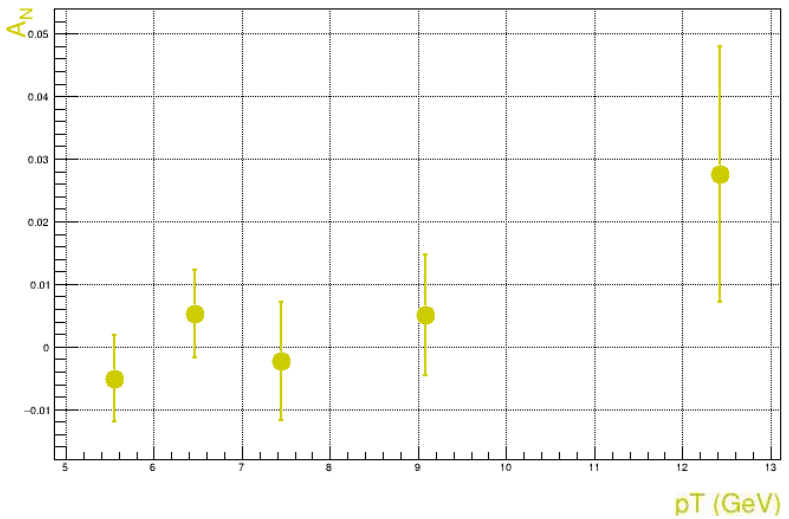
A_N (yellow beam, Even crossing)



A_N (blue beam, Odd crossing)

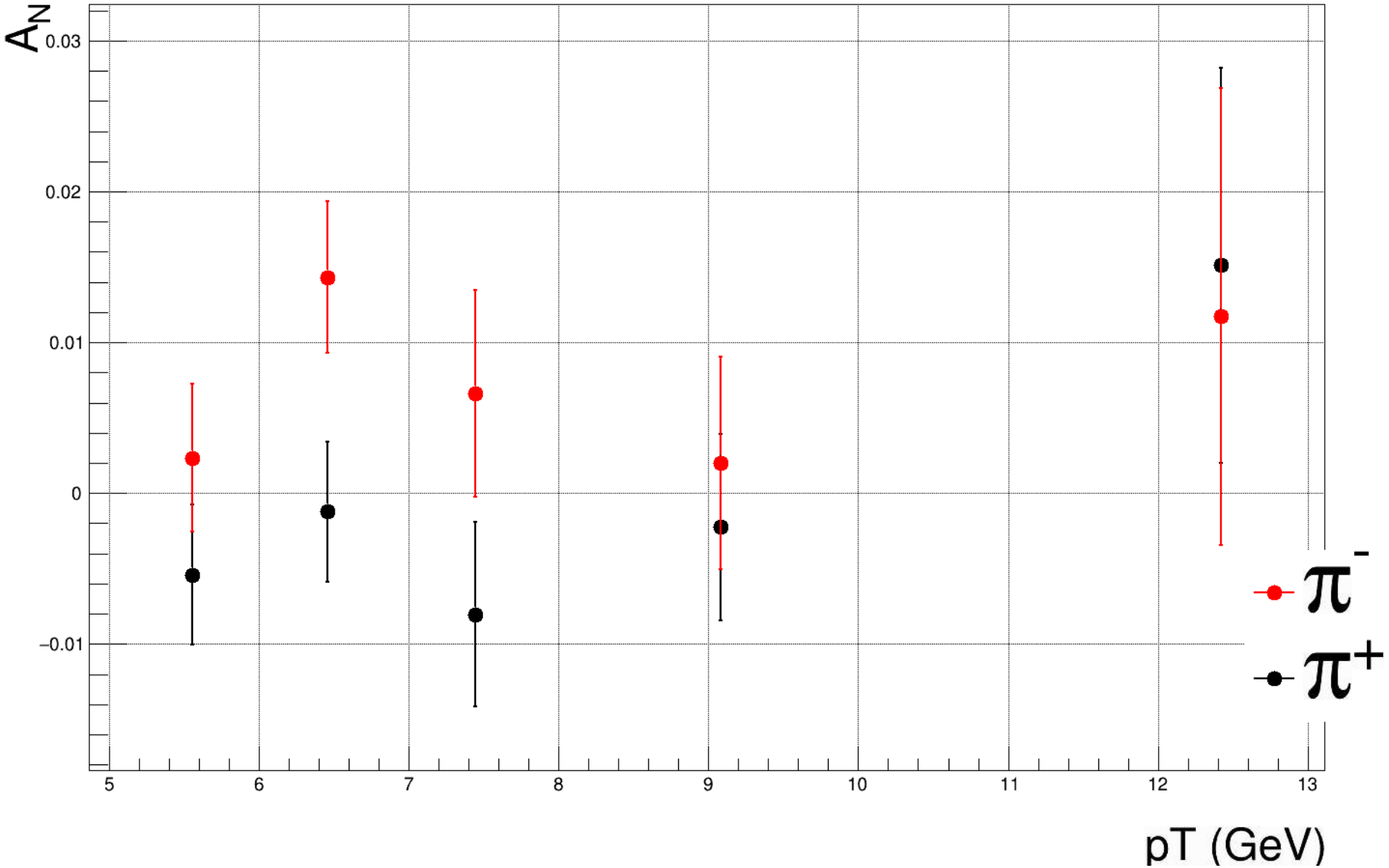


A_N (yellow beam, Odd crossing)

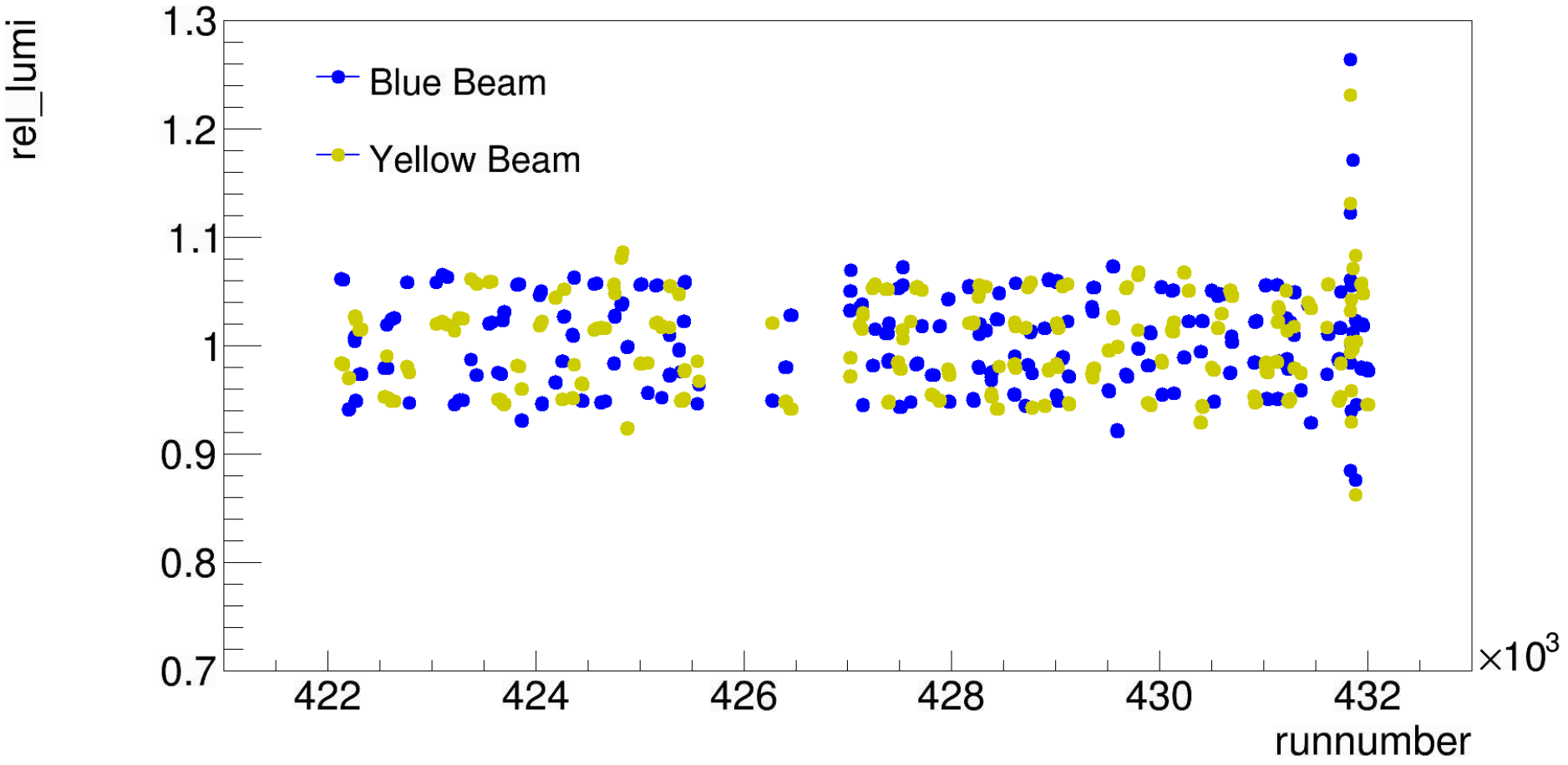


No systematic errors

Single Spin Asymmetry(charge)



No systematic errors



runnumber = 431831
rellumiB = 1.26445
rellumiY = 1.13172
runnumber = 431834
rellumiB = 1.06055
rellumiY = 1.23175
runnumber = 431835
rellumiB = 0.884932
rellumiY = 0.993677
runnumber = 431837
rellumiB = 1.12222
rellumiY = 1.03227
runnumber = 431859
rellumiB = 1.17176
rellumiY = 1.07103
runnumber = 431886
rellumiB = 0.875942
rellumiY = 1.08292
runnumber = 431888
rellumiB = 1.02352
rellumiY = 0.861929

Fill number

18898	18673	18674	18675	18676	18677	18683	18684	18686	18687
18689	18692	18693	18694	18696	18697	18698	18701	18702	18706
18707	18709	18710	18898	18900	18901	18903	18904	18905	18906
18908	18909	18914	18915	18916	18917	18920	18921	18922	18923
18924	18925	18926	18928	18930	18931	18942	18943	18944	18946
18948	18949	18950	18951	18952	18953	18710	18715	18718	18719
18721	18722	18723	18726	18727	18728	18729	18731	18732	18737
18738	18740	18741	18749	18750	18751	18752	18753	18754	18758
18776	18778	18779	18780	18785	18787	18788	18789	18790	18792
18793	18794	18795	18796	18797	18798	18800	18801	18803	18804
18805	18807	18815	18816	18818	18819	18820	18827	18828	18829
18837	18838	18843	18846	18847	18848	18849	18850	18852	18853
18854	18855	18856	18857	18865	18868	18875	18876	18877	18878
18881	18882	18883	18884	18892	18893	18894	18895	18897	18898

675 runs
->140 fills

plan

- I will calculate by using weighted averaging method.

  -> run by run ⟹ fill by fill

  and compare with Square Root Formula.

Thank you.

BACK UP

Rel. luminosity

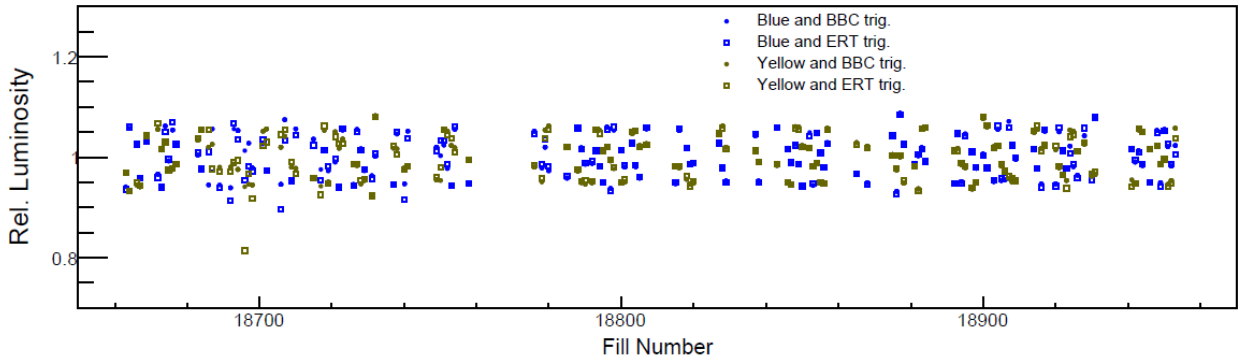


Figure 41: Relative luminosity factor calculated for each fill in Run-15 $p+p$.

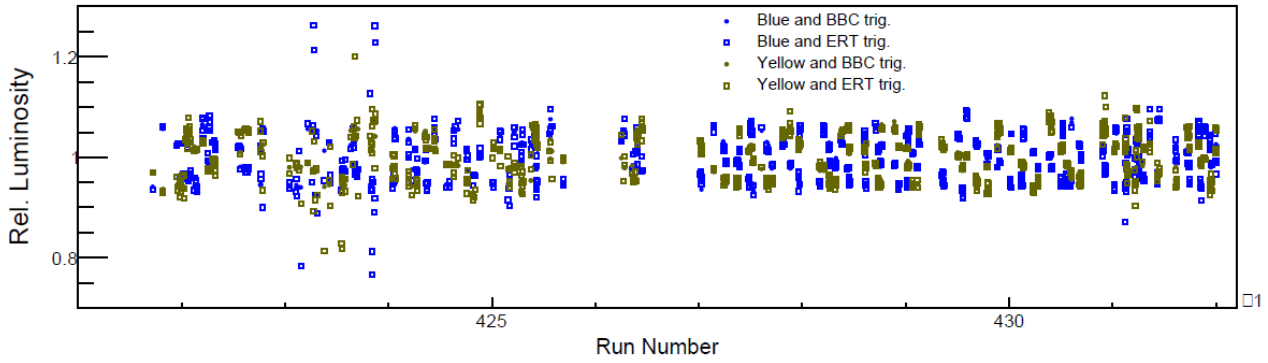
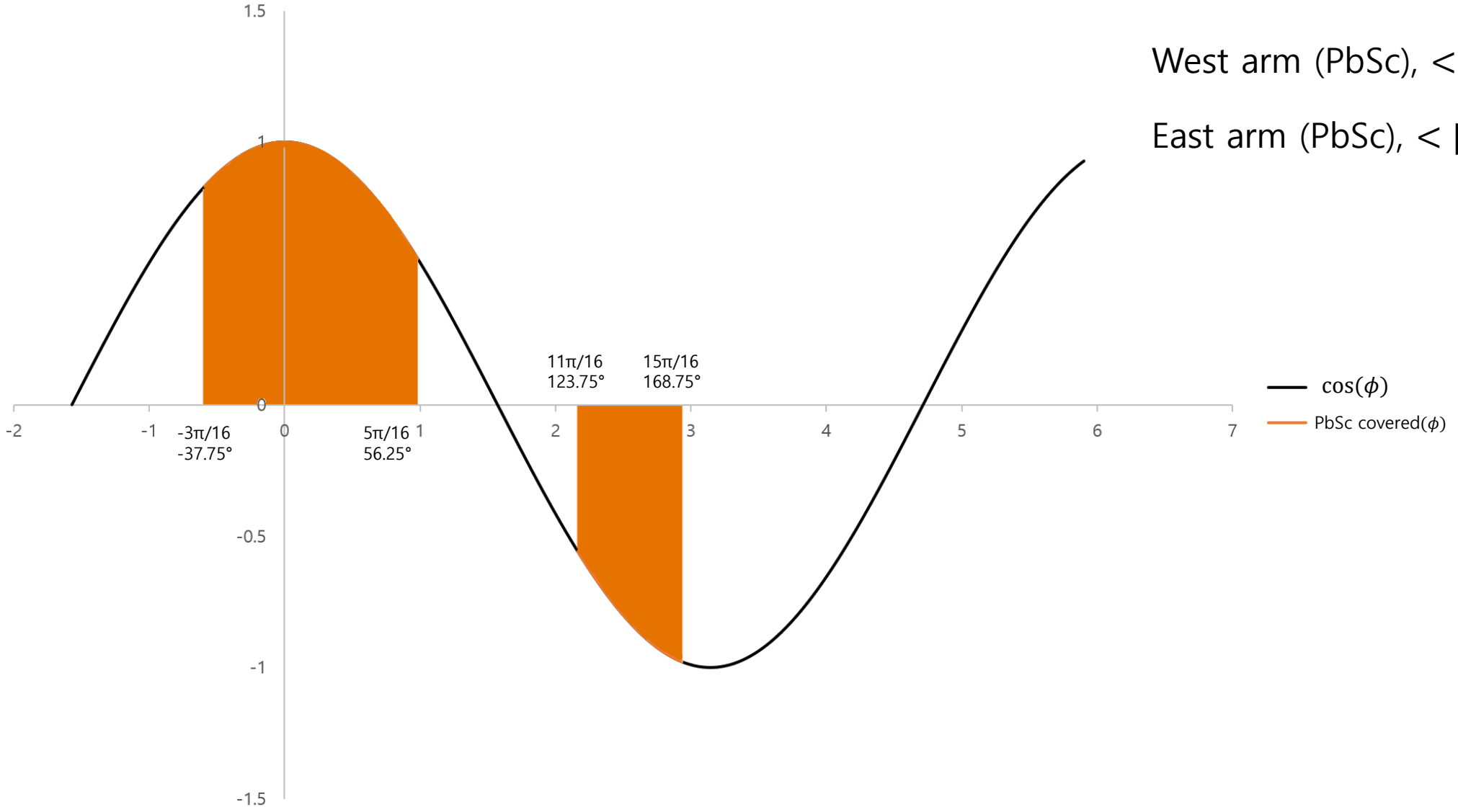


Figure 42: Relative luminosity factor calculated for each run in Run-15 $p+p$.

AN 1269(Norbert's)



West arm (PbSc), $< |\cos(\phi_1)| > = 0.883017$

East arm (PbSc), $< |\cos(\phi_2)| > = 0.40513$