

Single event effect in HCC ASICs for ITk strip upgrade

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Abstract: Special considerations have been made in the design to reduce digital state changes and ensure reliable operation, we tested the effectiveness of the protection by running separate chips inside the proton beam, and layout is that all chips concurrently fit into a 20 mm beam spot. The study of corrected bit flips in registers and actual SEEs in LCB and LP path is carried out under different energies (80MeV, 70MeV, 60MeV, 40MeV, 20MeV). The preliminary estimate there will be approximately $O(10)$ corrected bit flips per HCC bit per year at the HL-LHC. The total ionizing dose effect is monitored as well during the experiment.