

LNGS SEMINAR SERIES

Pavel Zarubin

*V. I. Veksler and A. M. Baldin Laboratory
of High Energy Physics
Joint Institute for Nuclear Research
Dubna, Russia*

Recent exposures of nuclear track emulsion to light radioactive nuclei, neutrons, heavy ions and muons

Nuclear track emulsion (NTE) continues to be an effective and versatile technique for pilot researches. At the JINR Nuclotron, the BECQUEREL collaboration (<http://becquerel.jinr.ru/>) performed exposures of NTE stacks in the beams of relativistic isotopes of beryllium, boron, carbon and nitrogen, including radioactive ones. To date, an analysis of the peripheral interactions of relativistic isotopes of beryllium, boron, carbon and nitrogen, including radioactive ones, with nuclei of the emulsion composition has been performed, which allows the clustering pattern to be presented for a whole family of light nuclei. As state-of-art application of the technique NTE pellicles recently produced by the "Slavich" enterprise (Pereslavl-Zalessky, Russia) have been exposed to low energy radioactive nuclei, thermal and fast monoenergetic neutrons, very low energy heavy ions and high energy mu-mesons. In particular, the ACCULINNA fragment separator in the G. N. Flerov Laboratory of Nuclear Reactions of JINR was used to irradiate a nuclear track emulsion by a beam of radioactive ^8He nuclei of energy of 60 MeV. Measurements of about 400 decays of ^8He nuclei stopped in the emulsion allow one to evaluate possibilities of α -spectrometry and to observe a thermal drift of ^8He atoms in matter. The other exposures are briefly discussed. The report is illustrated by macrophotographs and video of the discussed events.

NOVEMBER 14, 2013 – 2:30 PM
LNGS - " B. PONTECORVO" ROOM