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Optimization of the Muon Stopping Target of the Mu2e Experiment

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The Mu2e experiment being constructed at Fermilab will search for the coherent neutrino-less conversion of muons to electrons in the field of an atomic nucleus. Mu2e aims to achieve a sensitivity four orders of magnitude better than previous experiments searching for this same charge lepton flavor violating transition. An essential part of the Mu2e experiment is the aluminum muon stopping target. The stopping target is responsible for the energy loss and capture of the muons to be studied and provides the material in which the muon to electron conversion can emerge by interactions with the target nuclei. In the interplay with the muon beam, the magnetic field and the active detector components such as the straw tube tracker, the muon stopping target significantly affects the achievable sensitivity of the overall Mu2e experiment. On this poster, we present the results of computational simulation studies carried out to optimize the performance of the muon stopping target.

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