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Development of Position Sensitive Germanium Detector TOMONORI FUKUCHI, Rikkyo University, SUSUMU SHIMOURA, Center for Nuclear Study (CNS), University of Tokyo, EIJI IDEGUCHI, CNS, MEIKO KUROKAWA, HIDETADA BABA, RIKEN, SHINSUKE OTA, Kyoto University, MITSURU TAMAKI, MEGUMI NIIKURA, CNS — We have been developing the Gamma-Ray detector Array with Position and Energy sensitivity (GRAPE) which is mainly used for detecting  $\gamma$ -rays from fast moving nuclei. The GRAPE consists of 18 high-purity Germanium (Ge) detectors. All detectors have two planar-type Ge crystals (60 mm in diameter and 20 mm thickness). The electrode of Ge crystal is segmented in  $3 \times 3$ . The pulse shape analysis enable three-dimensional position determination. We applied an artificial neural network (ANN) algorithm for pulse shape analysis. An advantage of the ANN technique is rapid pattern recognition with an appropriate training in advance. We aim to extract the interacting position of  $\gamma$ -rays online using the ANN algorithm. In order to make a supervisory data set for training the ANN, the pulse shape sampling was performed using the flash-ADCs with a sampling rate of 100 MHz. However, the pulse shape sampling takes long time, therefore a fast sampling method using the Compton scattering kinematics was proposed. This method cope with the individual character of each detector and the change of a detector response as years go by.

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