

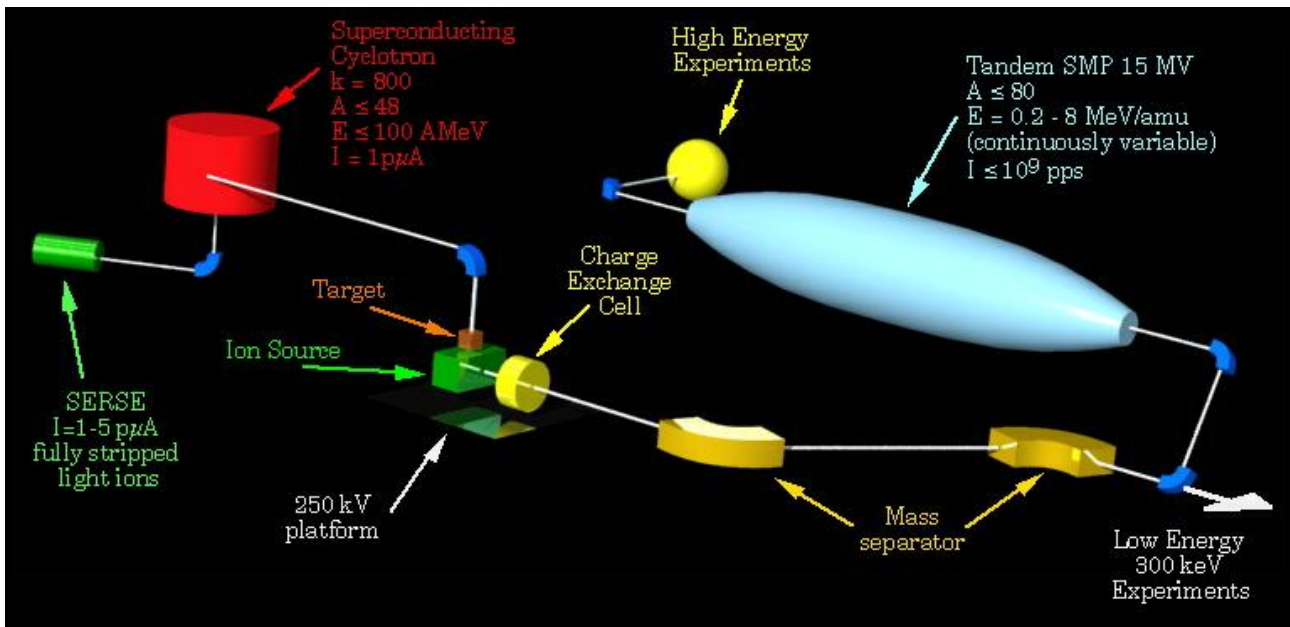
# Radioactive Ion Beam-s at LNS

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Radioactive ion beams are produced at INFN-LNS by means of two facilities the EXCYT facility (EXotics with Cyclotron and Tandem) and the upgraded FRIB facility (In flight scheme).

The aim of the EXCYT (EXotics with CYclotron and Tandem) facility is the production and acceleration of radioactive ion beams (RIBs). A primary beam provided by the K-800 superconducting cyclotron will produce, in a target-ion source complex (TIS), the required nuclear species which can be used for low energy experiments (up to 300 keV) or at higher energy by post-accelerating them with the 15 MV tandem.



The nuclear experimental programme started in July 2006 with the experiments BIGBANG and RCS using the post-accelerated  $^8\text{Li}$  ions. Since then  $^8\text{Li}$ ,  $^9\text{Li}$  and  $^{21}\text{Na}$  beams have been already produced and in the near future production of oxygen, fluorine and chlorine beams have been planned, according to the experimental proposals, with beam intensities ranging between  $10^4$  to  $10^6$  pps and at the typical energies of our tandem. Developments in different fields are ongoing in order to optimize the performance and increase the yield of the species produced. For this purpose different activities are going to start in collaboration with SPES project people to better understand the diffusion-effusion process occurring in the target. New materials and geometries are under investigation to increase the production and the ionization efficiency. Moreover, several alternative solutions are taken into account to directly produce negative ions. Finally a brief overview of the new FRIBS facility (commissioned on this March) with the preliminary results obtained has been given.