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South Africa's Contribution to the Phase-II Upgrade of the ATLAS Hadronic Tile-Calorimeter Low-Voltage Power Supply

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The High-Luminosity Large Hadron Collider (HL-LHC) is scheduled to begin operation in 2030. While the increased luminosity presents exciting opportunities for new scientific discoveries, it also introduces significant technical challenges for the ATLAS detector systems. To meet these demands, the ATLAS Hadronic Tile Calorimeter (TileCal) will undergo a comprehensive Phase-II upgrade during the third long shutdown (LS3) of the LHC.

A key component of this upgrade is the replacement of the on-detector electronics, which are powered by 256 Low-Voltage Power Supplies (LVPS). Each LVPS unit contains eight transformer-coupled buck converters, known as "Bricks," which step down the power delivered from off-detector bulk supplies to the required levels for the front-end electronics.

The South African cluster, led by the University of the Witwatersrand, is responsible for the research and development, production, quality assurance testing, and integration of half of the required Bricks for the Phase-II upgrade.

This presentation will provide an overview of South Africa's contributions to the LVPS Brick development for the TileCal upgrade. It will highlight key project milestones such as the recent pre-production, an essential step in preparing for full-scale production, and will conclude with a forward-looking perspective on the upcoming main production of the final Brick units.

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None

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