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# Development of CNS GRAPE and experiments at RIBF

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We have been developing a position sensitive germanium (Ge) detector array, CNS GRAPE (Gamma-Ray detector Array with Position and Energy sensitivity) for high-resolution in-beam gamma-ray spectroscopy using RI beams. In order to correct for the Doppler broadening effect from the fast moving reaction products, the array was designed to have position sensitivities in the Ge crystal by using the pulse shape analysis techniques. The total array consists of 18 detectors and each of which contains two Ge planar crystals with effective radius of 3 cm and thickness of 2 cm. The outer side of each crystal has 3×3 electrodes [1]. The planar structure and the segmenting electrodes bring us different pulse shapes depending on the depth of interaction. The resolution of less than 1% for v/c = 0.3 can be achieved after Doppler shift correction. The total efficiency of 5 % for 1 MeV gamma ray is expected. This array will be used at RIBF facility for the in-beam gamma-ray spectroscopy. In the talk, present status of CNS GRAPE and experiments and future develpment will be discussed.

[1] S. Shimoura, Nucl. Instrum. Methods A 525 (2004) 188.

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