

# LNGS SEMINAR SERIES

**Sergey Dmitrievsky**

*JINR Dubna*

---

## **Locating the neutrino interaction vertex with the help of electronic detectors in the OPERA experiment**

---

The OPERA experiment was designed for the direct observation of the appearance of  $\nu_\tau$  from  $\nu_\mu \rightarrow \nu_\tau$  oscillation in the CNGS neutrino beam. A hybrid OPERA setup consists of lead/emulsion brick target complemented by electronic detectors. Target Tracker (TT) detector built of 32000 plastic scintillator strips is a main tool for the neutrino interaction registration in real time and for the vertex location (Brick Finding, BF) for the further detailed analysis of the interaction in nuclear photoemulsion. The BF procedure includes muon track and hadronic shower axis reconstruction and a determination of the target bricks with the highest probability to contain the vertex. Particle detection efficiency and ageing of scintillator have been controlled with help of cosmic muons since TT installation in 2006 during 6 years of CNGS runs. Results of TT monitoring as well as description of the BF procedure are presented.

---

**APRIL 8, 2015 – 2:30 PM**  
**LNGS - "B. PONTECORVO" ROOM**