Progress on RF Coupling Coil Module Design for the MICE Channel

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We describe the progress on the design of the RF coupling coil (RFCC) module for the international Muon Ionization Cooling Experiment (MICE) at Rutherford Appleton Laboratory (RAL) in the UK. The MICE cooling channel design consists of two SFOFO cells that is similar to that of the US Study-II of a neutrino factory. The MICE RFCC module comprises a superconducting solenoid, mounted around four normal conducting 201.25-MHz RF cavities. Each cavity has a pair of thin curved beryllium windows to close the conventional open beam irises, necessitating separate power feeds for each of the four cavities. The coil package that surrounds the RF cavities is mounted on a vacuum vessel. The RF vacuum is shared between the cavities and the vacuum vessel around the cavities such that there is no differential pressure on the thin beryllium windows. This paper discusses the design progress of the RFCC module, the fabrication progress of a prototype 201.25-MHz cavity, and the superconducting coupling coil that will be cooled using a single, small 4 K cooler.