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Experience and results of the ATLAS ITK pre-production staves at Brookhaven National Laboratory

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The ATLAS experiment is currently preparing for an upgrade of the inner tracking detector for High-Luminosity LHC. The new tracker, ITk, employs an all-silicon detector with outer Strip layers. The building block of the ITk Strip barrel is the stave which consists of a low-mass support structure hosting the common electrical, optical and cooling services as well as 28 silicon modules. Half of the ITk Barrel Strip Detector will be assembled at Brookhaven National Laboratory (BNL) between 2023 and 2026. In this contribution, we outline the challenging aspects of the stave pre-production phase at BNL. The electrical characterization of these staves, hosting the final design of both front-end electronics and ASICs, will be discussed in detail.

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