

Abstract Submitted
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First application of a novel directional neutron detector to background measurements at SuperKEKB. MICHAEL HEDGES, Univ of Hawaii, BEAST II COLLABORATION — During first commissioning of the SuperKEKB accelerator, the next-generation B factory located in Tsukuba, Japan, the BEAST II commissioning detector conducted measurements of beam induced backgrounds. Such backgrounds are critical as they will eventually limit both the accelerator beam life time and performance and longevity of the Belle II detector. Among the many measurements made by the BEAST II system, the Micro Time Projection Chambers (micro-TPCs) subsystem provided the first observations of fast neutrons generated by the various beam backgrounds. We present motivations for fast neutron measurements at SuperKEKB and Belle II commissioning, a detailed description of the micro-TPC subsystem, and the resulting 3D tracking and charge cloud measurements of fast neutron recoils in a helium/carbon dioxide target gas and compare the resulting data with expectations from dedicated beam-loss and detector simulations. If time allows, we also present beam background measurements and conclusions from other BEAST II efforts.

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