Half-life measurement of neutron rich nuclei is one of the major projects at RIKEN RI Beam Factory (RIBF) relevant to the study of astrophysical r-Process. We have started developing a new detector system which enables us to measure the half-life of produced isotopes for wide range of half-life below and above 100 ms. The advantage of our system is its high detection efficiency as well as Its high precision position measurement for β rays.
These features allow us to operate the device under high multiplicity environment with mixed beam condition. Furthermore, the γ-ray detectors with high energy resolution help us to identify the stopped isotopes simultaneously. We will discuss the overall performance of detector system as well as the capability of the extension of half-life measurement considering the production yield of neutron rich nuclei at the RIBF.