LHC Seminar

SPEAKER: MASSACRIER, L. (Laboratoire de l'Accelerateur Lineaire (FR))

TITLE: **Heavy ion and fixed target physics at LHCb: results and prospects**

DATE: Tue 28/06/2016 11:00

PLACE: 503-1-001 - Council Chamber

ABSTRACT

In 2015, the LHCb collaboration endorsed the proposal to pursue an ambitious heavy ion physics program. In 2013, LHCb has demonstrated its capabilities to operate successfully in p-Pb and Pb-p collisions, leading already to several important publications in the field. The measurements of the nuclear modification factors and forward-backward production of prompt and displaced J/psi, psi(2S) and Upsilon states, as well as the production of prompt D0 mesons, have allowed to extend the knowledge of Cold Nuclear Matter effects on open heavy flavours and quarkonium production. The measurement of Z-boson production, important to constrain nuclear PDFs, and the measurement of two-particle angular correlations, probing collective effects in the dense environment of high energy collisions, have also been performed. Furthermore, LHCb is the only experiment at the LHC that can be operated in fixed-target mode, owing to the injection of a small amount of gas inside the LHCb collision area. There have been several p-gas and Pb-gas data taking periods during Run 1 and beginning of Run 2. This fixed target programme is conducted at a center-of-mass energy of O(100 GeV), and has great potential to bridge the gap of knowledge between SPS and RHIC in the domain of Quark Gluon Plasma physics. Finally, LHCb successfully participated to its first Pb-Pb data taking at the end of 2015. First studies show that up to semi-central Pb-Pb collisions can be successfully analysed to provide unique measurements in the forward region. An overview of the full LHCb programme in this sector will be given, including future prospects.

Organised by: M. Mangano, C. Lourenço, G. Unal..... **Tea and Coffee will be served at 10h30**