CURVATURE RECONSTRUCTION PERFORMANCE

SLAC ILC Simulation Meeting

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Alex Bogert (Undergraduate student)

Bruce Schumm

Question: ILD Higgs LOI recoil reconstruction appears somewhat better than SiD's. Could this be due to curvature reconstruction?
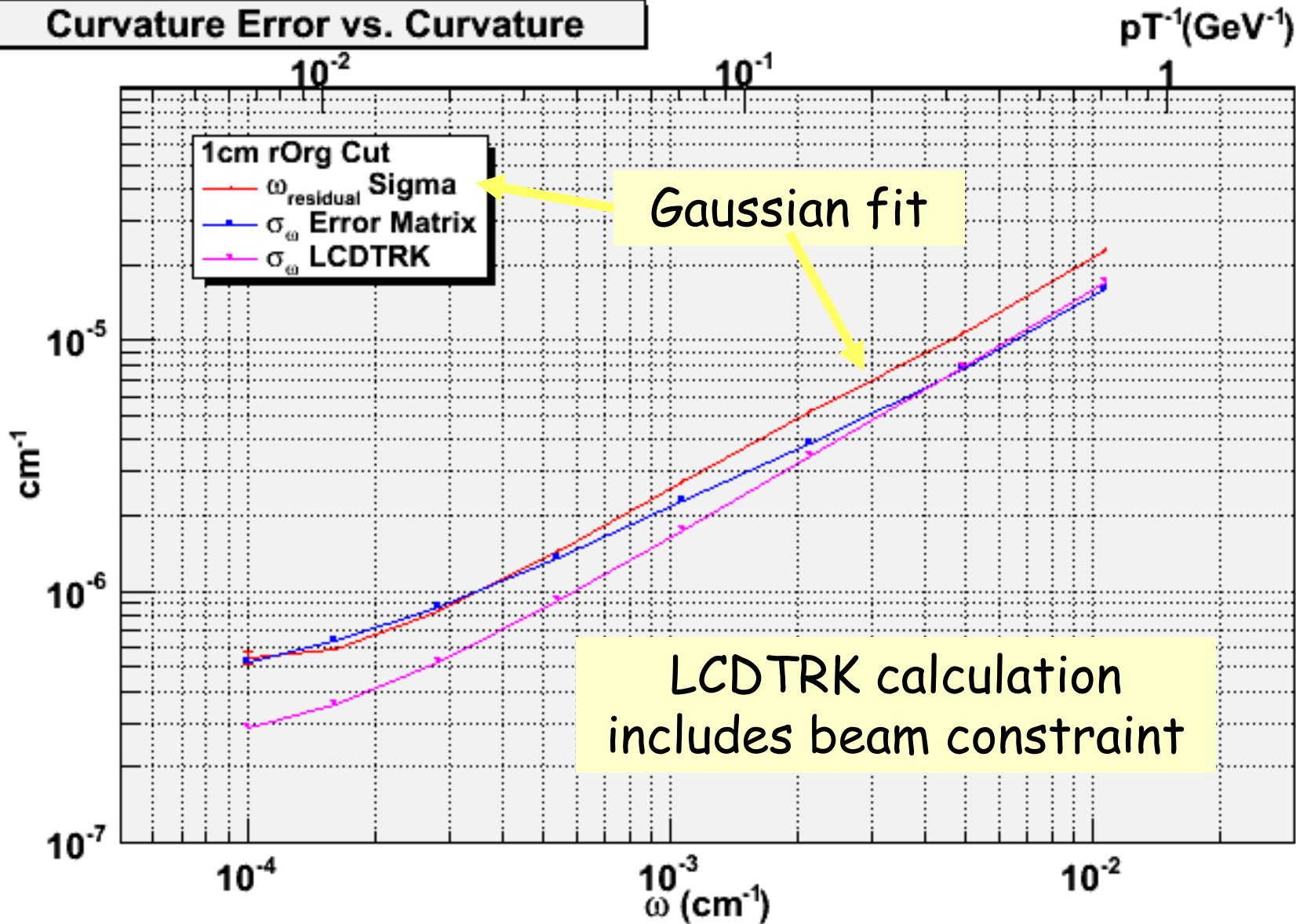
CURVATURE RECONSTRUCTION PERFORMANCE

1. Compare width of Gaussian fit to residuals with two different estimates:

    •   Error from square root of appropriate diagonal error matrix element

    •   Error from Billior calculation (LCDTRK program)

2. Only tracks with all DOF (5 VTX and 5 CT layers) are considered.

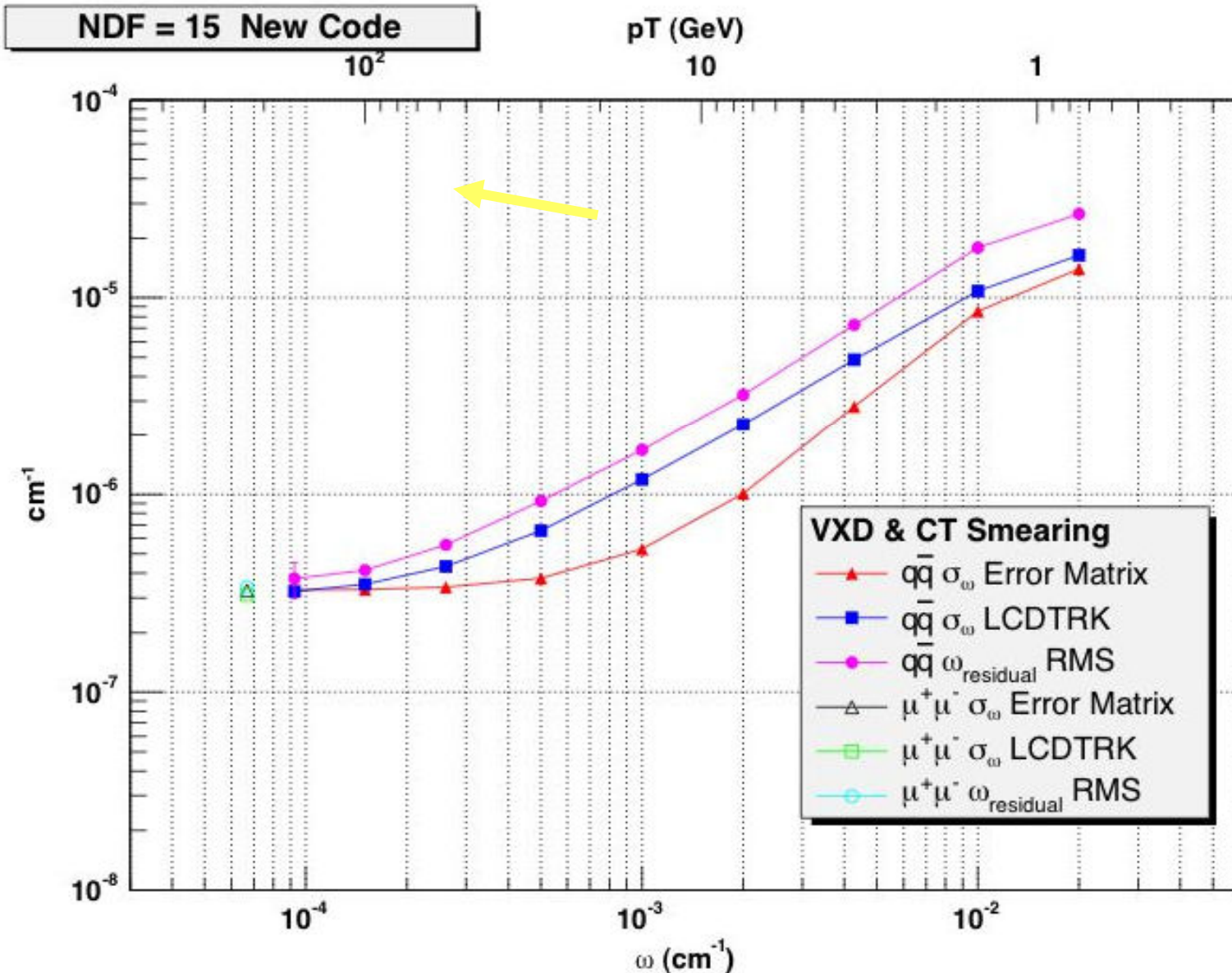3. Only gaussian smearing is used, since this is what is assumed for the two estimators.

Use q/qbar at 500 and 1000 GeV, tau samples at 500 GeV, all mixed together (shouldn't matter)

CURVATURE ERROR vs. CURVATURE

Curvature Error vs. Curvature

pT⁻¹(GeV⁻¹)

1cm rOrg Cut
$\omega_{residual}$ Sigma
σ_ω Error Matrix
σ_ω LCDTRK

Gaussian fit

LCDTRK calculation
includes beam constraint

ω (cm⁻¹)

Snowmass 2005 Results (RMS residual)

Most HZ tracks have all 10 DOF (but very small statistics!)

Number of DOF

Entries : 16
Mean : 9.5000
Rms : 1.3693

Tracks from HZ events
P_t > 5 Gev/c
$|cos(\theta)|$ < 0.8