



Contribution ID: 504

Type: Poster

Prospects of Low-Mass Dielectron Measurement in ALICE with an upgraded ITS

Thursday, August 16, 2012 4:00 PM (2 hours)

The measurement of electron-positron pairs in the low invariant mass region allows to study the vacuum and in-medium properties of light vector mesons. Dielectrons also probe the production of thermal photons in heavy-ion collisions.

ALICE is well-suited to perform this measurement due to its excellent tracking and particle identification capabilities at very low momenta. However, Dalitz decays and photon conversions lead to a high combinatorial background. Additionally, coincident semi-leptonic decays of charm and anti-charm hadrons produce a continuum signal, which dominates over a thermal dielectron signal.

Both contributions can be reduced by an improved Inner Tracking System, to be installed during LHC's long shutdown (2018). It will further improve the tracking efficiency at low p_t and provide excellent detection capabilities for electrons from secondary vertices like conversions and heavy-quark decays. The expected impact of a new ITS on the low-mass dielectron measurement in pp and Pb-Pb collisions will be presented.

To further increase the acceptance for low p_t tracks, a reduction of the magnetic field in the ALICE central barrel from 0.5 T to 0.2 T is considered. Its influence on the low-mass dielectron measurement will be discussed.

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Session Classification: Poster Session Reception

Track Classification: Experiment upgrades, new facilities, and instrumentation