

Charge Collection Measurements in single-column 3D detectors

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For the future luminosity upgrade proposed for the Large Hadron Collider (LHC), pixel detectors will have to survive fluences of fast hadrons up to 10^{16} neq/cm². Since charge trapping during the drift is the main limitation for the application of silicon detectors, 3D detectors with their shorter collection length are a promising candidate as silicon pixel sensors. We report on charge collection studies using a ⁹⁰Sr source and a scintillation counter as an electron telescope, and 3D detectors of single column n-implants in p-substrate, configured both as strip and pad detectors. The charge collection as a function of bias voltage is compared with the measured C-V characteristics, and with simulations of the pulse development.