

# Status of nuclear emulsion plates for J-PARC E07 experiment

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In the J-PARC E07 experiment, the number of  $S = -2$  nuclei is planned to be about  $10^2$  which is 10 times or more events than that of the E373 experiment at KEK-PS. We prepared large-scale emulsion plates which have two times the area of the plate at E373 experiment. The K-beam intensity of E07 experiment is  $3 \times 10^5$ /spill, about 25 times of the E373 experiment [1]. It has been possible to save time for exchange of the cassette of huge amount of 1500 large plates and can use effectively the beam time.

All of emulsion plates for E07 experiment were stored in a lead box in Kamioka mine in order to reduce the Compton electron from  $\gamma$ -ray radiation and cosmic rays from the atmosphere in Figure 1. We check the storage conditions of the emulsion plate until the beam exposure.

After beam exposure, we will develop the emulsion plates at facility for emulsion handling in Gifu University. When the charged particles pass through the Emulsion, the latent image specks generated along the path, and they form a silver crystal called grain by chemical reaction in photographic development. The intensity of grain production is very sensitive to the temperature of solution, chemical concentration and development time. The thickness and density of track is proportional to the ionization losses, which is important for particle identification in emulsion. However, many fog will appear when the excessive development to keep the sensitivity of particle tracks. We are developing the optimal method, it is evaluated by grain density ( $\geq 25$  grain /  $100\mu\text{m}$  track) and fog density ( $\leq 3$  /  $1000\mu\text{m}^3$ ) for the E07 experiment. In this poster, the condition of emulsion plate in Kamioka mine and development method for the E07 experiment will be displayed.

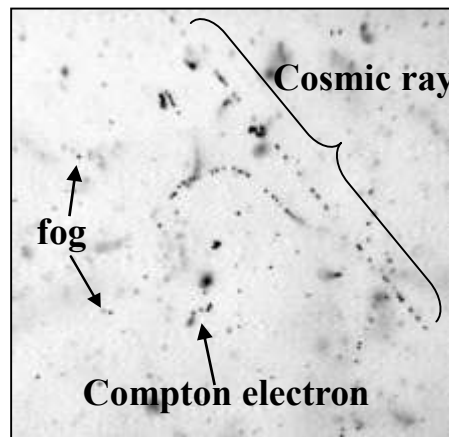


Figure 1: Cosmic ray and Compton electron in nuclear emulsion.

[1] K. Nakazawa et al., J-PARC E07 proposal