

THE WARSAW K=160 CYCLOTRON

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Abstract

The overview of the Warsaw cyclotron facility is presented. The facility consists of K=160 cyclotron, 10GHz ECR ion source, and several experimental stations. The cyclotron is of compact design with 2 straight dees. A yearly operation time is about 2 900 hours on an average for the past few years. The cyclotron can deliver beams up to Ar with energy up to 10 MeV/amu to the experimental area. Experimental stations are:

1) The multidetector OSIRIS II, allows the study of exotic nuclei in the double magic 100Sn region. The experimental set-up consists of 8 HPGe detectors equipped with charged particle 4π multiplicity filter SiBall, 50 elements BGO γ -rays multiplicity filter, 4 sector polarimeter and electron conversion detector system.

2) CUDAC - Coulomb Universal Detector Scattering Chamber - an array of PIN-diodes in connection with HPGe detectors and the computer data analysis package GOSIA, maintained by the Laboratory allows investigation the Coulomb Excitation (COULEX) reactions.

3) IGISOL or Helium-jet transport system opened investigation of the reaction products by means of the on-line mass separator with ion-guide system, The system uses the Scandinavian-type mass separator built in INR Świerk, Poland.

4) Giant Dipole Resonance studies using experimental set-up JANOSIK developed for the detection of high-energy photons emitted in heavy-ion collisions. The set-up consists of a large NaI(Tl) detector (25cm x 29cm) surrounded by shields: passive lead shield, active anticoincidence plastic shield and LiH shield to absorb neutrons, and a multiplicity filter of 32 small scintillator detectors (BaF2 and NaI(Tl)).

5) Laser spectroscopy stand now in test phase. The laser spectroscopy group at HIL has completed an equipment consisting of Argon ion Laser Innova 400-25W in all lines and coherent Ring Laser 669-21 as well as atomic beam apparatus.



Fig 1. Heavy Ion Laboratory building

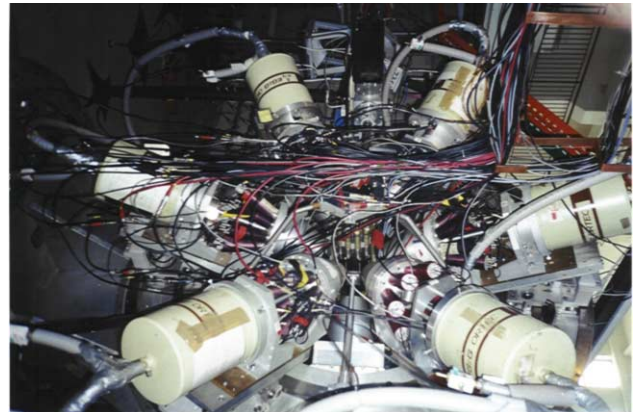


Figure 2. "OSIRIS II" HPGe Compton-shielded detector ball



Figure 3. "IGISOL" type reaction production separator



Figure 6. Control room

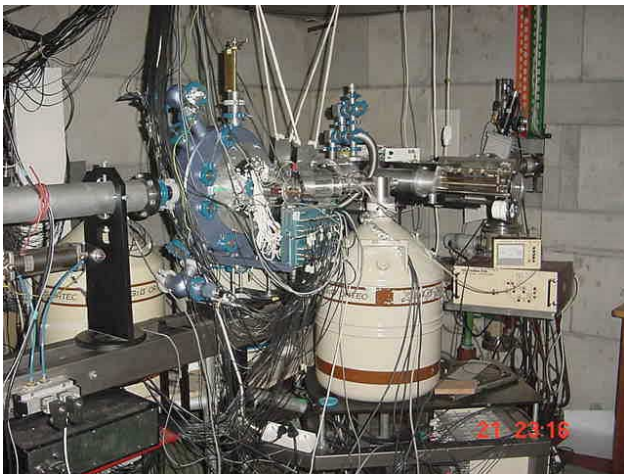


Figure 4. "CUDAC" a PIN-diode detector array to study particle-gamma coincidences following Coulomb excitation



Figure 7. Experimental areas of the Warsaw Cyclotron facility

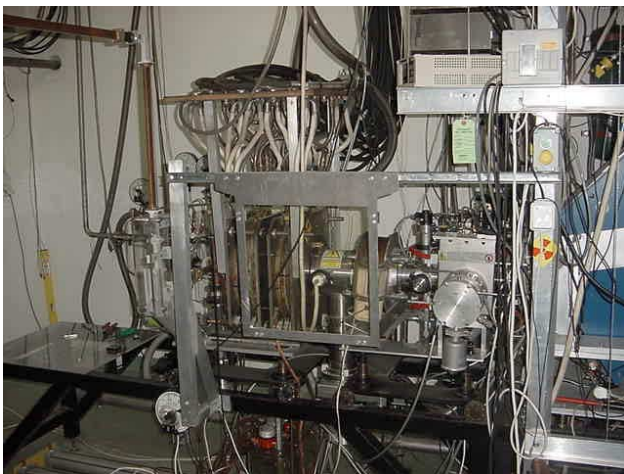


Figure 5. 10 GHz ECR ion source



Figure 8. "JANOSIK" a multidetector system dedicated to the investigation of Giant Dipole Resonance