Application of the pulse-shape discrimination of the PiN type Si detectors in the neutron-rich nuclei investigation

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Abstract

An identification and discrimination of fission fragments by means of time-of-flight vs. energy and zero-crossing technique with commercial PiN diode and laboratory grade reversed n-type Si detectors was undertaken. The several tests and calibrations with ^{252}Cf source were done before the fusion-evaporation reaction (e. g. ^{16}O + ^{208}Pb) will be investigated. A consequence of the rear-side injection mode is a strong variation of the charge-collection time with energy, charge, and mass number of the detected ion as it was noticed by G. Pausch et al. [1,2]. On the basis of results given in this papers the present measurements were initiated and are conducted with the aim to apply in the field of heavy-ion physics in conjunction with the 4π EAGLE gamma-array.