



Contribution ID: 106

Type: **Oral Presentation**

## Central Exclusive Production in pp collisions at LHCb

*Thursday 10 September 2015 09:50 (25 minutes)*

Proton-proton collisions at LHC energies usually produce hundreds of charged and neutral particles. However, when colourless propagators are involved and, in addition, the protons remain intact, this leads to a unique experimental signature of a small number of particles in the central region and two rapidity gaps that extend to the outgoing protons in the far-forward direction. Although designed with b-physics in mind, the LHCb detector is well suited to the detection and study of Central Exclusive Production (CEP) due to its ability to trigger and reconstruct low mass central systems, its good particle identification, its large pseudorapidity acceptance, and the running conditions of the LHC.

Photoproduction of single  $J\psi$ ,  $\psi(2S)$ , and Upsilon mesons has been studied at fixed target colliders, at HERA, and most recently at the LHC in CEP through the colourless exchange of photons and pomerons. I will present recent results from LHCb which extend measurements of this process into a new kinematic regime and can be used to measure the gluon content of the proton at very small fractional momenta. The CEP of single  $\chi_c$  mesons, produced through Double Pomeron Exchange will be presented. Finally, I will present the first observation of a somewhat unexpected and experimentally dramatic signal: CEP of pairs of  $J\psi$  and  $\psi(2S)$  mesons. Prospects for the spectroscopy of low mass mesons producing pion and kaon pairs, as well as the potential for glueball and odderon searches will be discussed.

**Author:** MCNULTY, Ronan (University College Dublin (IE))

**Presenter:** MCNULTY, Ronan (University College Dublin (IE))

**Session Classification:** Small-x

**Track Classification:** Small-x and saturation