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Prompt-delayed γ-ray spectroscopy with AGATA, EXOGAM and VAMOS++ : Report on the present status of e661

The study of atomic nuclei in the phase space of large isospin, angular momentum and excitation energy, provides new insights to understand and predict the evolution of nuclear structure and the emergence of new phenomena in exotic nuclei [1, 2]. The prompt and isomeric γ-ray spectroscopy of discrete states is a powerful method to address the above. The properties of isomeric states, their excitation energies, lifetimes and decay patterns, provide valuable constraints for understanding the structure of these nuclei [3, 4]. Nuclear fission at energies around the Coulomb barrier is powerful tool to populate neutron-rich exotic nuclei at large angular momentum.

The e661 experiment was carried out to explore the nuclear structure at large isospin, angular momentum near the doubly magic 132Sn. The neutron-rich nuclides were produced from fusion-transfer fission, using a 238U beam at an energy of 6.2 MeV/u impinging on a 9Be target. A new experimental setup was applied to measure prompt-delayed γ-ray coincidences from isotopically identified fission fragments. The fission fragments are isotopically identified by VAMOS++ [5] large acceptance spectrometer. The prompt γ rays emitted at the target were detected AGATA γ-ray tracking array [6]. The corresponding delayed γ rays emitted within time range 200 μs at the focal plane of the spectrometer were measured by seven EXOGAM HPGe Clover detectors [7]. We will report current status on the analysis of e661 and present the characteristic and the performance of the new experimental setup.

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