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Studying of SuperFGD response using stopped cosmic muons

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The SuperFGD (Super Fine-Grained Detector) is a part of ND280 near detector complex for T2K and Hyper-Kamiokande experiments. The SuperFGD is a fully active and highly granular scintillator neutrino detector. It consists of ~2 million scintillation cubes, which allow reconstruction of particles going in all directions. A good understanding of SuperFGD response is crucial for detailed Monte-Carlo simulations and further physics studies. This poster covers selection of atmospheric muons stopped inside the sensitive volume of the detector including their decays. Muons were selected by applying geometrical constraints and searching for subsequent electron or positron. The reconstructed spectrum of the Michel e^-/e^+ is useful for energy scale determination. Bragg's curve built using muon energy release along its track is sensitive not only to energy scale but also to the nonlinear effects: Birks coefficient and Cherenkov radiation intensity. Reconstruction of Compton electrons following positron annihilation allows to evaluate an effective low energy threshold.

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