Dijets and the Unintegrated Gluon Density

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Outline

→ Control Plots 2000 Data

→ Trigger Efficiencies

→ Summary & Outlook

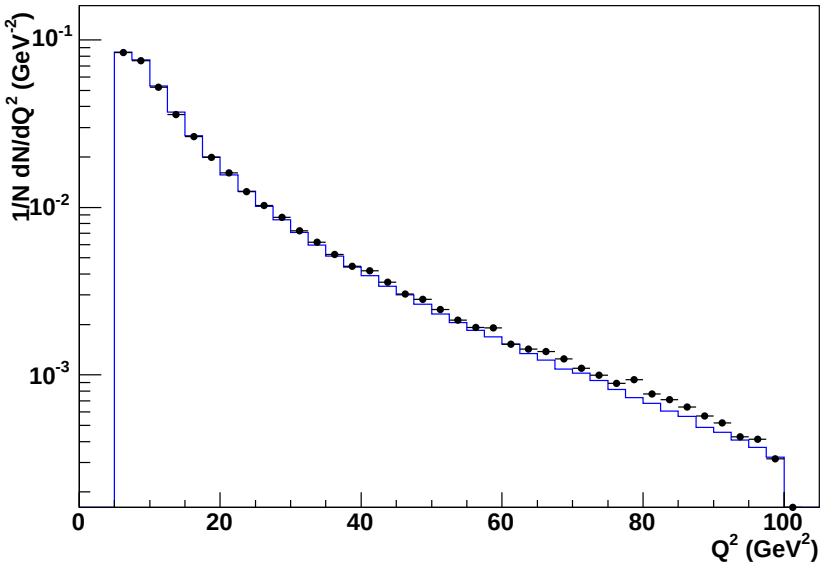
Control Plots 2000 Data

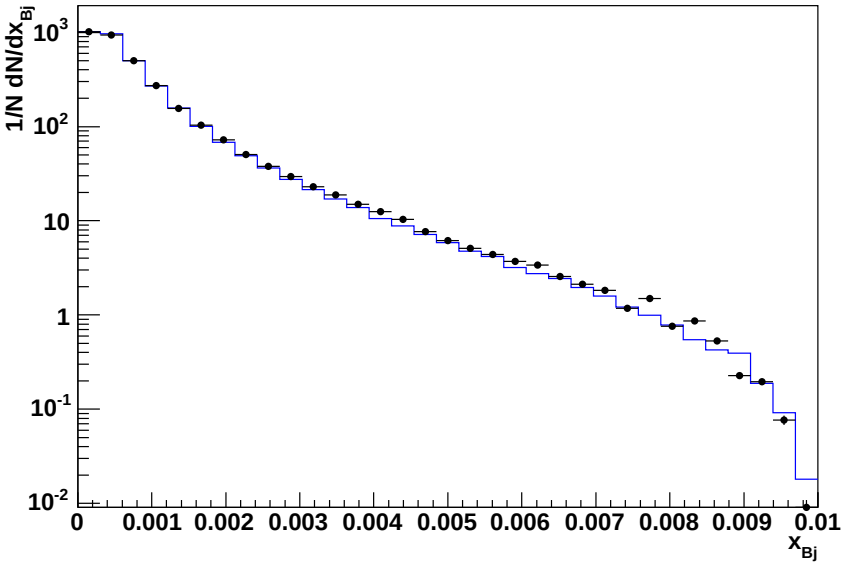
Selection

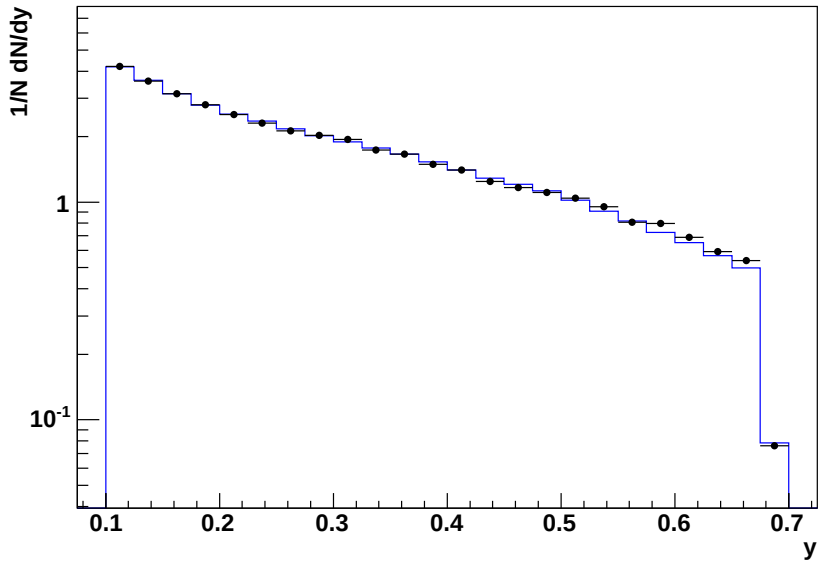
- 2000 Data vs Djangoh13 (CDM)
- Same cuts as R. Pöschl:

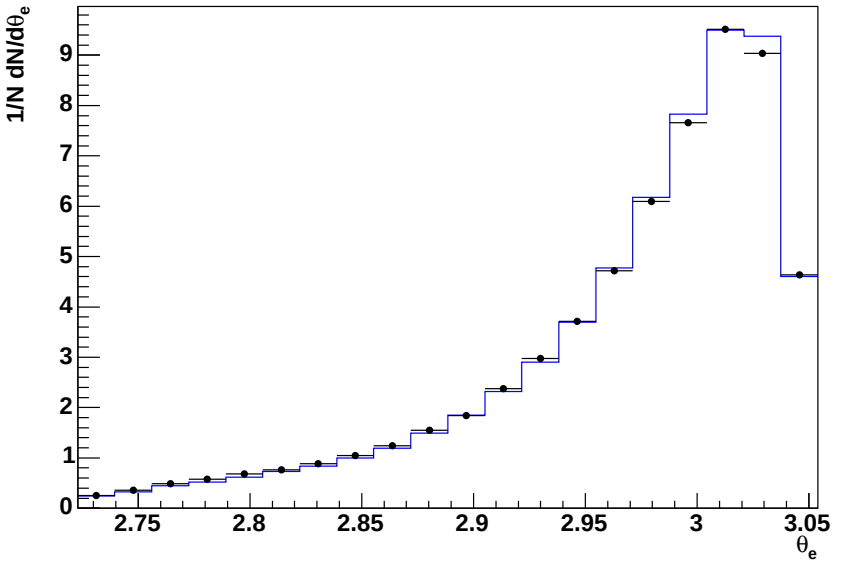
DIS Cuts			Dijet Cuts		
$5\ \text{GeV}^2 <$	Q^2	$< 100\ \text{GeV}^2$	$-1 <$	η_j	< 2.5
$0.1 <$	y	< 0.7	$7\ \text{GeV} <$	$E^*_{\perp j1}$	
$10^{-4} <$	x_{Bj}	$< 10^{-2}$	$5\ \text{GeV} <$	$E^*_{\perp j2}$	
$9\ \text{GeV} <$	E_e			Sort in $E^*_\perp$	
$156^\circ <$	θ_e	$< 175^\circ$			
$35\ \text{GeV} <$	$E - p_z$	$< 70\ \text{GeV}$			
	$\lvert z_{vtx} \rvert$	< 35 cm			
	R_{clus}	< 3.5 cm			
	E_{had}	$< 0.5\ \text{GeV}$			

Control Plots: DIS Sample

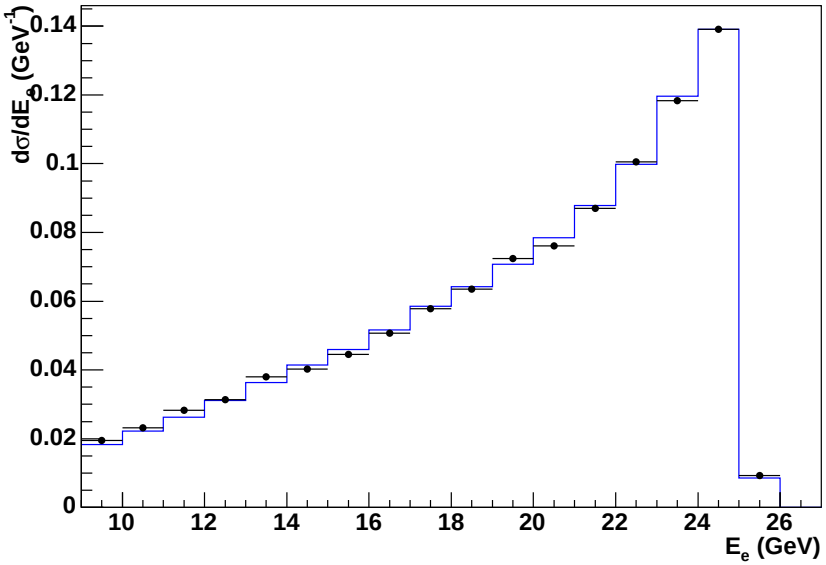


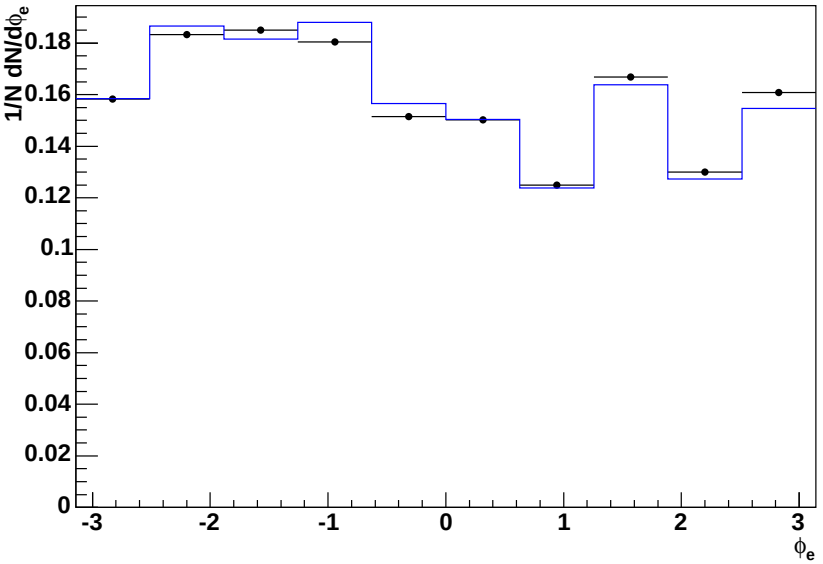


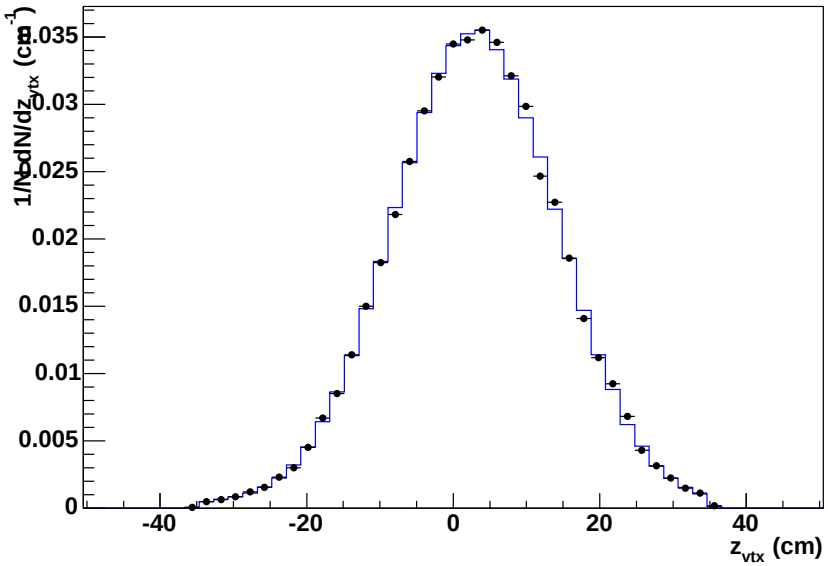


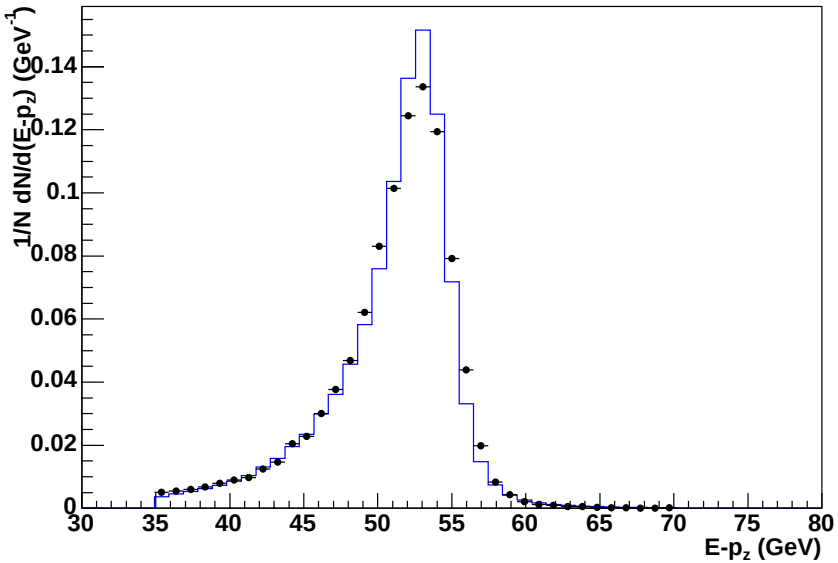


Control Plots: DIS Sample







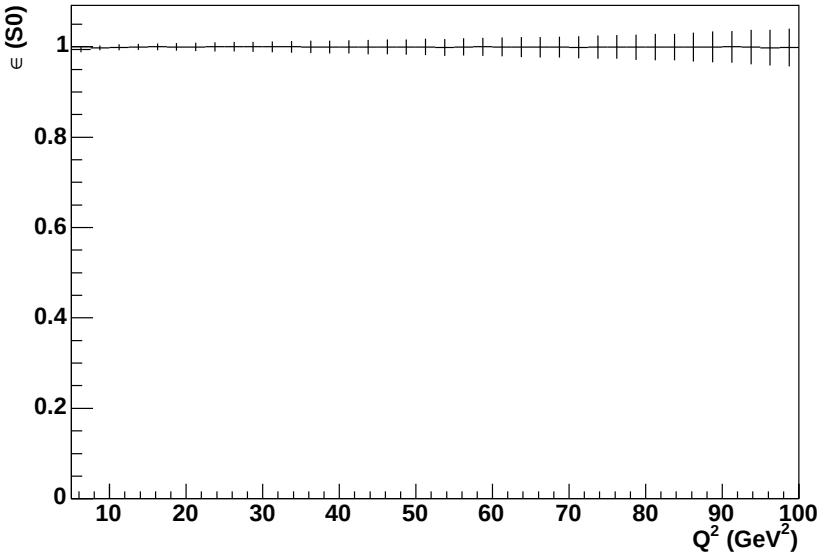


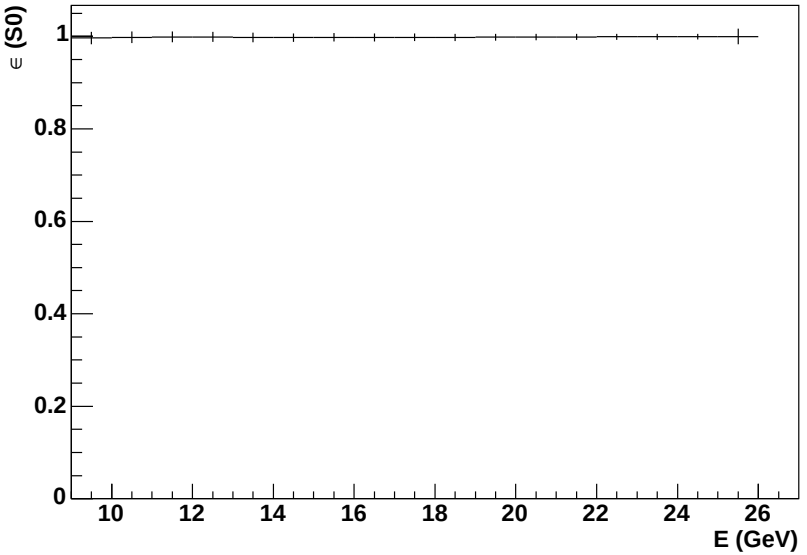
Control Plots: Dijet Sample

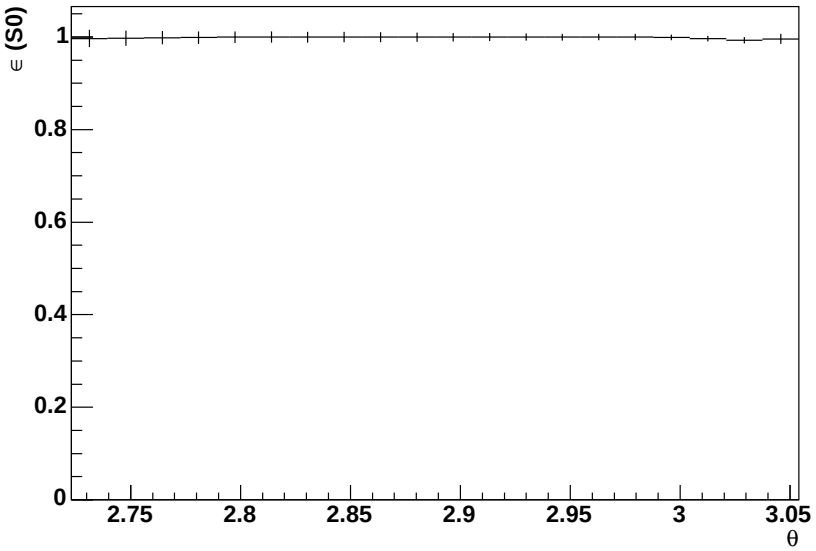
Control Plots: Dijet Sample

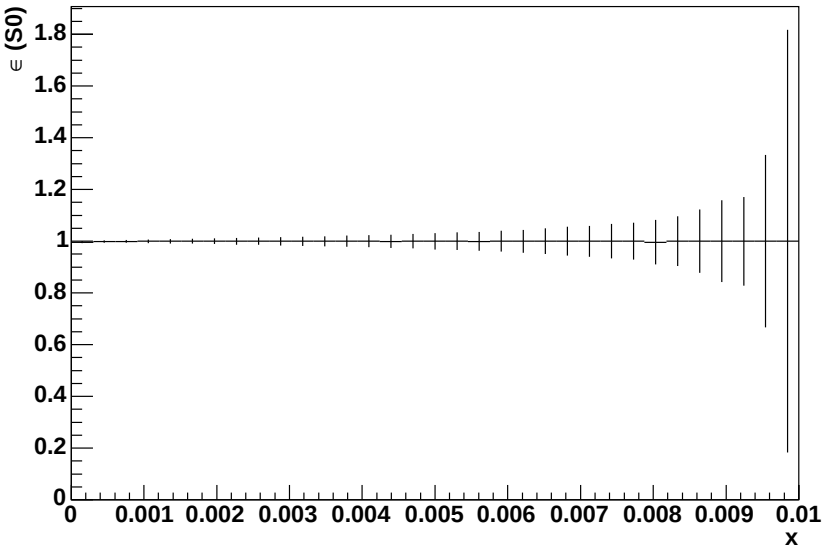
Trigger Efficiencies: S0

Monitor: S71



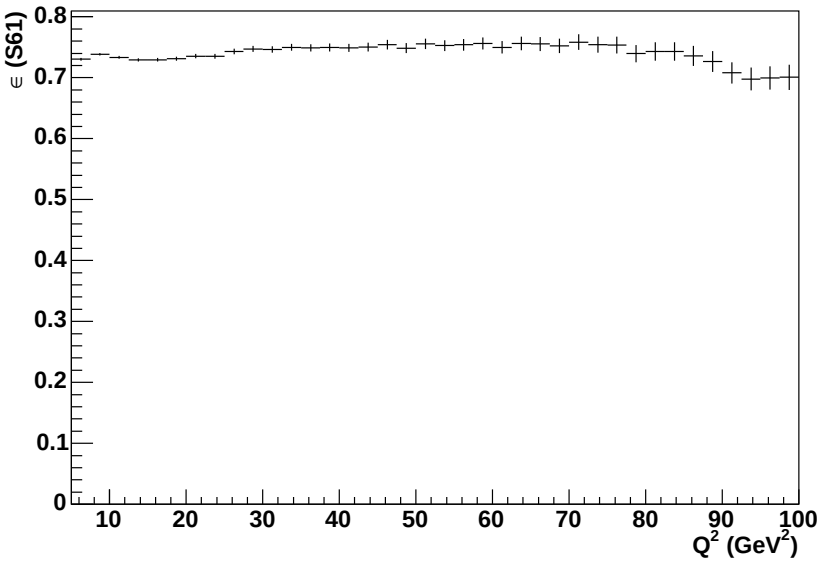


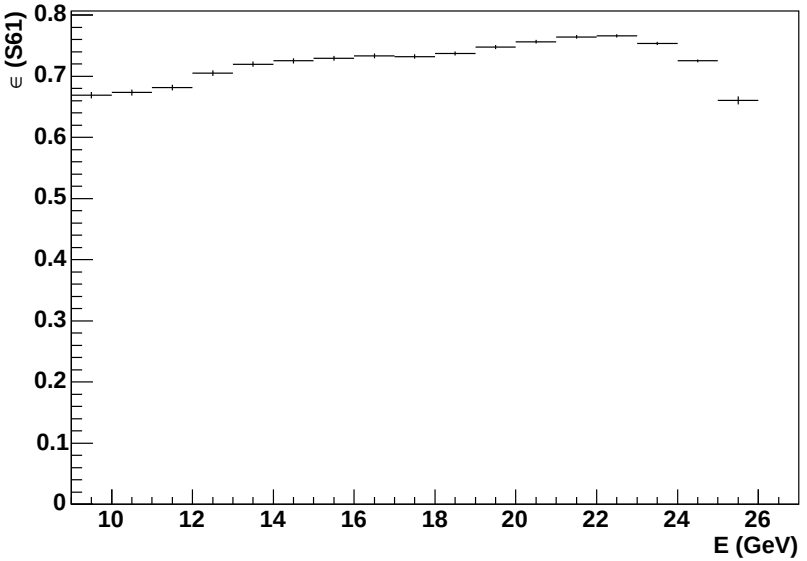


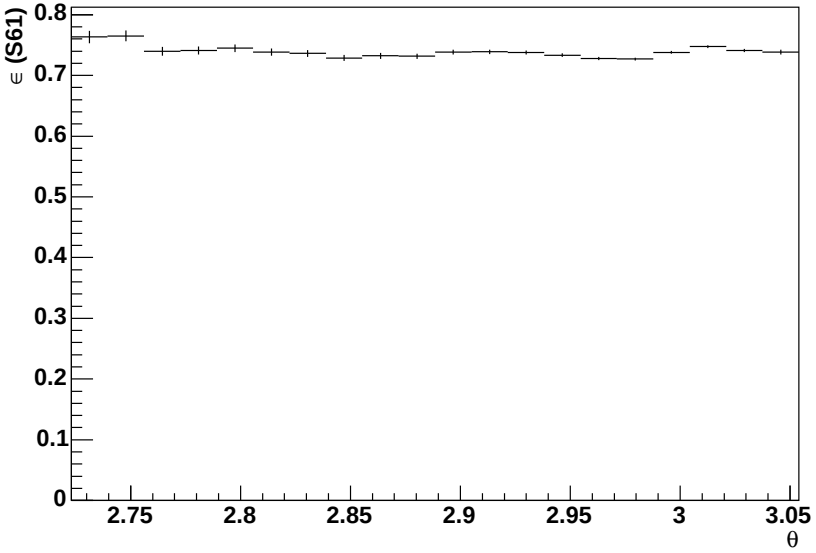


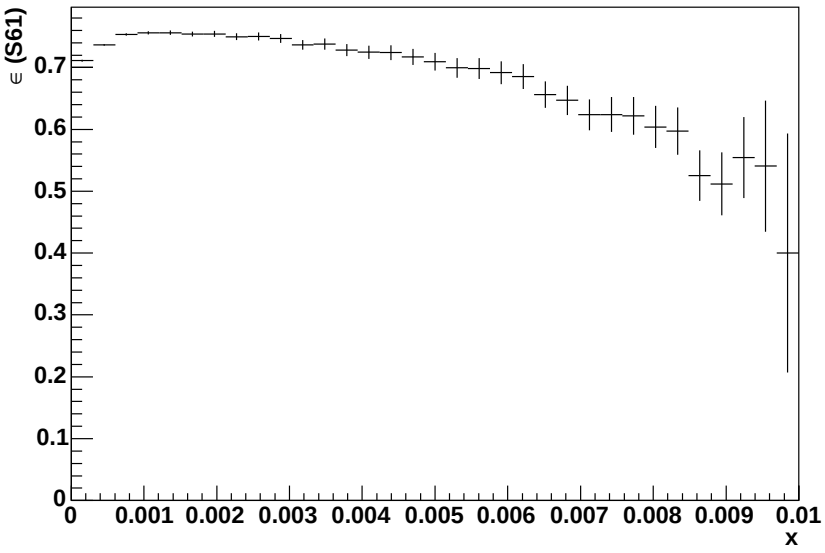
Trigger Efficiencies: S61

Monitor: S0 & S77









Summary & Outlook

- Control Plots Ok
- Triggers Ok
- Next:

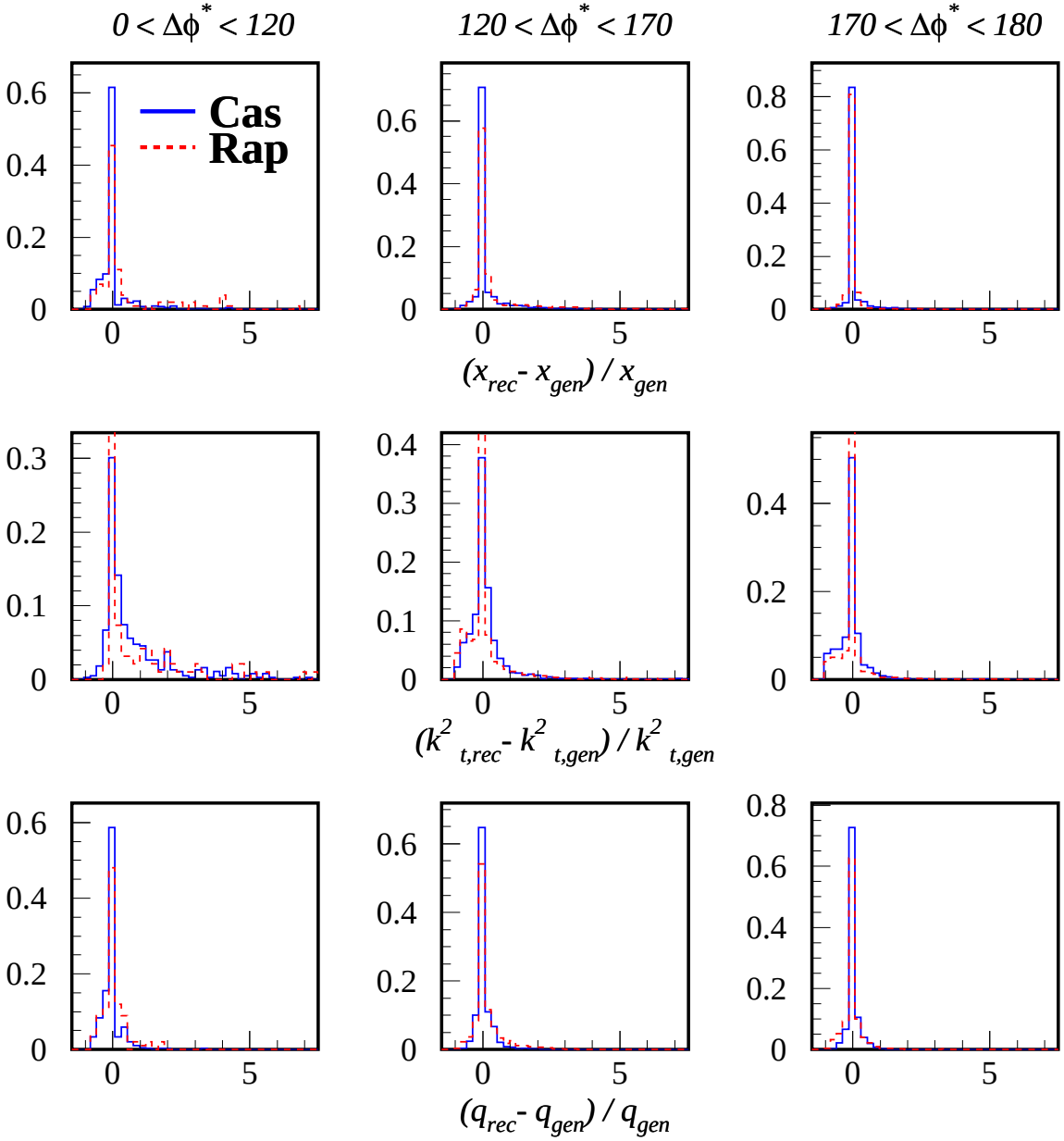
1. Control Plots using Rapgap
2. QCD-weights and Beam Tilt
3. $\Delta\phi^*$ Resolution
4. x_g, k_{tg}^2, $\bar{q}$ Resolution

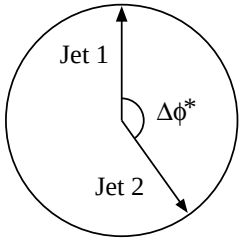
Reconstruction of Gluons

- Cascade v1.2 and Rapgap v3.1
- Find jets on parton level in HCM (inclusive k_t)
- Reconstruct propagator & compare to gluon in eventlist
- Cuts:

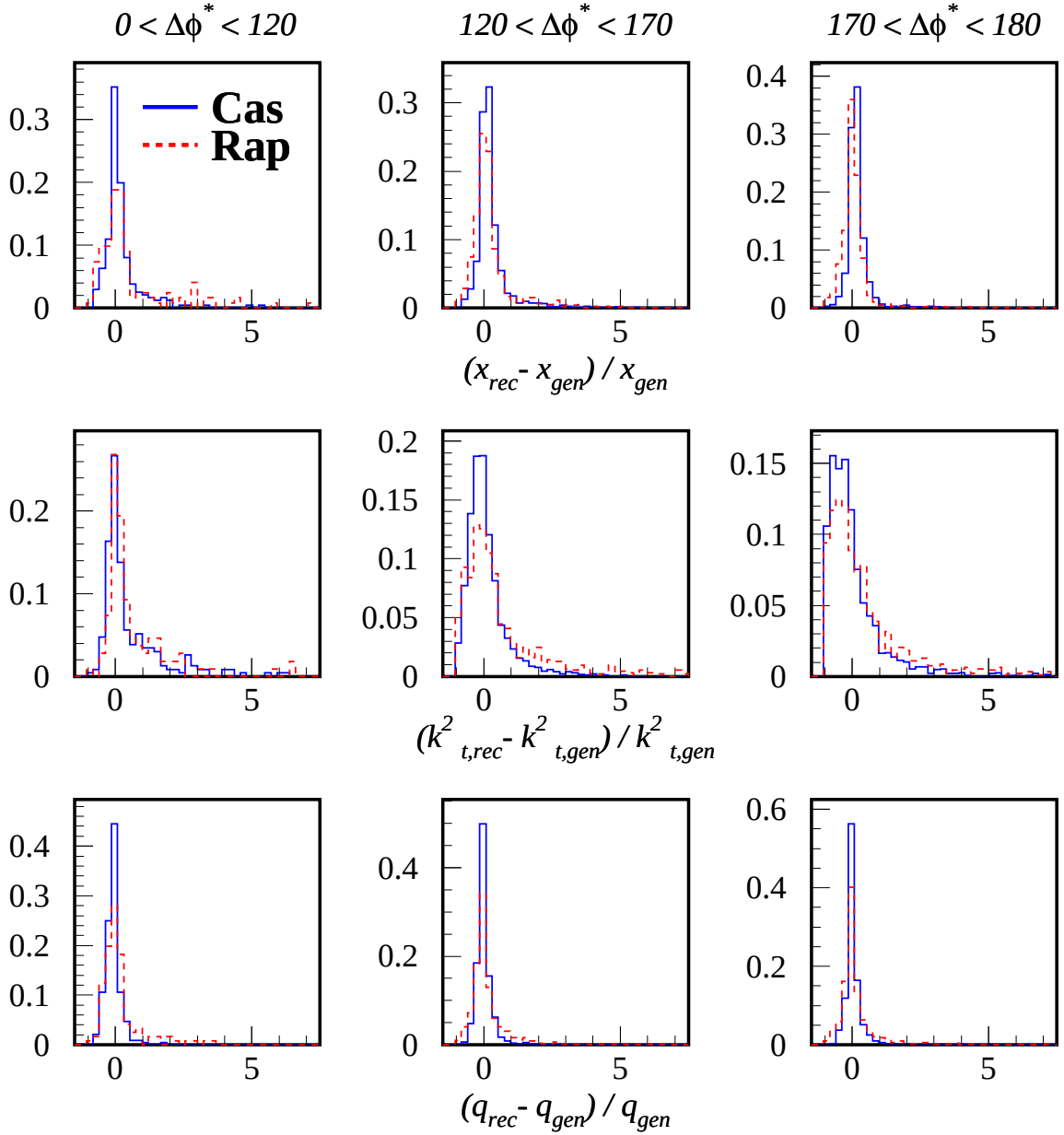
$$
\begin{aligned}
5\ \text{GeV}^2 < \quad & Q^2 \quad & < 100\ \text{GeV}^2 \\
0.1 < \quad & y \quad & < 0.7 \\
10^{-4} < \quad & x_{Bj} \quad & < 10^{-2} \\
9\ \text{GeV} < \quad & E_e & \\
156^\circ < \quad & \theta_e \quad & < 175^\circ \\
-1 < \quad & \eta_j \quad & < 2.5 \\
5\ \text{GeV} < \quad & E^*_{\perp j1,2} &
\end{aligned}
$$

Parton Level Resolution

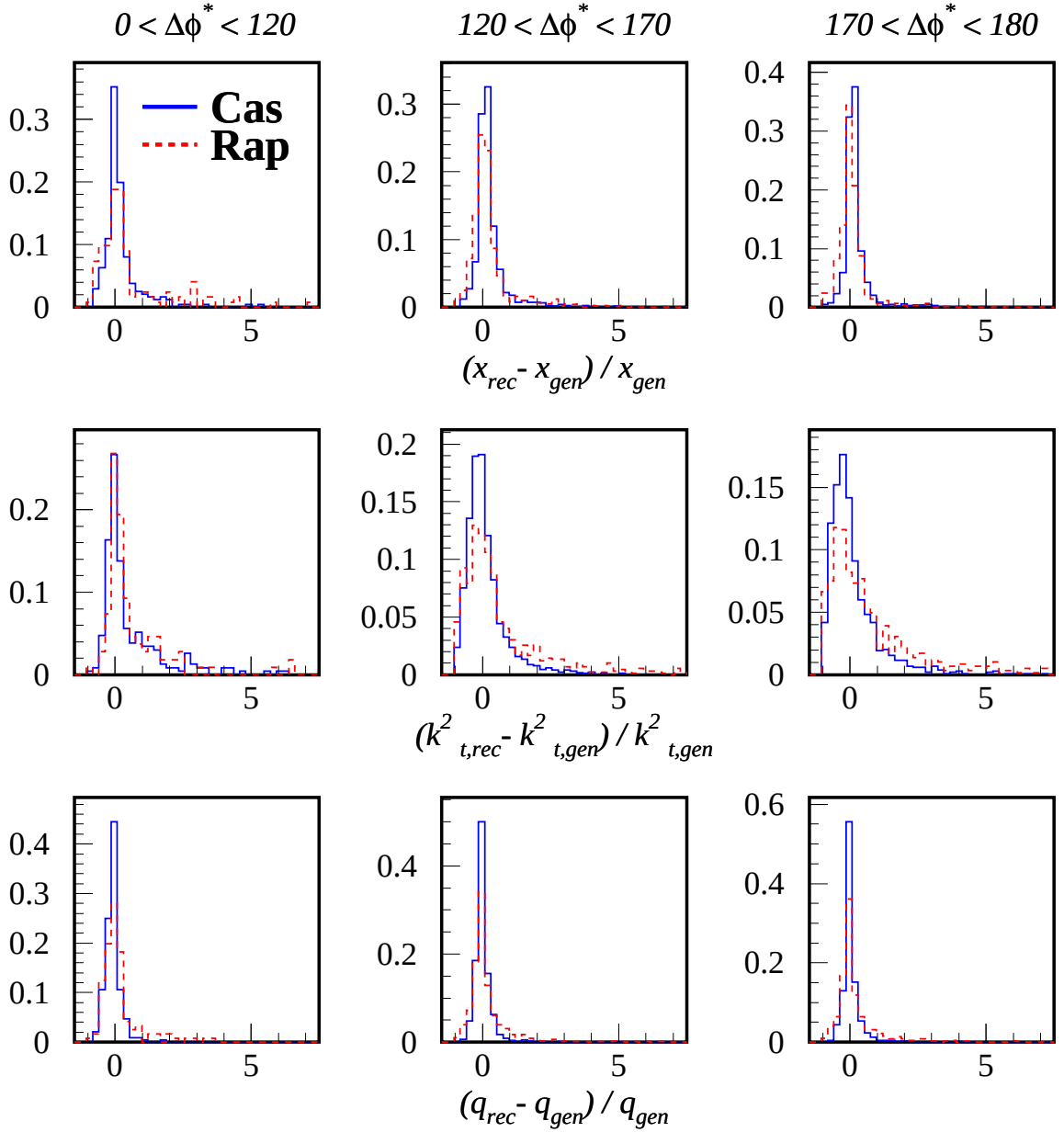




Hadron Level Resolution

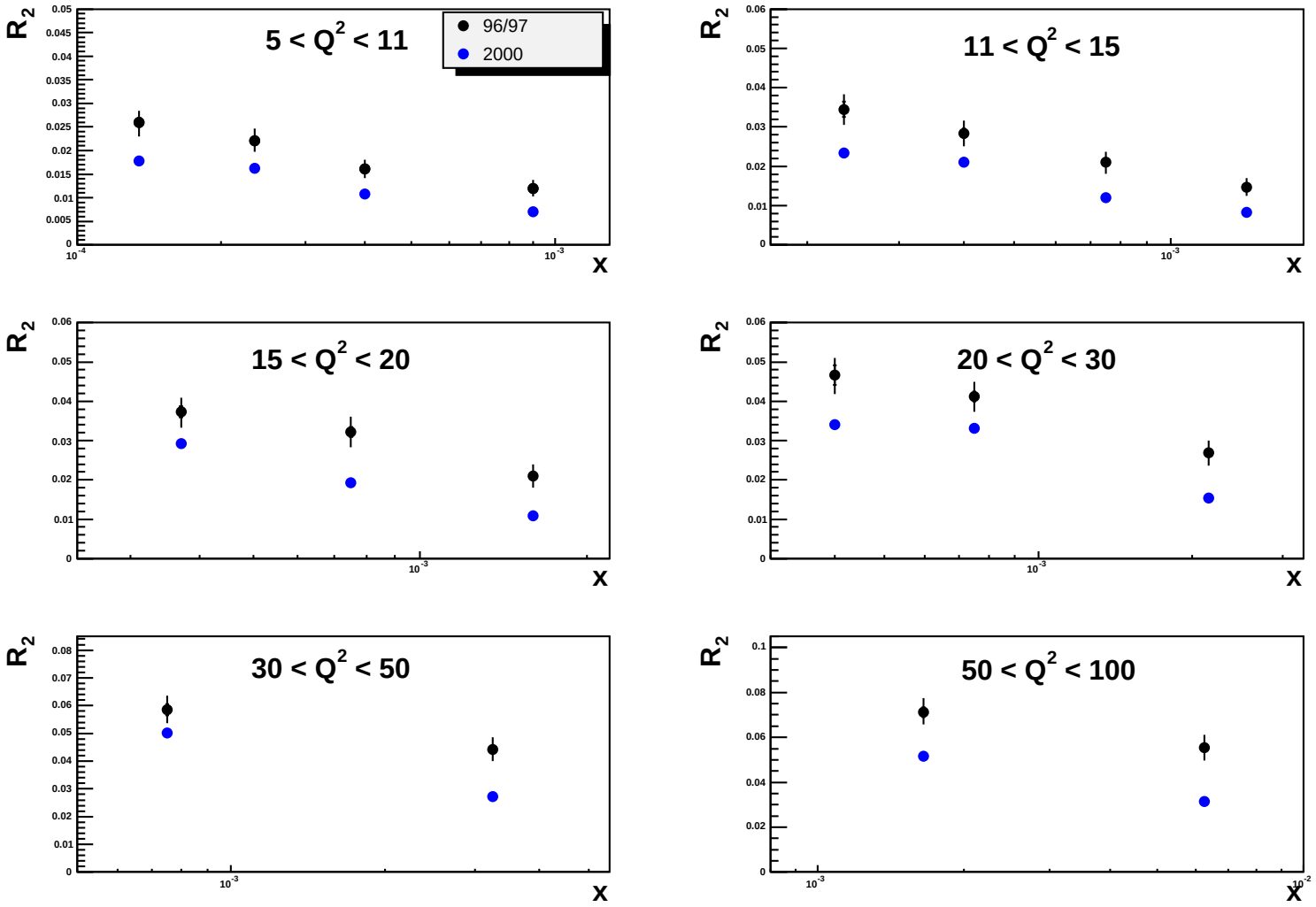


Hadron Level Resolution $k^2_{t,rec} > 1$ GeV^2



Dijet Rates 96/97 vs 2000

$$R_2 = \frac{\sigma_{2jet}}{\sigma_{DIS}}$$



Triggers

Trigger S0: SPCLe_IET>2
Monitor S71: LAr_BR && DCRPh_Tc && zVtx_sig>1

Trigger S61: (SPCLe_IET>2||SPCLe_IET_Cen_3) && DCRPhi_THig && zVtx_sig
Monitor S77: LAr_Etmiss>1 && (zVtx_T0||FwdRay_T0)
Monitor S0: SPCLe_IET>2

SPCLe_IET > 2:	Energy in SPACAL trigger towers > 5.7 GeV
LAr_BR:	BT above thresh and validated by MWPC track
DCRPh_Tc	At least 3 masks fired
zVtx_sig>1	A signature for the z-vertex found
SPCLe_IET_Cen_3:	Energy in central part of the SPACAL > highest threshold
DCRPhi_THig:	At least one track candidate in the CJC with a p_t > 800 MeV
zVtx_sig:	A signature for the z-vertex found
LAr_Etmiss>1	Sum over all BT w'ed by sin_th*sin_phi,cos_phi
zVtx_T0	At least one ray
FwdRay_T0	Any multiplicity of rays

SPACAL Fiducial Cuts

Inner Region:

$$\text{-16.0} < \text{X}_{clus} < 16.0 \;\&\&\; \text{-9.0} < \text{Y}_{clus} < 16.0$$

Other:

$$\text{-48.5} < \text{X}_{clus} < \text{-36.5} \;\&\&\; \text{-32.5} < \text{Y}_{clus} < 20.5$$

$$\text{-12.0} < \text{X}_{clus} < 0.0 \;\&\&\; \text{-52.5} < \text{Y}_{clus} < 40.5$$

$$44.5 < \text{X}_{clus} < 56.5 \;\&\&\; 36.5 < \text{Y}_{clus} < 48.5$$