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## A data-driven method for antiproton background measurement in Mu2E

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The Mu2e experiment will search for the CLFV neutrinoless coherent conversion of muon to electron, in the field of an Al nucleus. The experimental signature of the process is a monochromatic conversion electron (CE) with the energy  $E_{CE} = 104.97$  MeV. CE-like electrons could also come from a number of background processes like the cosmic muons, Decay in Orbit (DIO) of muons stopped in the Stopping Target (ST) or antiprotons (p) produced by the proton beam at the Production Target and annihilating in the ST. Our study concerns the antiproton background measurement. The background induced by p cannot be efficiently suppressed by the time window cut used to reduce the prompt background because the ps are significantly slower than the other beam particles. We are developing a technique for the in-situ measurement of the antiproton background. pp annihilation in the ST is the only source of events in Mu2e with two tracks, simultaneous in time, each with a momentum of  $\sim 100$  MeV/c, and we plan to exploit this unique feature. The idea is to identify and reconstruct events with two or more tracks and use them to estimate the background from the pp annihilation. As the Mu2e detector is optimized for reconstructing single-track events, we are developing an algorithm to reconstruct multi-track events. The talk presents its status and discusses the prospects of the in-situ estimate of the antiproton background.

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