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Solid state laser system for SPES radioactive isotopes ionization

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Nowadays the resonant ionization by tunable lasers (also known as LIS, laser ion source) is the most suitable ionizing system to assure a good selectivity directly in the initial phase of the ion production in an ISOL (Isotope Separation On Line) facility

Keeping into account the other experiences from all the ISOL facilities spread into the world, this ionization technique is planned to be used also in SPES (Selective Production of Exotic Species) facility, that will be built in Laboratori Nazionali di Legnaro (LNL –National Laboratory of Legnaro) in Italy by INFN (Istituto Nazionale di Fisica Nucleare –National Institute of Nuclear Physics).

Studies of laser ionization technique in support of SPES project has started in 2009 in Laser Spectroscopy Laboratory of Pavia with dye lasers and nowadays, at the beginning of 2013, an offline laser laboratory will be constructed in LNL to continue studies of photoionization using an all solid state lasers solution.

The all solid state solution is a recent approach respect to the dye laser to develop a ionization laser system and has to be investigated to reveal its strength points and also its weakness; this will be the aim of the new laser laboratory in LNL.

All this efforts are finalized to be ready with an operative solution and equipment for the first SPES ion beam for the users planned for 2017.

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