For Zr targets experimental data are in agreement with the systematics: the transfer probability for ^{92}Zr is larger by a factor of almost 2 in comparison with the ^{90}Zr (and the Ni) targets. Moreover, the inelastic excitations are clearly stronger in the former case (see Fig. 2). Whether this is related to the smoother barrier distribution in the former case – remains to be seen.

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2. ICARE @ HIL

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ICARE is a charged particle detector system used for their identification and energy measurements, built in the IReS (Strasbourg). This year first experiments employing this set-up were performed at HIL by teams from Strasbourg, Cracow, Ukraine and Warsaw. The ICARE system consists of the 1m diameter reaction chamber with up to 48 E-ΔE gas, semiconductor and scintillator telescopes, supplied by the vacuum and gas systems, electronics and data acquisition systems. The detectors can be mounted in various configurations using internal

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mounts. The self-supporting target holder allows to use up to 8 different targets. Some of the detectors as well as the target holder can be remotely operated without necessity of opening the reaction chamber.

During this year some elements of the system were upgraded, including collimator, target holder, detector mounting, preamplifiers, amplifiers, data acquisition. In November the French – Polish – Ukrainian team started measurements of angular distribution of products from $^{14}N + ^{12}C$ reaction at 80 MeV in the laboratory frame. An example of charge and mass identification is shown in Fig. 1.

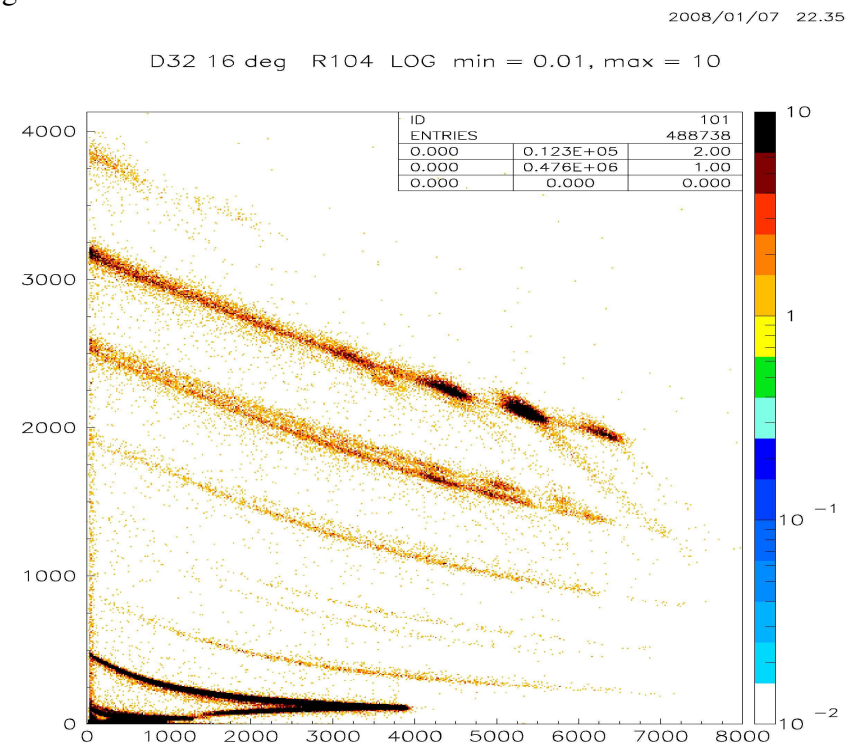

Figure1. Reaction products observed in one of the Si E-ΔE telescopes in the $^{14}N + ^{12}C$ reaction at the LAB energy of 80 MeV.

We plan to expand soon the ICARE possibilities by adding to the system the Time-of-Flight detectors and increasing the flight base.

In the near future several experiments are planned to be performed using the ICARE system:

- Study of properties of isotopes far from stability line produced in heavy-ion reactions [1]
- Studies of fusion barrier height distributions using the quasi-elastic scattering method [2,3]
- Study of nuclear deformation using light-charged particles emission spectra [4]

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