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Development of Low Mass Integrated Local Supports for the ATLAS Tracker Upgrade

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The silicon tracker of the ATLAS experiment will be replaced in 10 years'time in readiness for the high luminosity operation of the LHC. The replacement tracker will cover 200m2 and will consist of 10,000 detector modules mounted onto a mechanical support structure. Central to the design of the support structure is the concept of a highly integrated local support (or stave) onto which 26 modules are mounted. The stave provides the necessary mechanical support, cooling and electrical interfaces required by the modules for implementation in ATLAS. In this paper we describe the current status of the design of the local supports together with the results of finite element analyses and measurements from prototypes and discuss the applicability of the design to the mass manufacture of a large number of staves.

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