

Xcheck of HpT asymmetries ($Q^2 > 1$) 2004

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Outline

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 - Cuts
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Samples

Period	Slot	Coral
W22	2 - 7	prod-2005-4-12-slc3
W23	3 - 7	prod-2005-4-12-slc3
W26	2 - 7	prod-2005-4-12-slc3
W27	2 - 7	prod-2005-4-12-slc3
W28	2 - 7	prod-2004-11-17
W29	1 - 7	prod-2004-11-17
W30	2 - 7	prod-2004-11-17
W31	2 - 7	prod-2004-11-17
W32	3 - 7	prod-2005-4-12-slc3
W37	3 - 7	prod-2004-11-17
W38	2 - 7	prod-2005-4-12-slc3
W39	2 - 7	prod-2005-4-12-slc3
W40	3 - 7	prod-2005-4-12-slc3

Selections

	Konrad	Roman
Origin of selection code	Sebastien	Sonja
uDST produced by	Luis	Roman
# of events selected	253493	253490

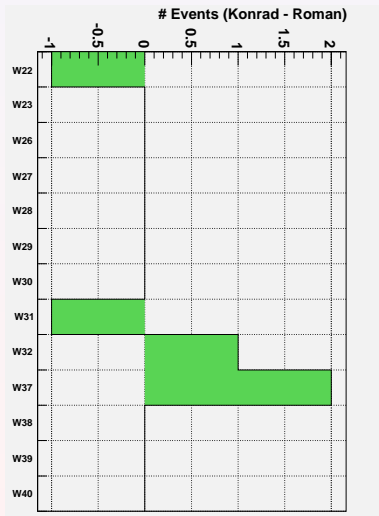
Cuts

- Primary Vertex (PV) with μ'
- μ' has last hit after MF2 (pure CT: or in MA02)
- PV inside the target
- extrapolated beam crosses both target cells
- $Q^2 > 1 \text{ GeV}^2$
- $p_T > 0.7 \text{ GeV}$
- $M_{inv} > 1.5 \text{ GeV}$
- $\sum z < 0.95$
- Ecal/p > 0.3 OR last cluster $< 4000 \text{ cm}$
- Last cluster $> 400 \text{ cm}$
- $x_f, z > 0$
- $0.1 < y < 0.9$
- $x_{bj} < 0.05$
- $\sum p_T^2 > 1.3 \text{ GeV}^2$
- Badspills, badruns and grouping lists

Cuts impact

Cut	# events	%
mDST	3164689442	
PV with μ' in the target, flux, 2 hadrons with $p_T > 0.7$, $Q^2 > 1$	794678	100
μ' has last hit after MF	678698	85.4
Last cluster > 400 cm	673515	84.8
Invariant mass of the 2 hadrons > 1.5 GeV	457059	57.5
$\sum z$ of 2 hadrons < 0.95	445707	56.1
Ecal/p > 0.3 OR last cluster < 4000 cm	384854	48.4
Badspill and Groupings list	341403	43.0
$\sum p_T^2 > 1.3$	292736	36.8
$0.1 < y < 0.9$	289424	36.4
$x_F > 0$	278862	35.1
$x_{bj} < 0.05$	253493	31.9

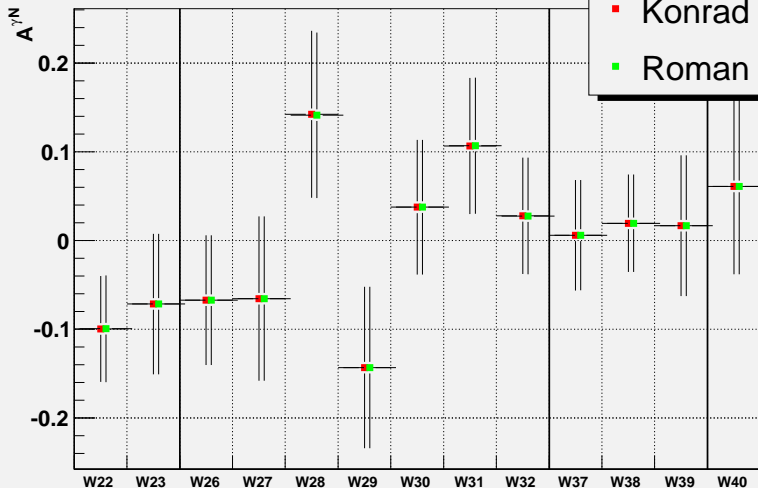
Events selected (Konrad vs Roman)



Period	Konrad	Roman
W22	30627	30628
W23	16321	16321
W26	18883	18883
W27	11670	11670
W28	11770	11770
W29	12383	12383
W30	17006	17006
W31	17768	17769
W32	25692	25691
W37	28760	28758
W38	33800	33800
W39	17657	17657
W40	11156	11156

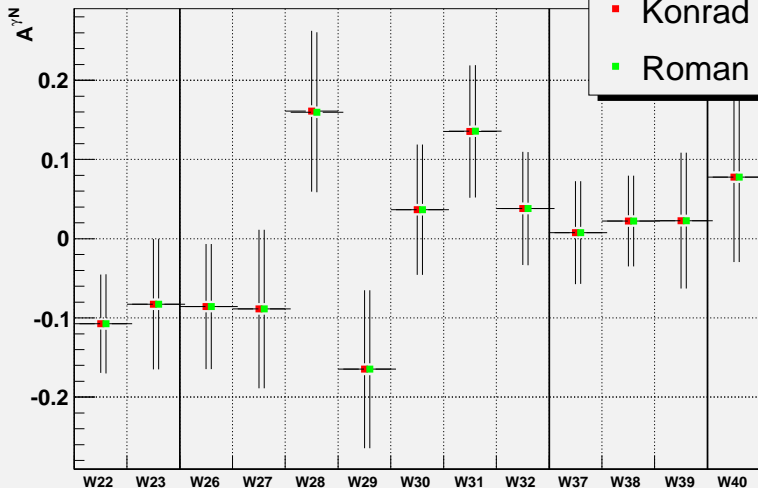
Asymmetry 1st order (Konrad vs Roman)

$A^{\gamma N}$ 1st order (2004)

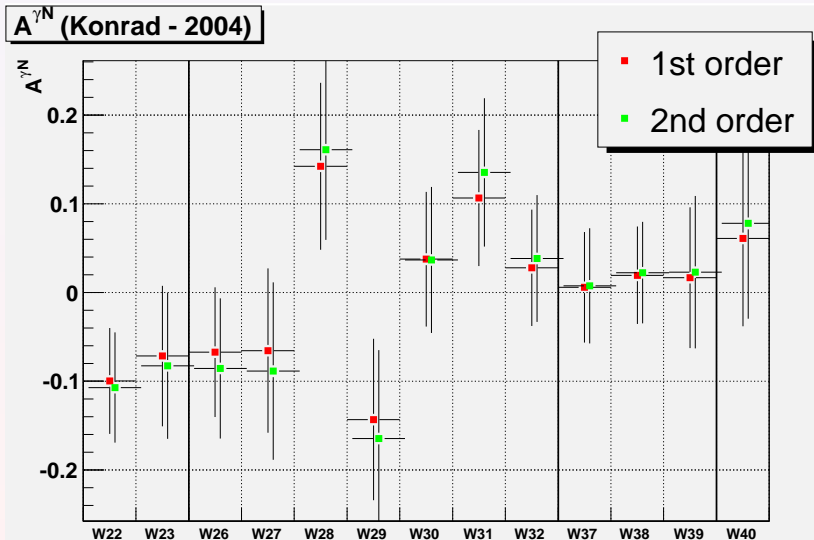


Asymmetry 2nd order (Konrad vs Roman)

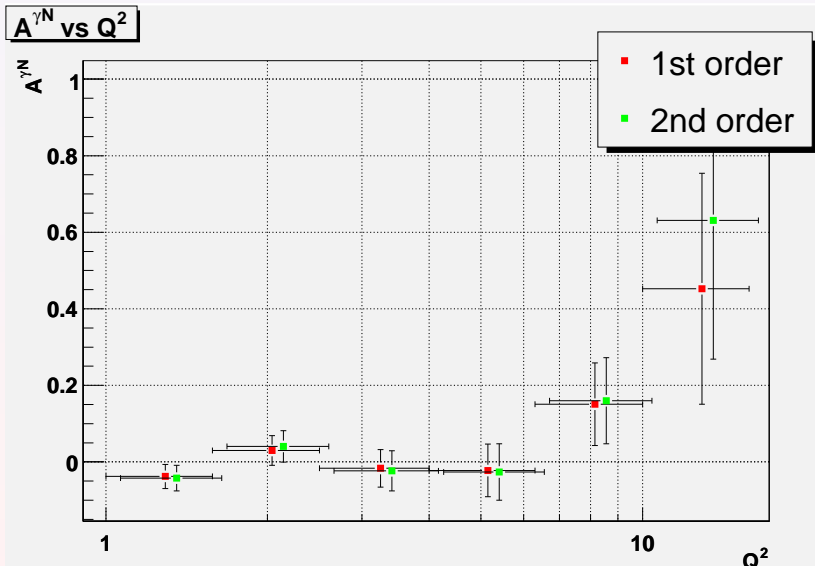
$A^{\gamma N}$ 2nd order (2004)

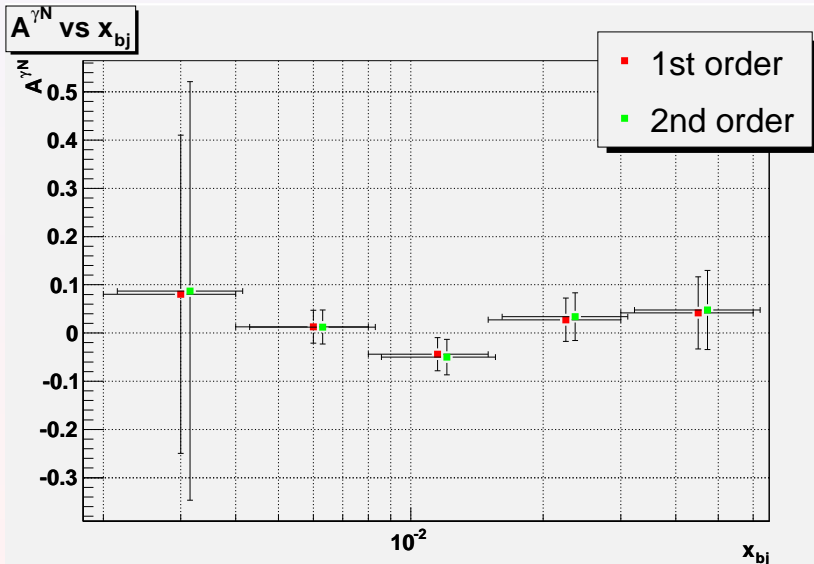


Asymmetry 1st vs 2nd order (Konrad)



Asymmetry vs Q^2 (Konrad)



Asymmetry vs x_{bj} (Konrad)

Results

	Asymmetry	Error
Konrad - 2nd order $\Sigma p_T^2 > 1.3$	-0.0061	0.0217
Roman - 2nd order $\Sigma p_T^2 > 1.3$	-0.0058	0.0218
Konrad - 1st order $\Sigma p_T^2 > 1.3$	-0.0055	0.0204
Roman - 1st order $\Sigma p_T^2 > 1.3$	-0.0052	0.0204
Konrad - 2nd order $\Sigma p_T^2 > 2.5; z, x_F > 0.1$ (2004)	-0.0356	0.0525
Released - 2nd order $\Sigma p_T^2 > 2.5; z, x_F > 0.1$ (2002-2003)	-0.015	0.08

Summary and outlook

- Xcheck
 - Both samples are in good agreement
 - Both asymmetries are in good agreement
 - μ' identification needs to be clarified
- Future
 - MC studies for HpT sample are needed
 - Extraction of $\Delta G/G$