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A new intense DC muon beam from a pion capture solenoid, MuSIC

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MuSIC is a project to provide the world's highest-intensity muon beam with continuous time structure at Research Center of Nuclear Physics (RCNP) of Osaka University, Japan. A pion capture system using a superconducting solenoid magnet and a part of superconducting muon transport solenoid channel have been build in 2010. The highest muon production efficiency was demonstrated by the beam test carried out in February 2011. The result concludes that the MuSIC can provide more than 10^9 muons/sec using a 400W proton beam. The pion capture system is one of very important technologies for future muon programs such as muon to electron conversion searches, neutrino factories, and a muon collider. The MuSIC built the first pion capture system and demonstrate its potential to provide an intense muon beam. The construction on the entire beam channel of the MuSIC will be finished in five years. We plan to carry out not only an experiment to search the lepton flavor violating process but also other experiments for muon science and their applications using the intense muon beam at RCNP.

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