



Contribution ID: 86

Type: **Presentazione 20 minuti**

ALICE Results on Heavy Ion Physics at the LHC

Thursday, 12 April 2012 08:30 (20 minutes)

ALICE is a multipurpose detector for high-energy nucleus-nucleus physics at the CERN Large Hadron Collider (LHC). In November 2010, ALICE took its first Pb-Pb data at the centre of mass energy of 2.76 TeV per nucleon pair; reference data in proton-proton collisions at the same energy and at 7 TeV were collected in 2010 and 2011. A second, higher statistics Pb-Pb run took place in Fall 2011.

This talk gives an overview of the main physics results obtained with these data. In particular, I will present results on identified charged and strange particle transverse momentum spectra, on anisotropic flow of produced particles, on open heavy flavour and quarkonia production in Pb-Pb collisions, compared to pp collisions. The first Pb-Pb results from ALICE at LHC suggest a smooth evolution of global (bulk) event characteristics from RHIC to LHC energies. They indicate that matter created in these collisions, while initially much larger and hotter, still behaves like a very strongly interacting, almost perfect liquid. On the other hand, first results from “hard probes”, namely high p_t hadrons, open heavy flavour and quarkonia production, provide novelties, surprises and challenges for theory.

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Session Classification: Ioni pesanti

Track Classification: Ioni Pesanti