

Cockcroft Institute Seminar

Beam-Gas Background for LHCb at 3.5 TeV

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Walton Rooms A & B, The Cockcroft Institute

Abstract

I consider the machine induced backgrounds for LHCb arising from collisions of the beam with residual gas in the long straight sections of the LHC close to the experiment. I concentrate on the background particle fluxes initiated by inelastic beam-gas interactions with a direct line of sight to the experiment, with the potential impact on the experiment increasing for larger beam currents and changing gas pressures. In this seminar I present the background rates for parameters foreseen with LHC running in 2011, using realistic residual pressure profiles. I also discuss the effect of using a pressure profile formulated in terms of equivalent hydrogen, through weighting of other residual gases by their cross section, upon the radial fluxes from the machine and the detector response. I present the expected rates and the error introduced through this approximation.