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## J-PARC superconducting magnets and radiation environments

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The J-PARC accelerator has been jointly operated by JAEA and KEK since 2007 and a variety of experiments has been carried out using secondary beams of pions, muons, neutrinos and other particles generated by proton beam with a power of several hundreds of kilowatts from 3 GeV Rapid Cycle Synchrotron and 30 GeV Main Ring. Superconducting (SC) magnets have been widely utilized in J-PARC. In particular, the SC magnets for the muon experiments have to be operated under severe radiation environment where a yield of muons is maximized by a combination of high field and intense proton beam bombardment with target nuclei. In this view, development of radiation resistant materials and their experimental validation through the irradiation tests have been carried out. In addition, the magnet design studies considering the degradation of the properties and the production of radioactive nuclei (in particular tritium) during the operation have been conducted.

In this presentation, a general overview of the J-PARC facility and the active and planned SC magnets will be introduced. The dedicated studies on radiation resistance of the SC magnets including the future project will be reported.

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