Title:Multipacting Study of the MICE 201 MHz RF Cavity
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The international Muon Ionization Cooling Experiment (MICE) aims to demonstrate transverse cooling of muon beams by ionization. The MICE ionization cooling channel requires eight 201-MHz normal conducting RF cavities to compensate for the longitudinal beam energy loss in the cooling channel. Multipacting is a resonant electron discharge produced by the synchronization of emitted electrons with the RF fields, which can cause breakdown at high power RF operation. In this paper, we present the study of the multipacting effect in the MICE 201 MHz cavities with the SLAC ACE3P code. The simulation is carried out in the cavity body, the RF coupler region, and the coaxial waveguide, with the external magnetic field from the Coupling Coil. We will identify potential RF breakdowns due to multipacting and propose a solution to suppress them.