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Effects of Ionisation Electron Diffusion on Calibrations in LArTPCs

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To maximise the physics reach of time projection chambers, it is vital that we have accurate knowledge of the transport properties of the ionisation electrons that drift through such detectors. One such property, ionisation electron diffusion, has typically been considered during detector design, with little attention given to its effects on high-level physics. This talk will provide a brief overview of the diffusion measurements that have been made to date, and will present a GEANT4 based study that shows diffusion can bias current calibration techniques at the ~5% level.

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