

Title : Gamma spectroscopy of the exotic ^{79}Cu nucleus

Keywords : Gamma, spectroscopy, copper, lifetime, exotic nuclei, nuclear structure

Abstract : ^{78}Ni is an iconic neutron-rich nucleus for structure studies located far from the line of stability and the primary focus of many recent experimental investigations. Though a closed magic character for both the proton ($Z=28$) and neutron ($N=50$) shells is expected, theoretical and experimental work has suggested that either shell gap may be weakened. This may give rise to deformed shapes that exist in the nucleus at nearby energies, a phenomenon known as shape coexistence and

an active topic of research these days. The experiment aims to profit from the unique opportunity of gamma-ray spectroscopy with a high-resolution detector array, combined with the high-intensity beam provided by the RIBF facility in Japan to investigate the nuclei around ^{78}Ni . In particular the thesis will focus on the exotic nucleus ^{79}Cu , which contains one proton orbiting around an inner core of ^{78}Ni , continuing the previous work that was initiated by our group.