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Automated thermal cycling and testing of ATLAS Inner Tracker detector modules using a microcontroller

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The current ATLAS inner detector provided tracking and vertex reconstruction with high precision and efficiency during Run 1 and Run 2, and will continue to provide similar performance for Run 3 of the Large Hadron Collider (LHC). However, with the increased radiation damage and bandwidth requirements from the future High Luminosity LHC (HL-LHC), the ATLAS inner detector needs to be upgraded. The new Inner Tracker (ITk), is designed to maintain or even improve the performance of the ATLAS tracking, whilst operating in the harsher environment of the HL-LHC for a duration of ten years.

In this flash talk, I present my work at DESY, where we are developing a test setup controlled by a Raspberry Pi microcontroller to automate the thermal cycling procedure of the ITk detector modules. This procedure is a necessary part of the modules quality control and quality assurance, which is needed to ensure that each module has the required performance and reliability.

Abstract Track

Flash talk, LHC

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