

REGISTRATION OF FISSION PRODUCTS IN $^{48}\text{Ca}+^{238}\text{U}$ REACTION BY TIME OF FLIGHT SPECTROMETER

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This paper presents the results of measuring fission fragments in $^{48}\text{Ca}+^{238}\text{U}$ reactions using a time-of-flight system developed at the MAVR facility (the experimental setup is shown in Fig. 1a). A microchannel plate (MCP) detector was used to determine the mass of the resulting fission fragments, which offers high temporal resolution and high efficiency in registering heavy charged particles. A distinctive feature of this methodology is the ability to directly measure the masses of the nuclear reaction products based on flight time and energy values. The paper includes a technical description of the system and an experimental block diagram, which allow for evaluating the system's effectiveness under actual experimental conditions, as well as data on the characteristics of fission fragments, including mass, temporal, and energy distributions (see Fig. 1b) in heavy ion fission reactions. The obtained results can be utilized in studying the mechanisms of heavy nucleus fission and provide important data within theoretical research in nuclear physics. In the future, it is planned to study of other reactions, such as $^{40}\text{Ar}+^{197}\text{Au}$, ^{238}U , $^{136}\text{Xe}+^{197}\text{Au}$, ^{238}U .

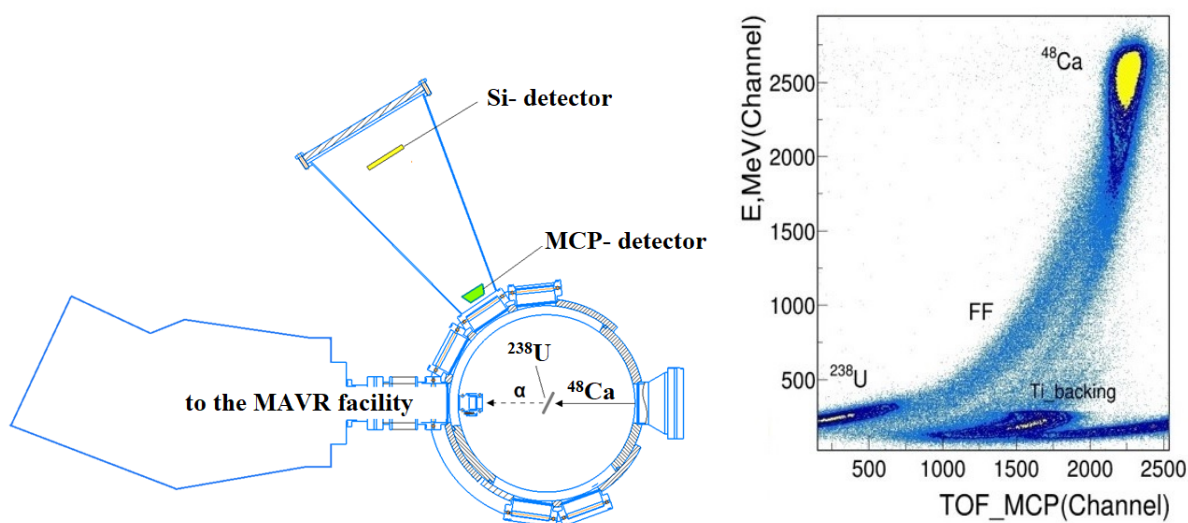


Fig. 1: a) Diagram of the time-of-flight spectrometer connected to the reaction chamber at MAVR; b) Two-dimensional matrix showing the output of reaction products of $^{48}\text{Ca}+^{238}\text{U}$ by time of flight and their energies

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