

The SuperFGD prototype PID beam tests results

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The near detector ND280 of the T2K experiment will be upgraded in 2022 with the aim of measuring precisely CP violation in neutrinos. The ND280 upgrade consists of the installation of 3 new sub-detector types including SuperFGD, a novel neutrino active target concept.

SuperFGD (Super-Fine-Grained-Detector) will have 2million $1\times 1\times 1\text{cm}^3$ plastic scintillator cubes forming a cube array of $184\times 56\times 192\text{cm}^3$. Each of the cubes will be intersected by 3 orthogonal WLS fibers with an MPPC on one end. Thanks to its super-fine segmentation, high light yield, and excellent time resolution, great particle identification (PID) capabilities are expected. Since 2018, a set of prototypes have been exposed to particle beams (charged tracks and neutrons) to test this concept. Here, the SuperFGD prototype PID beam tests results are presented, including its measured time and dE/dx resolution, light yield for different particles and preliminary neutron detection capabilities.

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No, this is an entirely new submission.

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