Lc reconstruction
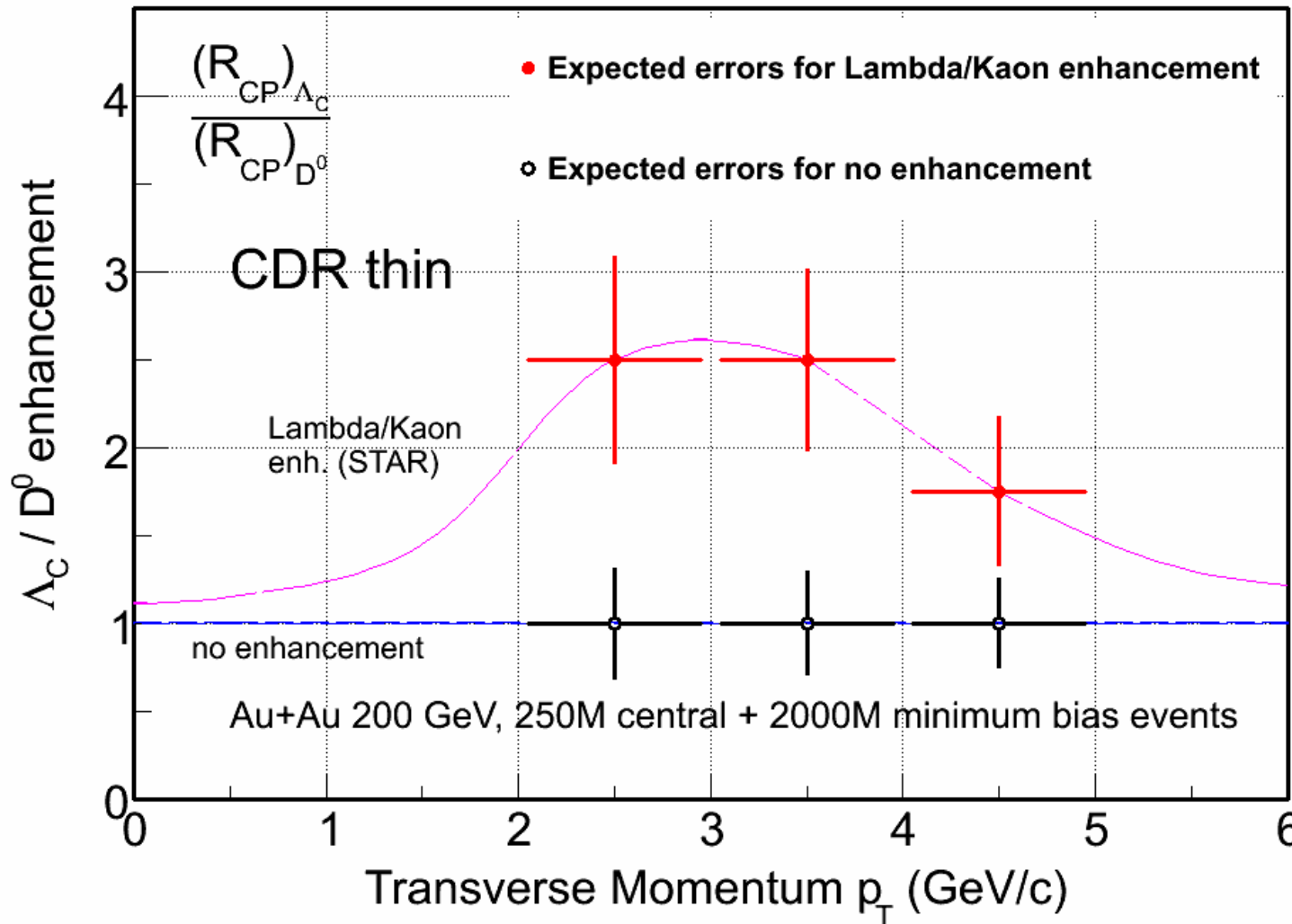## new production:
–higher statistics
-thick geometry

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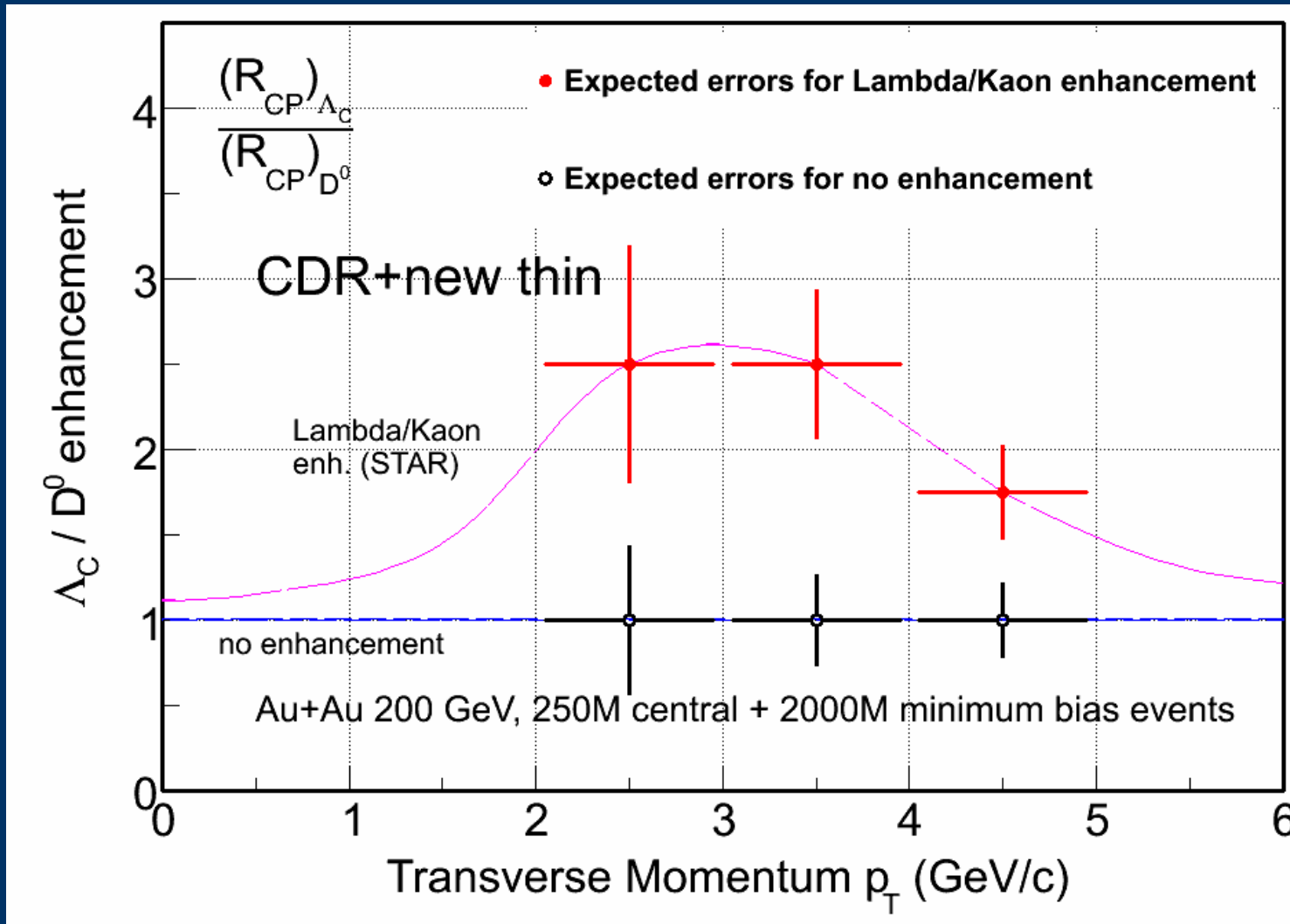# TC meeting, March 2010

CDR – final result

thin geometry:
-pixel 0.32% X0
-ist 1.32% X0
-beampipe 0.076cm

CDR production:
-10k events
-5 Lc in each

how to read the errors: difference from the other CURVE – not the datapoints!!

new production: thin

10k events, 30 Lc in each : merged with CDR production to increase statistics

improvement for 3-4, 4-5 GeV pt bins: PID of daughter particle requirement ("GoodPID") not used for peripheral collisions!

+thorough cut optimisation performed: globalDCA * cos (theta) * nsigma_decayVertex: total ~3000 cut values tried for each pt bin * centrality

except... (skip to next slide for thick:-)

why is the result for 2-3 GeV pt bin so much worse, despite better cut optimisation?

well, one generally obtains significance as:
significance +- error

for tight cuts that we have to use, sometimes error is not negligible and then one has to decide, what is more (for example):
10 +- 5
or
8 +- 1

I chose to optimise the "lower estimate" : mean – error : in this case 10+-5 gives 10-5 = 5, 8+-1 gives 8-1 = 7
this is also what is finally used for the plots (!): I believe it's fair...

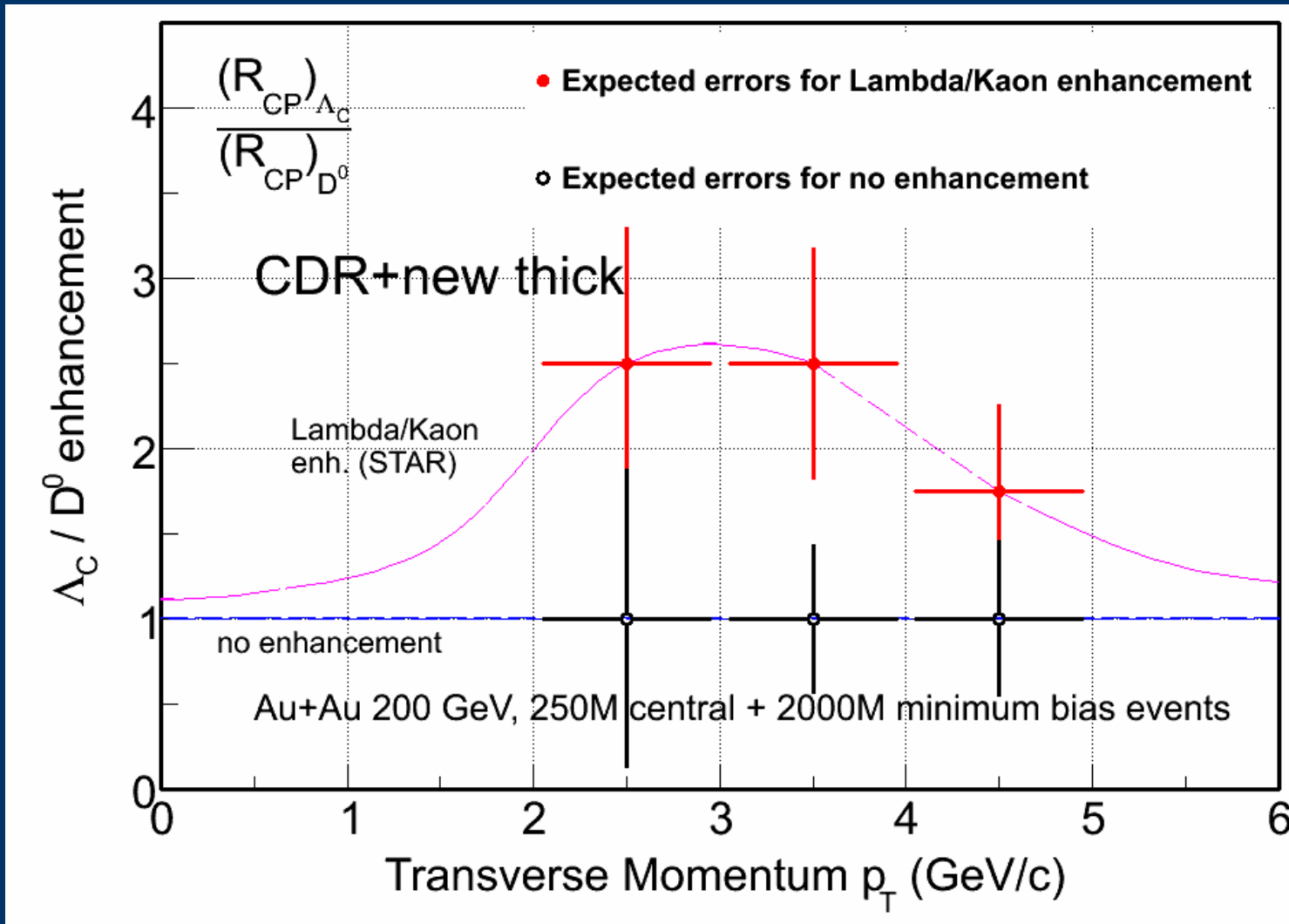for 2-3 GeV pt bin, central collisions, we had significance:
CDR: 8.2 +- 4.2, mean-error = 4.0
new: 3.1 +- 0.8, mean-error = 2.3
merged: 3.4 +- 0.7, mean-error = 2.7

->now I plot significance 2.7 as opposed to 4.0, but the actual numbers ARE statistically compatible...

new production: thick

thick geometry:
-pixel 0.64% X0
-ist 2.64% X0
-beampipe 0.076cm

errors are factor 1.5 to 2 bigger than for thin geometry!!

fitting pt shape of background may help at high pt: not done here yet!

Conclusion

new production allowed to obtain significance with better precision

cut optimization and better track selection (PID not required for peripheral events) improved "thin" significance for 3-4, 4-5 GeV pt bins compared to CDR

errors for thick geometry factor 1.5 to 2 bigger than thin: pointing resolution penalty clearly seen...

Lc reconstruction with thick detector in 2-3 GeV pt bin seems quite challenging