

The HCCStar ASIC for the ATLAS ITk silicon strip detector: irradiation testing

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The Hybrid Controller Chip (HCC) is an application specific integrated circuit designed as part of the silicon strip detector for the ATLAS Inner Tracker (ITk), which will be installed as part of the High Luminosity LHC upgrade program. A prototype of the HCC was produced and tested in 2018 and 2019, and the production version is currently being prepared. The HCC must read out clustered hit data from the strip tracker at a high rate while simultaneously surviving exposure to radiation. Ionizing radiation has the potential to interfere with the digital logic and memory of the HCC, disrupting normal operation and jeopardizing the accuracy of read out results. This talk will discuss the measurement of the effect of heavy ion irradiation on physical prototype HCCs as well as improvements made to the production design of the HCC informed by the results of irradiation.

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No

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