14. Status of the IGISOL device

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Following the test experiments with the IGISOL device [1] a series of on-line runs as well as the off-line tests were performed during 2002. Four short on-line tests with ^{14}N (5,5-6,5 MeV/nucleon) incident beam and ^{232}Th and Si targets were performed. This allowed us to estimate roughly the overall efficiency of IGISOL system as 10^{-5} to 10^{-4}.

For a more precise investigation of the IGISOL transmission system an alpha decay recoil source is needed. The ^{223}Ra alpha source was mounted in the special designed ion guide helium cell with remote controlled deplacement of the source inside the chamber. Two Si alpha detectors were used, the first one placed at the front of separator magnet, the second - at the collection point in a new vacuum chamber. The first experiment with the alpha source showed the necessity of improving the vacuum in the extraction region to decrease the neutralisation of ions in this zone. A series of test experiments is planned with the alpha decay recoil source (^{223}Ra) to determine the best parameters of the ion optics, the extraction and the helium supply systems for optimal operation of the facility.

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References

[1] A. Wojtasiewicz et al. Ann.Rep. HIL Warsaw Univ.(1998) p.15

15. An electron transport system for off- and in-beam measurements

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Internal conversion electron (ICE) spectroscopy plays an important role as a one of the tools of (HI, xnyp) spectroscopy giving the unique possibility for the estimation the nuclear transitions multipolarity. In order to fulfill such requirements the system for transport of electrons from the target area to the place where the detection of delayed ICE after (HI, xnyp)-reaction is less obscured, has been constructed. The electron transport system consists of permanent magnets ring segments made of Nd-Fe-B with internal diameter of 30 mm and total length of 100 mm, and cooled with small Peltier device down to -14 °C Si(Li) detector located at the end of magnetic tube at a distance of ~14 cm from the target (source). The calibration measurements performed with ^{137}Cs and ^{207}Bi sources with and without magnetic field have shown that about 45 times more electrons were observed with magnetic field comparing to those in absence of the field. The in-beam test measurements were performed at the Warsaw Cyclotron using the