

SPACE CHARGE SIMULATIONS FOR THE Mu2e EXPERIMENT AT FERMILAB

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Abstract

The proposed Mu2e experiment will present a number of challenges for the Fermilab accelerator complex. The Accumulator and Debuncher rings of what is currently the antiproton complex will be required to handle proton beams with intensities several orders of magnitude larger than the antiproton beams they now carry, leading to a substantial space-charge tune shift. The protons will be then be extracted from the Debuncher using resonant extraction. We present results from simulations of 3D space charge effects for Mu2e beam parameters, with emphasis on how they affect the resonant extraction process.

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