

TINA - a New Silicon Tracker for Transfer Reactions

Transfer reactions are powerful tools to study the structure of atomic nuclei. The recently commissioned OEDO beamline of CNS and RIKEN can provide beams with the necessary intensities at low energies (10-20 MeV/u) offering experimental access to regions of the nuclear chart which were hitherto not accessible for transfer studies.

To utilize OEDO for transfer reactions, a detector array called TINA has been built and successfully used in two experiments. TINA is a joint project of CNS, RCNP Osaka and RIKEN Nishina Center. It is designed for the position and energy measurements of the recoiling light particles (protons) from transfer reactions in inverse kinematics.

The first version consists of six $\Delta E - E$ telescopes, each consisting of YY1-type silicon strip and CsI detectors. It has been used at Kyushu University Tandem Accelerator and at the OEDO facility. An excellent performance has been achieved in identifying light reaction products and in obtaining kinematics information with both stable and energy-degraded radioactive beams.

TINA is also compact enough to be coupled with 4- π gamma-ray detector arrays. An upgrade is ongoing that implements highly granular DSSD detectors to improve the angular resolution. The upgraded TINA will be well-suited for future transfer studies at OEDO and can compete with other world-leading devices.

A general overview, some first results about the performance and a short outlook on future perspectives will be presented.

Summary

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