

The Cross-Section Measurement of ^{16}N at Intermediate Energies for ESPRI*

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Density distributions tell us the characteristics of nuclei, such as the nuclear size and nuclear skin structure. Both proton and neutron density distributions can be acquired by proton elastic scattering at two different intermediate energies such as 200 and 300 MeV/u.

For stable nuclei, proton beam and targets of stable nuclei are used.

Inverse kinematics are used for short-lived nuclei, such as unstable nuclei.

ESPRI (elastic scattering of protons with radioactive ion beams) is the unique way of acquiring nuclear density distributions.

Nuclear isomers, another kind of short-lived nuclei, are planned to be also investigated by inverse kinematics.

Three important devices and techniques are needed to be developed or improved for proton elastic scattering with isomers (ESPRI*):

isomer beam, ESPRI detectors, and isomer tagging detector.

This report shows the brief results of ^{16}N beam production cross-section around 200 and 300 MeV/u, performed at HIMAC (heavy ion medical accelerator in Chiba).

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Primary author: Mr YOSHIDA, Ryosuke (Kyoto University)

Presenter: Mr YOSHIDA, Ryosuke (Kyoto University)

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