

# J-PARC Neutrino Beamline Upgrades towards 1.3 MW Beam Power for Long-Baseline Neutrino Oscillation Experiments in Japan

Thursday 30 July 2020 09:40 (20 minutes)

The J-PARC neutrino beamline produces a high intensity neutrino beam using 30 GeV protons from the J-PARC Main Ring (MR) accelerator for the T2K long baseline neutrino oscillation experiments. The MR accelerator and neutrino beamline achieved 515kW stable operation during the most recent run. MR upgrades toward 1.3 MW beam power are being planned for further running of the T2K and future Hyper-Kamiokande experiments by shortening the repetition cycle (2.48s to 1.16s) and increasing the number of protons per spill ( $2.6 \times 10^{14}$  to  $3.2 \times 10^{14}$  protons per spill). The neutrino beamline will also be upgraded to accept the 1.3 MW proton beam. The main challenges in the neutrino beamline are precise and safe handling of the very high intensity proton beam and robustness of the secondary beamline components in a very high radiation environment. We will present the ongoing beamline upgrade project including development of new beam monitors, an enhanced remote handling system, cooling capacity improvements for secondary beamline components, enforcement of radioactive waste treatment, neutrino flux improvement with higher horn current, and DAQ/control system upgrades.

## Secondary track (number)

**Author:** SEKIGUCHI, Tetsuro

**Co-authors:** CAO, Son (KEK); FRIEND, Megan (High Energy Accelerator Research Organization (JP)); FUJII, Yoshiaki (KEK); ISHIDA, Taku (KEK); KOBAYASHI, Takashi (KEK); MATSUBARA, Tsunayuki (KEK); NAKADAIRA, Takeshi (HIGH ENERGY ACCELERATOR RESEARCH ORGANIZATION, KEK); NAKAYOSHI, Kazuo (KEK); OYAMA, Yuichi (KEK); SAKASHITA, Ken (High Energy Accelerator Research Organization (JP)); TADA, Masaru (KEK)

**Presenter:** SEKIGUCHI, Tetsuro

**Session Classification:** Accelerator: Physics, Performance, and R&D for Future Facilities

**Track Classification:** 11. Accelerator: Physics, Performance, and R&D for Future Facilities