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3 - Upgrade of the electrostatic spectrometer and ion/shakeoff detectors in TRIUMF's neutral atom trap apparatus.

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Measurements of correlation parameters from beta decay of atoms in a MOT may require application of an electric field, which can work as a spectrometer for recoiling ions and atomic shake-off electrons on their way to MCP based detectors in a back-to-back geometry. Such a field, in combination with the drift distance, separates in time the arrival of recoiling, differently charged ionized atoms on an ion detector relative to much faster moving shake-off electrons, detected by an electron MCP. This allows us to distinguish between ions with different charge and calculate correct kinematics event by event.

In our earlier measurements of the beta asymmetry from beta decay of trapped polarized ^{37}K atoms [B.Fenker et al. Phys. Rev. Lett. 120 062502 (2018)], we have achieved an electric field of about 540V/cm. Further increase of the field prevented simultaneous detection of ion and electrons, resulting in high, up to 1MHz, background count rate in both detectors. Recent development of spectrometer allowed us to reach a field strength of 1000V/cm and ensure reliable simultaneous operation of both ion and electron MCP based detectors in beta decay measurements of trapped ^{92}Rb [J.McNeil, contributed talk to DNP-DPN].

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