



SPEAKER: Marek Gazdzicki (Johann-Wolfgang-Goethe Univ. (DE))

TITLE: **NA61/SHINE: latest results and future perspectives**

DATE: Tue 02/06/2015 11:00

PLACE: Main Auditorium

ABSTRACT

NA61/SHINE is a multi-purpose experiment-facility to study hadron production in hadron-proton, hadron-nucleus and nucleus-nucleus collisions at the SPS, and performs measurements for three physics programmes:

- (i) The programme on strong interactions which includes the study of the properties of the onset of deconfinement and the search for the critical point of strongly interacting matter. The data on nucleus-nucleus, proton-proton and proton-lead collisions at six collision energies are to be recorded within this programme.
- (ii) Precise hadron production measurements for improving the computation of the properties of neutrino beams at J-PARC, Japan, and Fermilab, US. Here proton/pion-carbon and proton/pion-(replica target) interactions are recorded.
- (iii) Precise hadron production measurements needed for reliable simulations of cosmic-ray air showers. The Pierre Auger Observatory and KASCADE experiments requested measurements of pion-carbon interactions at the top SPS beam momenta.

This talk will introduce the NA61/SHINE facility and the data taking status, before presenting recent results obtained within the neutrino physics programme for T2K at J-PARC and plans for similar measurements for the Fermilab neutrino beams. We will then discuss new data for the programme on strong interactions, including the energy dependence of three deconfinement signals (the "horn", "step" and "kink") in pp and central Pb-Pb collisions. Also string-hadronic models are tested using hadron spectra in pp interactions; results on (multiplicity and transverse momentum) fluctuations will be shown as a function of the collision energy and of the number of wounded nucleons for Be-Be and pp collisions, in search for the critical point of strongly interacting matter. Finally, future plans of the collaboration will be sketched.