

Impact of MC Beam Spot Re-weighting on $dN/d\eta$

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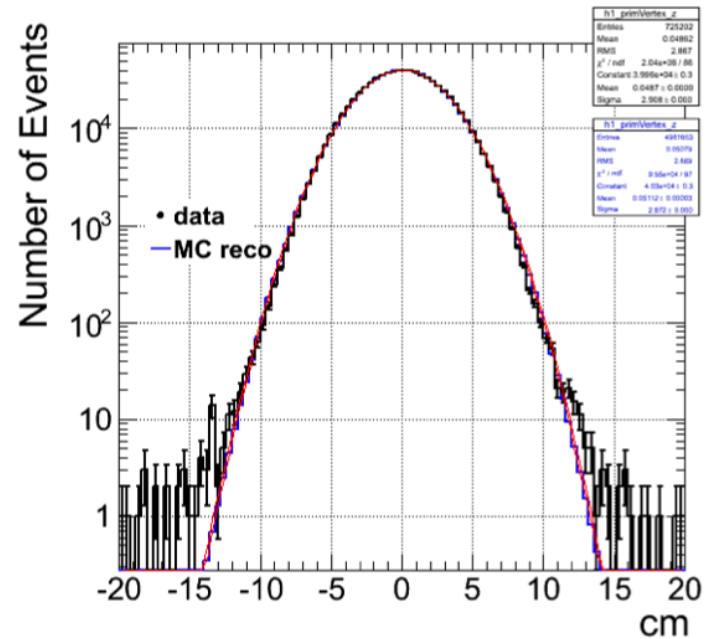
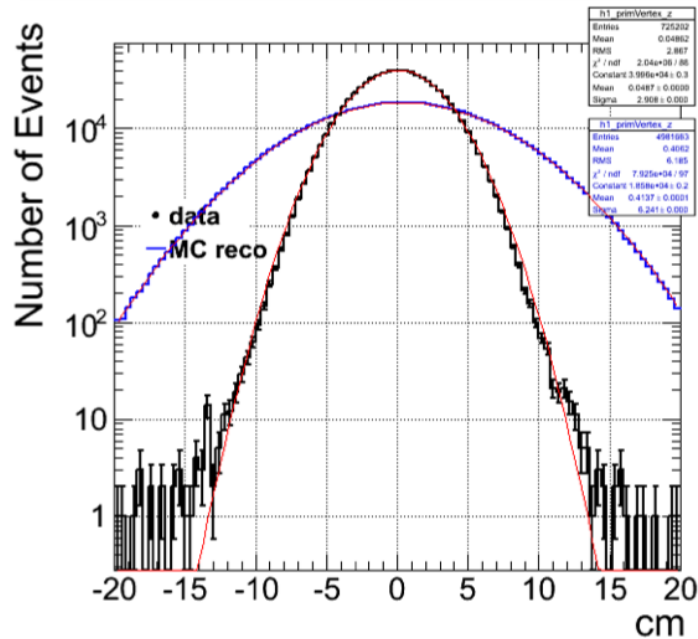
Feb. 1, 2011

Status and history on beam spot in the simulation

- Current beam spot description in the simulation is optimized to match that latter part of the 2010 data taking, where we have the largest amount of collected data.
 - Consequence, poor description of the commissioning data used in this analysis (needed to be in a low pileup environment)
- The correct procedure is to re-weight the beam spot in the MC to “match” our actual experimental conditions
- Results with reweighting were not available at the time of the pre-approval
- Results with reweighting now available and found to make more than 1% difference in the regions of pseudo-rapidity where tracks are close to an edge of the various tracker sub-systems

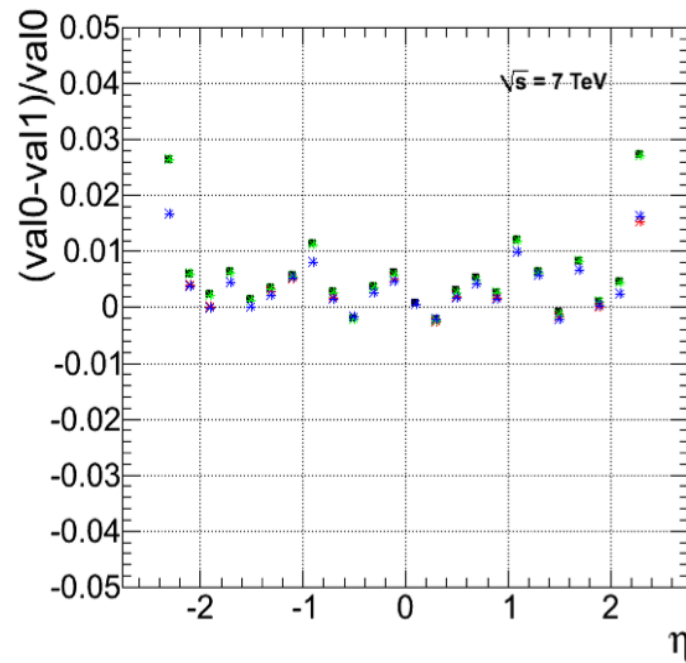
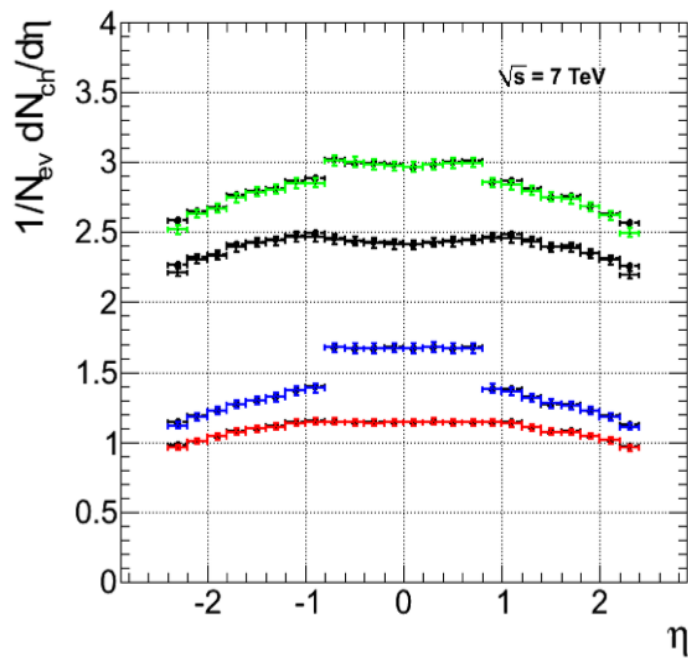
Systematics study: reweighting

- BeamSpot position in MC is different than it is in Data.
- Based on z-plot of primary main vertex we can reweight MC events.



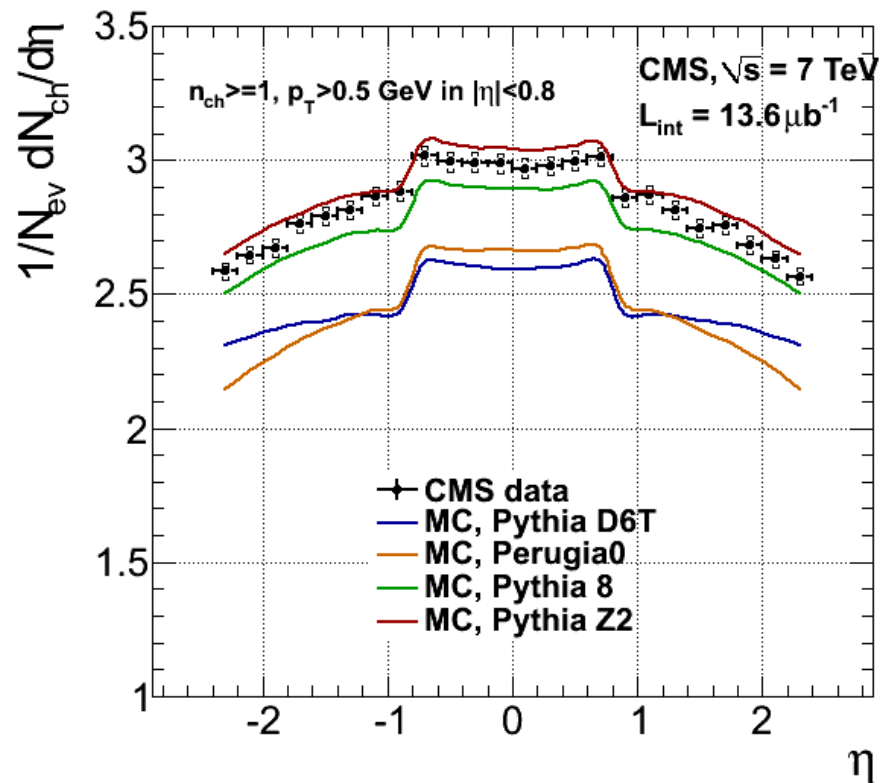
Systematics study: reweighting

- Effect of reweighting

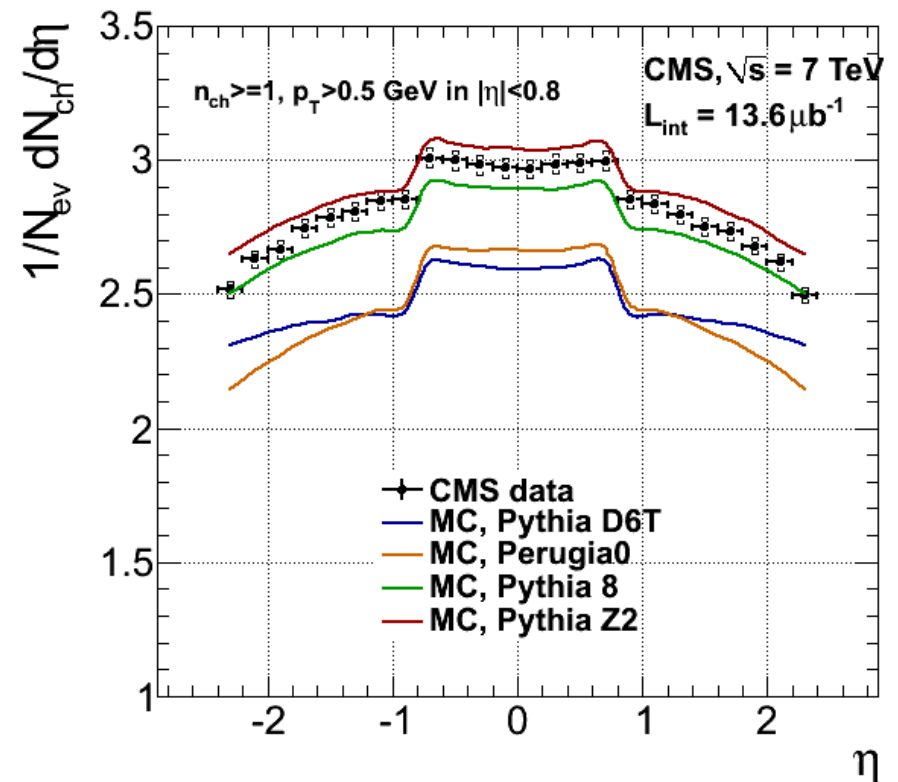


Updated results for 0.5 GeV and central with $|\eta| < 0.8$

Without re-weighting
Pre-approved

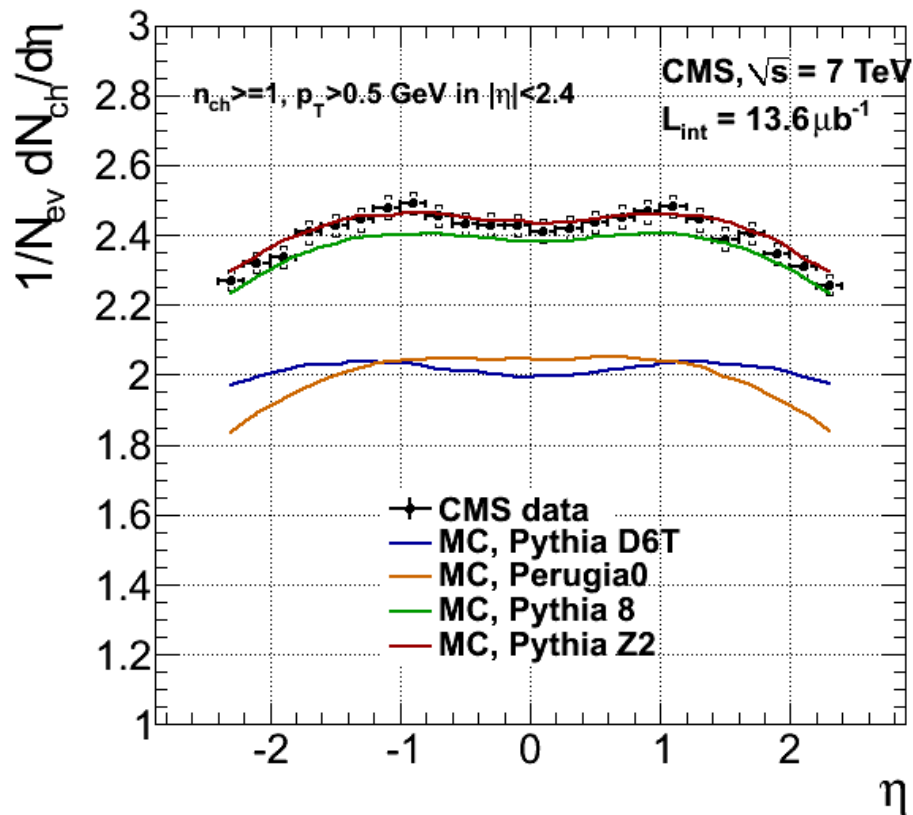


With re-weighting
Recommend to supersede the
Pre-approved results

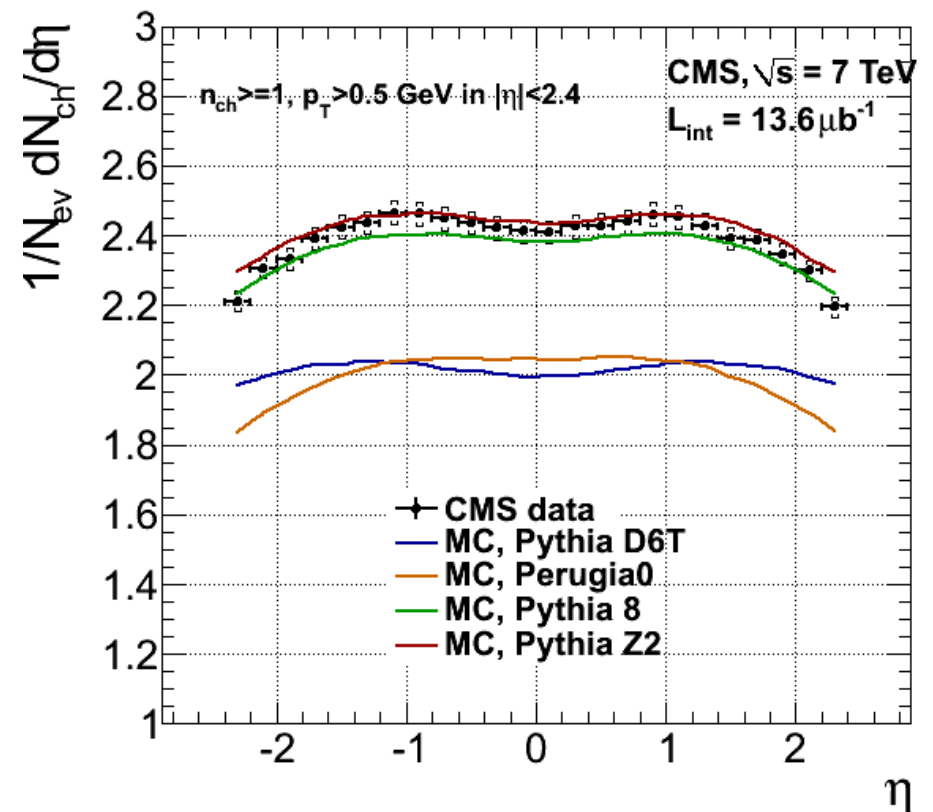


Updated results for 0.5 GeV and central with $|\eta| < 2.4$

Without re-weighting
Pre-approved



With re-weighting
Recommend to supersede the
Pre-approved results



Request

- Would like to change the pre-approved central values of $dN/d\eta$ by those obtained using the beam spot reweighting for all four distributions
- The systematic uncertainties are not changed