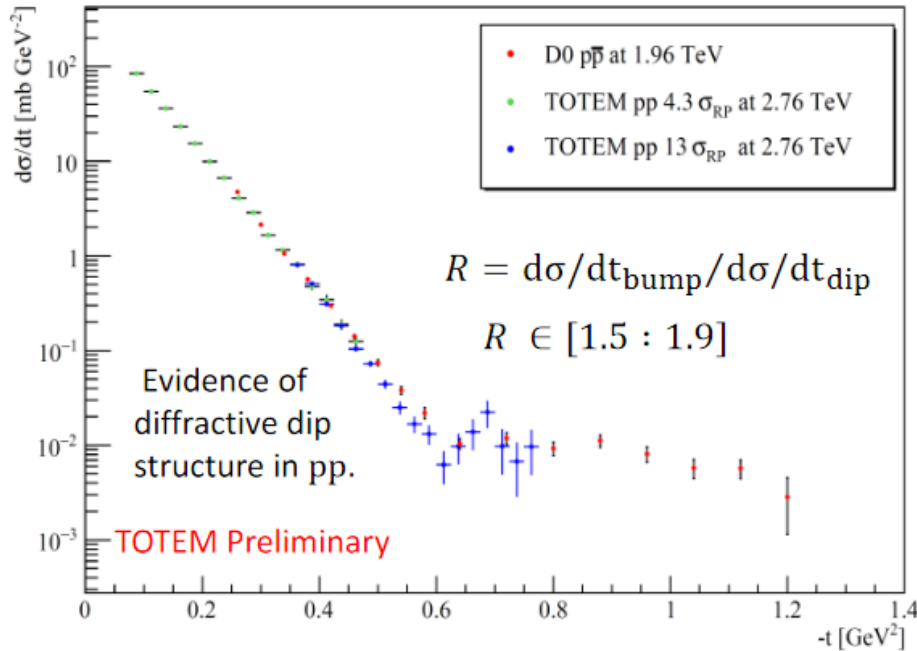


Edoardo Bossini

## 2.76 TeV analysis



Elastic differential cross-section: pp @ 2.76 TeV and p $\bar{p}$  @ 1.96 TeV



Durham model (*PLB 784 (2018) 192*) predictions for R:

Model/collision type	No-Odderon pp & p $\bar{p}$	Odderon pp	Odderon p $\bar{p}$
$\sqrt{s} = 1.96$ TeV	1.42	1.78	1.20
$\sqrt{s} = 2.76$ TeV	1.47	1.82	1.25

Odderon pp model by Nicolescu predicts (preliminary)  
 $R \sim 1.5$  @ 2.76 TeV [arXiv:1808.08580v1]

Physics goal is to probe differences of pp and p $\bar{p}$  differential cross section at the TeV energy scale .

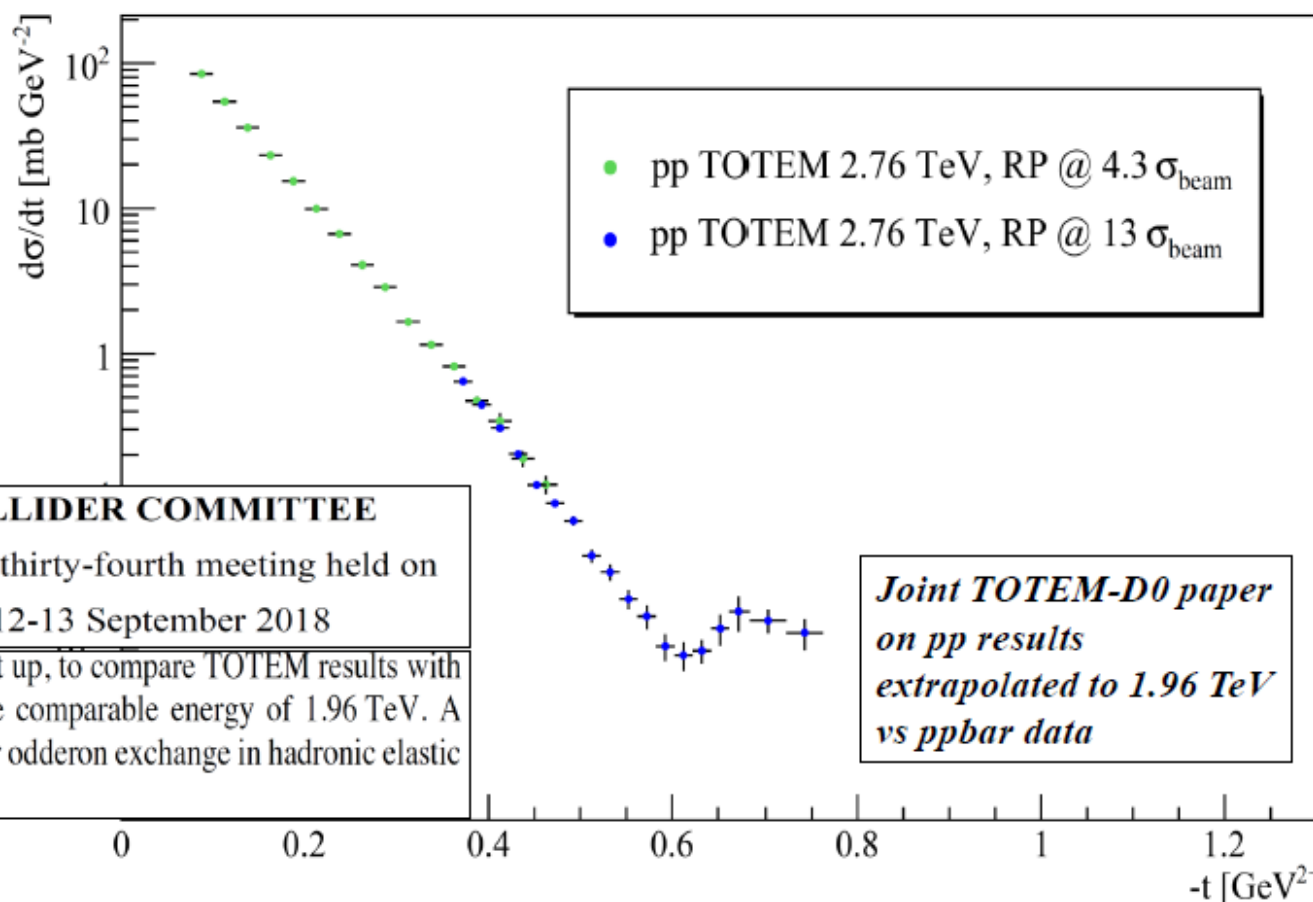


Joint working group with D0 collaboration.

Given the preliminary central value by TOTEM at 2.76 TeV ( $R \sim 1.7$  for pp) and the recent Levy expansion results by [arXiv:1807.02897] at 1.96 TeV ( $R \sim 1.0$  for p $\bar{p}$ ), the data clearly disfavour the Pomeron-only predictions and favour the predictions with the Odderon. Additional parameters/variables/observables characterizing the dip/bump region are going to emphasize the difference between pp and p $\bar{p}$  even more significantly (excluding the predictions by the Pomeron-only model).

## 2.76 TeV pp TOTEM results wrt 1.96 TeV ppbar D0 results

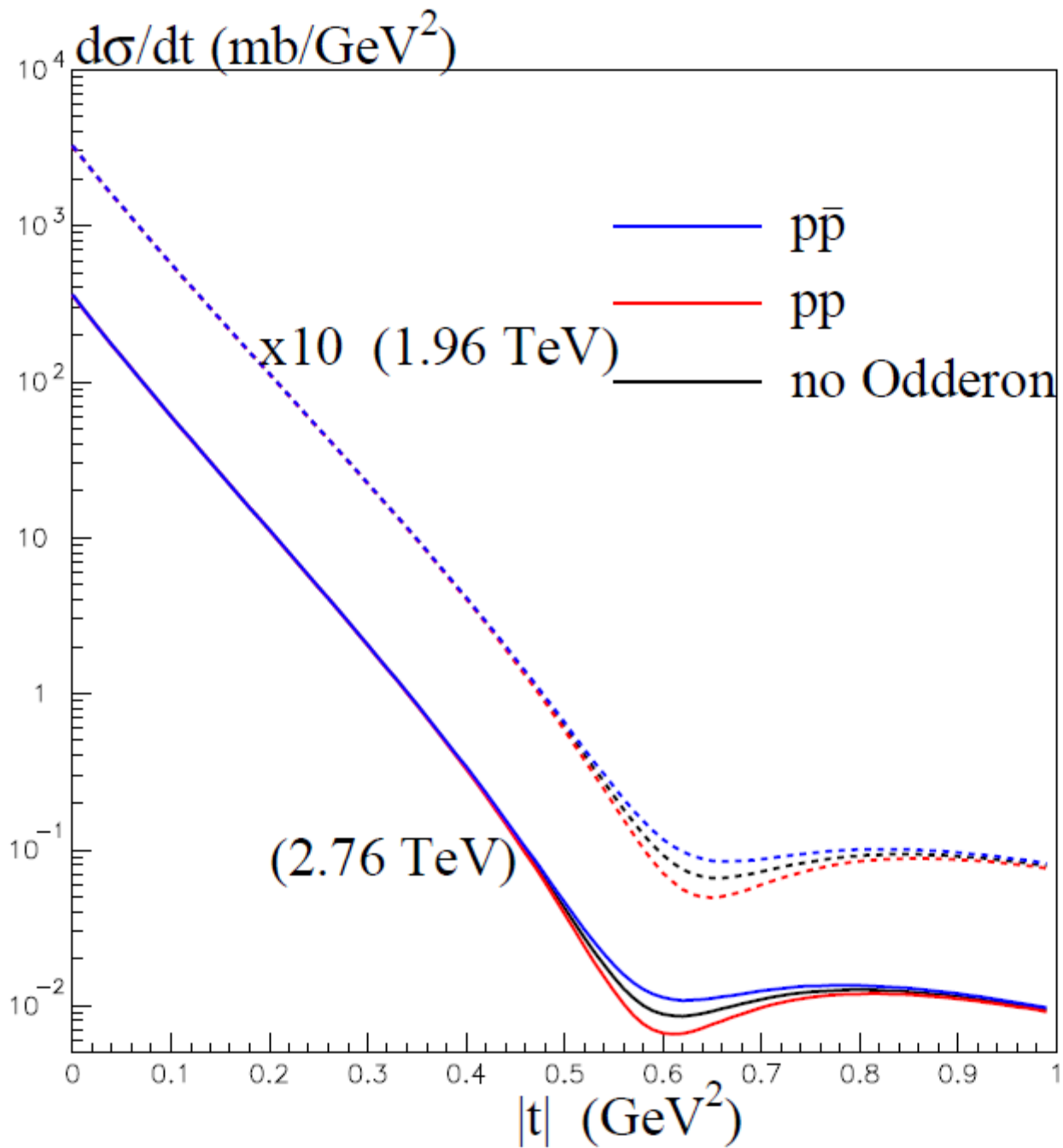
**LHC TOTEM pp data at 2.76 TeV** show diffractive dip, with structure quantitatively consistent with pp data at larger  $\sqrt{s}$ , while **not compatible with ppbar data at 1.96 TeV**

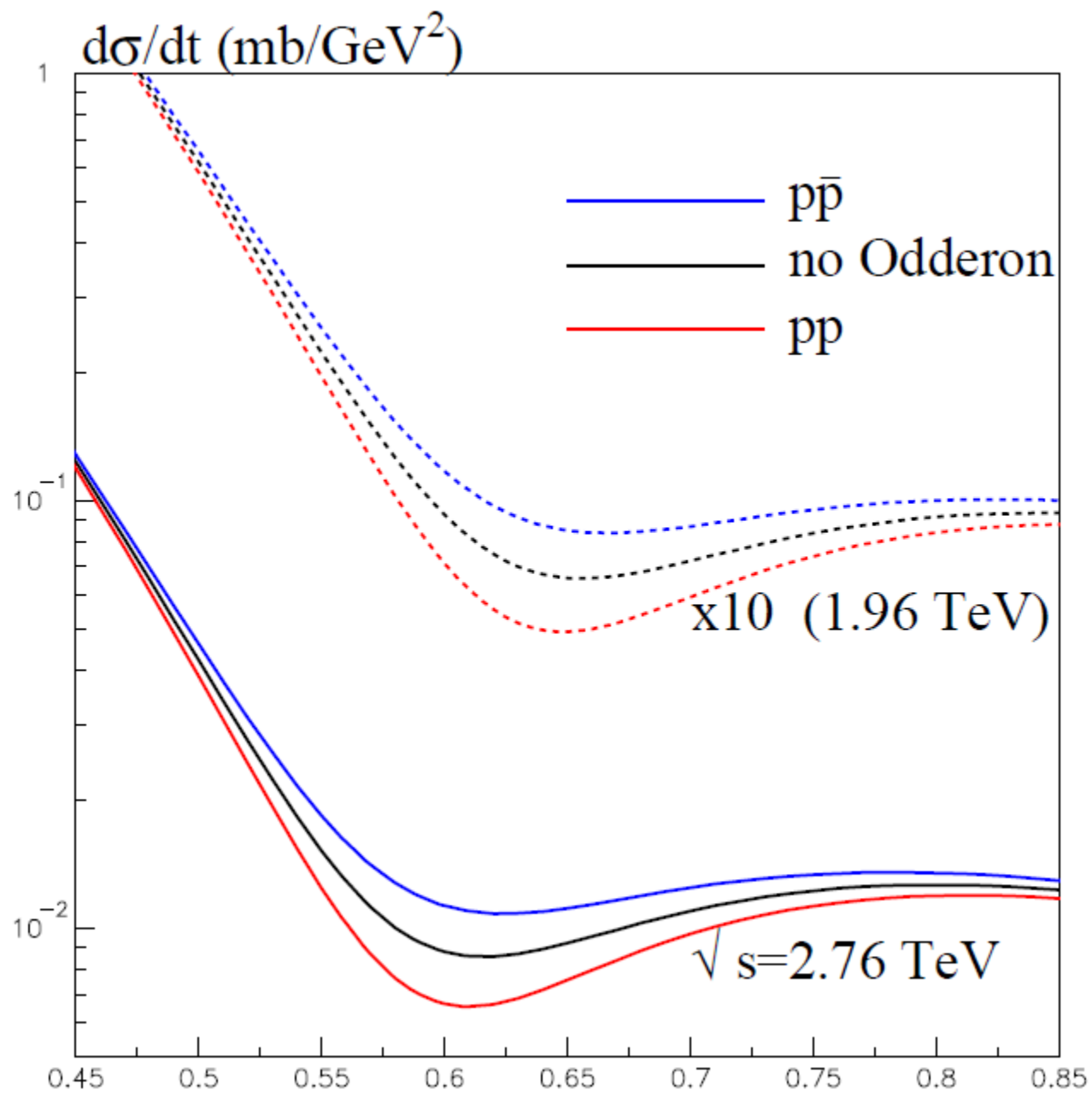
**LARGE HADRON COLLIDER COMMITTEE**

Minutes of the one-hundredth-and-thirty-fourth meeting held on Wednesday and Thursday, 12-13 September 2018

A joint working group with D0 has been set up, to compare TOTEM results with those in proton-antiproton collisions at the comparable energy of 1.96 TeV. A significant difference would be evidence for odderon exchange in hadronic elastic scattering.

*Joint TOTEM-D0 paper on pp results extrapolated to 1.96 TeV vs ppbar data*





model 2 (tuned 2018)

- $p\bar{p}$
- $pp$
- no Odderon

$d\sigma/dt$  (mb/GeV<sup>2</sup>)

$\times 10$  (1.96 TeV)

(2.76 TeV)

