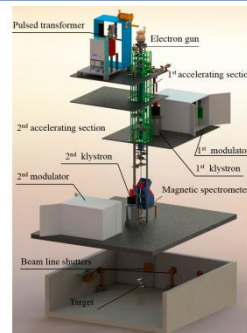


Joint Institute for Nuclear Research - IREN



Frank Laboratory of Neutron is one of the laboratories of the Joint Institute for Nuclear Research (Dubna, Russia) that investigates the neutron as an elementary particle and neutron induced reactions using various instruments. The first stage of scientific research complex IREN comprises a linear accelerator LUE-200 with beam power up to 3 kW, nonmultiplying target, and beam infrastructure with experimental pavilions, as well as technological, control, safety, and service systems. The achieved parameters of complex IREN (pulsed electron beam current about 2.0 A; electron energy up to 70-MeV; pulse width – 100 ns; repetition rate – 50 Hz; integral neutron yield about 10^{12} n/s) make it possible to carry out experiments which require precision neutron spectroscopy in the energy range from fractions of eV to hundreds of eV. The existing infrastructure includes set-up for neutron activation analysis (NAA). It has pneumatic channels for measurement of short-lived isotopes. In the nearest future we plan to increase the repetition rate up to 100 Hz and equip the facility-by a gamma rays production target. It will allow us to realize gamma-ray activation analysis measurements. Near the IREN complex there is a lab that has instruments for X-ray fluorescence measurements, Infrared spectroscopy, system for target preparation by magnetron sputtering and e-beam evaporation.



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| Instruments: | Domain and object of research : ENE |
|---------------------|---|
| Regata-2 | neutron activation analysis for research on cultural heritage sites (in collaboration with archaeological and historical institutions) and other fields of research. |
| TETRA | Spectrometer for investigation of fission process, aimed at measuring characteristics of prompt fission neutron emission. |
| LLSD | Spectrometry based on a Large Liquid Scintillation Detector for applied investigation using different neutron-nuclear methods of non-destructive isotopic composition analysis of the of objects. |