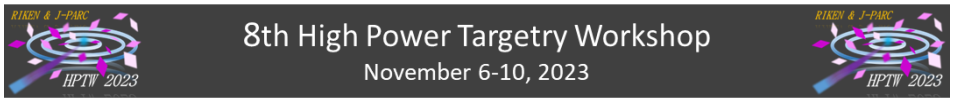

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Facility Design of the COMET Experiment at J-PARC

Monday, 6 November 2023 16:00 (15 minutes)

Construction of the COMET Experiment is underway at J-PARC. It aims to discover a phenomenon of muon to electron conversion, which can prove an existence of the new physics. To achieve and overcome the current experimental record, we will generate high-intensity muon beam by injecting J-PARC 8-GeV primary proton beam to the target. The beam power will be 3.2 kW at the first stage and will be upgraded to 56 kW. The target will be very thick and have length of ~700 mm. We will start the experiment with a graphite target and plan to change it to tungsten in the future. The target will be installed inside a superconducting solenoid magnet. Generated charged pions and muons can be captured by the strong solenoidal field and they will be transported to the experimental area. The irradiation of the high-intensity proton beam to the thick target will generate huge amount of the radiation. To prevent quench of the superconducting coil by the radiation from the target, a heavy shield will be installed between the target and coil. The target room, where the beamline apparatus including the target and superconducting magnet will be installed, must be shielded with sufficient thickness to protect workers who will stay on the top of the beamline. One of the difficulty of the COMET facility design is to efficiently shield the radiation which will be widely distributed due to the thick target. In this presentation, we will introduce the current design of the COMET experimental facility.

Themes for the contribution

5 Target facility challenges:

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