

# Monte Carlo Development

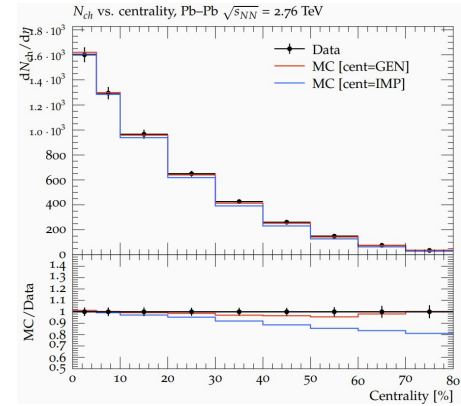
## Summary of WG2

A Buckley, S Gieseke

# Analysis and tuning

## Rivet for HI physics (C Bierlich)

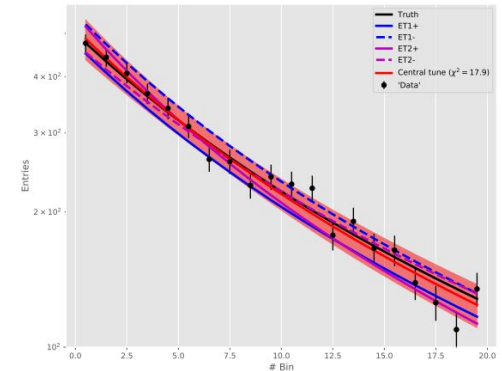
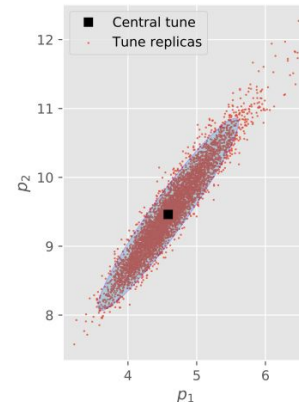
HI challenging for default Rivet paradigm as observables often not computed on event-by-event basis, or even model dependent. E.g. Centrality. Framework allows for multiple runs. Applied to N-particle correlators.



## Professor tuning methodology (H Schulz)

New techniques:

- portfolio tune to ~eliminate weight setting
- rational approximants (for suitable functions)
- PDF-like bootstrapped Hessian eigentunes



# LHC MC tunes

## LHC tunes (P Gunnellini)

Common basis of observables to tune different generators via LHC EW WG.

Goal: emphasis on hard observables. Do not allow e.g. parton shower to model emissions that ought to be described by a hard matrix element.

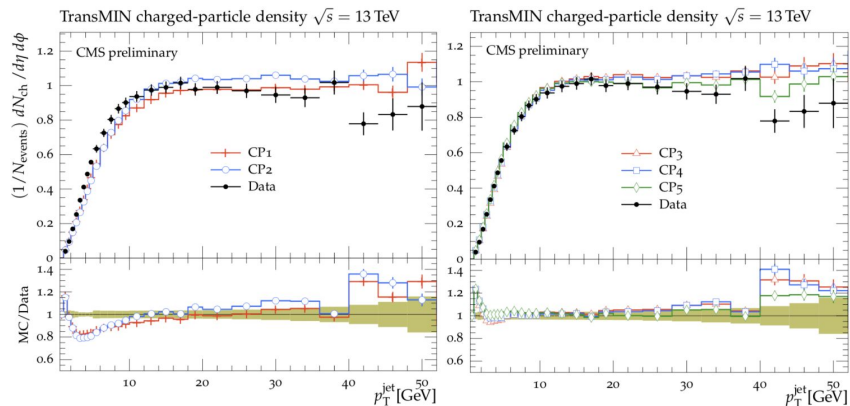
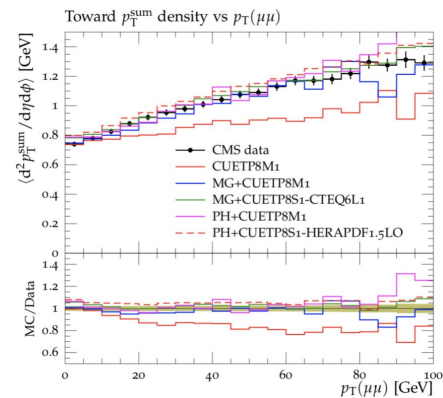
Allow generators to fail!

## CMS soft tunes (G S Chahal)

Set of 5 tunes exploring LO, NLO, and NNLO PDFs in PS/MPI. Fix all  $\alpha_s$  to PDF.

Good descriptions across many processes, including MB, UE and diffractive. MPI/ME PDF consistency?

Higher-order PDFs sometimes better  $\rightarrow \alpha_s$ , not  $f(x, Q^2)$ .



# New model developments

## EPOS (K Werner)

New statistical hadronization model: unify hydro EPOS3 with EPOS LHC via microcanonical ensemble. Efficiently sample hadron configurations, recover grand canonical limit.

## MC for DPS in pA (M Strikman)

MC to generate MPIs in pA collisions, using transverse geometry and Glauber-like procedure for wounded nucleons. Propose study of centrality-dependent multiplicity observable.

## Space-time CR model (M Myska)

Different contributions to smearing of partonic coordinates in transverse plane. CR between particles that are close in space-time (not momentum space). Propagation of partons important. Critical radius to increase amount of possible CR

