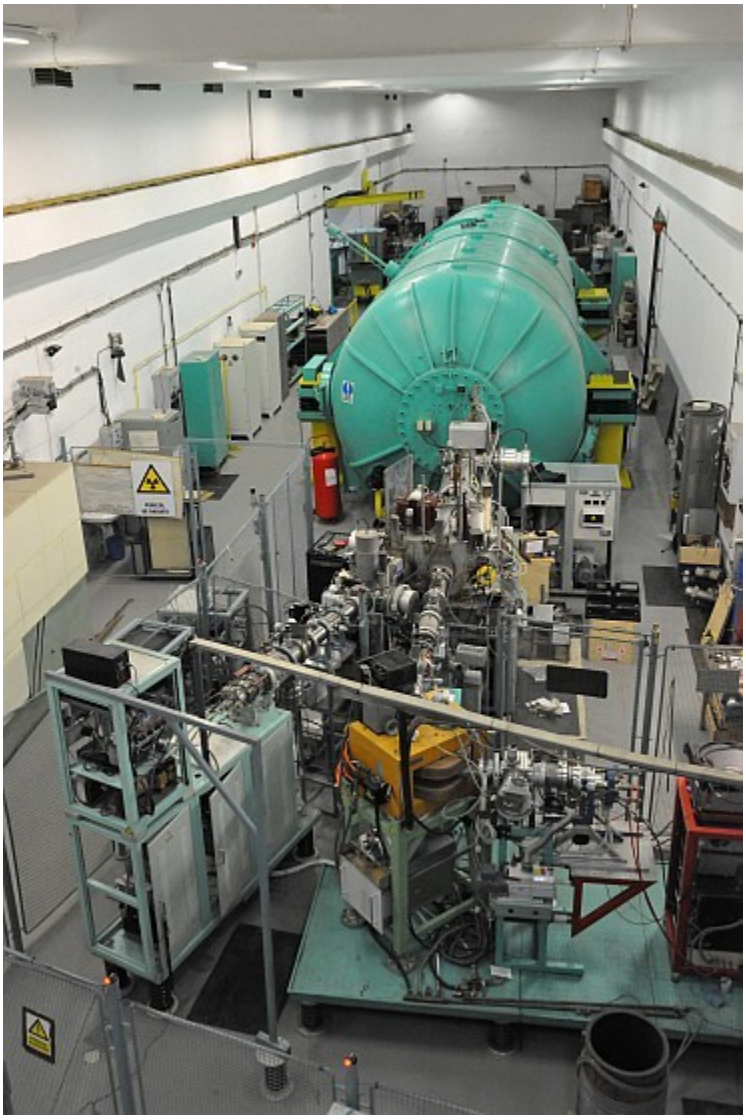
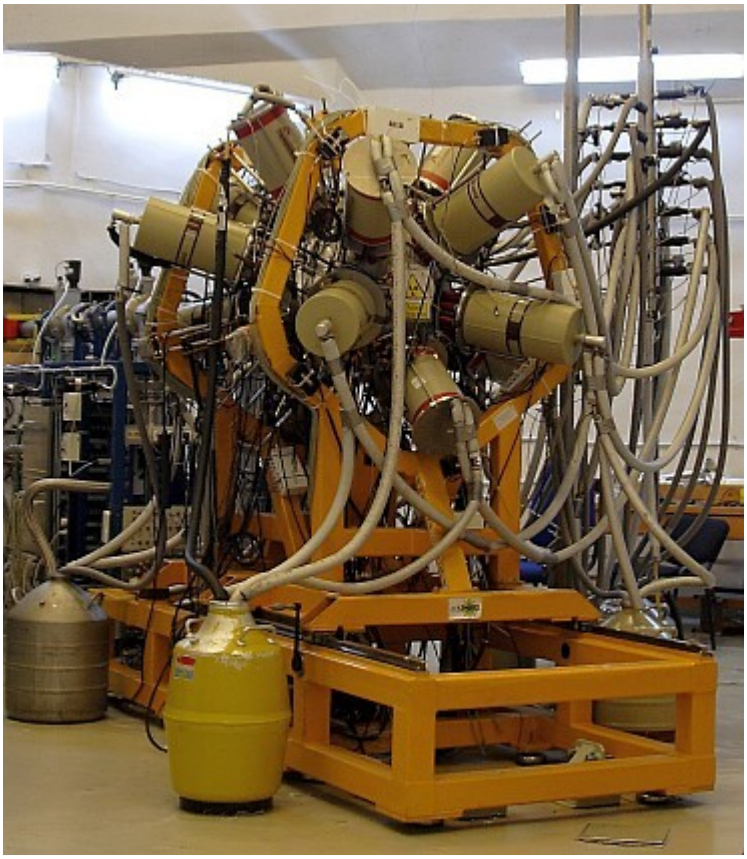
The IFIN-HH tandem accelerator complex consists of one 9MV FN Pelletron tandem and two smaller tandem accelerators:

1. The 9-MV FN Pelletron Tandem accelerator has been completely upgraded in the last five years. The accelerator can provide beams from hydrogen to gold from the two types of ion sources and can deliver currents up to the range of microamperes. The accelerator has two beam pulsing systems, one in the millisecond range and the other one in the nanosecond range. More details can be seen here: https://tandem.nipne.ro/9MV_Pelletron.php



The accelerator comes with 7 beam-lines, each one with its dedicated experimental setup:

- The ROSPHERE multi-detection array, used mainly for nuclear structure experiments, consists of 25 high-purity germanium detectors with anti-Compton shields. The setup can accommodate up to 15 LaBr3:Ce fast scintillators for fast-timing measurements and the plunger reaction chamber also used for timing measurements.



ROSHPERE Array (https://tandem.nipne.ro/rosphere.php)

- The tape station for beta-decay experiments using three clover detectors with 120% relative detection efficiency and anti-Compton shields, and fast lanthanum bromide scintillators;
- The setup dedicated to nuclear reaction and nuclear astrophysics studies consisting of multi-strip silicon detectors for particle detection with the possibility of radial and longitudinal movement around the target;
- Low background measurements setup;
- A Rutherford backscattering (RBS) and elastic recoil detection analysis (ERDA) set-up;
- A dedicated beam-line for accelerator mass spectrometry (AMS) measurements.

All these experimental setups make use of a few digital and analogue acquisition systems in various standards (CAMAC, VME, etc.).

Two additional low-energy electrostatic accelerators complete the existing facility. A 3-MV HVEE Tandetron accelerator has two ion sources capable of delivering a wide range of negative-ion beams in the range of tens of microamperes and 1-MV HVEE Tandetron accelerator installed in 2012 in IFIN-HH is dedicated for AMS experiments.

The research at these facilities can be structured in the following five directions:

- Nuclear structure at low energy (in-beam or beta decay using tape-station spectroscopy experiments);
- Nuclear-reaction and nuclear-astrophysics studies;
- Nuclear-data evaluation and measurement;

- Applications of the charged-particle beams in solid-state physics, ecology, biology, medicine, archeology and industry.

From the total number of experiments in one year at one tandem accelerator (around 60 experiments per year) about 50% of the experiment proposals are from international users.

Detailed info about the 1 and 3 MV accelerators can be found here:

https://drive.google.com/file/d/1H7vaZ9xcv2uUXzGpG38UJaNIkNPfUkRh/view?usp=sharing

https://drive.google.com/file/d/1P7HrLgSxxPM6bcIFXulXk8Mt9WQ1Mbj9/view?usp=sharing