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ALTO, the electron-driven ISOL facility in Orsay: status and perspectives

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ALTO (Accélérateur Linéaire auprès du Tandem d'Orsay) is the electron-driven isotope separation on-line (ISOL) system built and operated by the Institut de Physique Nucléaire (IPN) in Orsay. It is dedicated to the production of neutron-rich radioactive beams from the interaction of a 50 MeV 10uA electron beam with a UCx target (~60-70 g of ^{238}U). It is dimensioned for 10^{11} fissions/sec (inside the target-ion source ensemble) and located in the Orsay Tandem premises. RIBs are available after mass separation at the source extraction energy. ALTO is then the first electron-driven photo-fission facility operated in the world. The coexistence of the two machines, Tandem and ISOL, within the same facility, allows a large variety in the research domains which can be addressed, ranging from basic nuclear physics and nuclear astrophysics research, to instrument development or testing, to applications of nuclear techniques.
In year 2012, the ISOL facility received the full green light for operation from the French nuclear safety authorities. A formal inauguration was organized on May 13th 2013 followed by a scientific workshop. Meanwhile, a laser ion source was commissioned and successfully used for the selective ionization of neutron rich Ga isotopes. The development of several other laser ionization schemes is scheduled, starting from Zn in June 2013. In parallel, the available RIB lines are being equipped. A new detection setup based on the use of a movable tape station has been designed and dimensioned to accommodate the 4 small EXOGAM CLOVERs (EXOGAM prototypes). This setup named BEDO (BEta Decay Studies at Orsay) has been optimized for Compton suppression and beta selection, it was fully commissioned on line with radioactive A=83,84 beams. On a second beam line, the On-Line Nuclear Orientation (OLNO) method will be used in a near future to observe the decay of a spin-oriented ensemble of nuclei with the POLAREX (POLARization of EXotic nuclei) setup.