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ATLAS Pixel Endcap Structure

Monday 17 June 2019 14:15 (30 minutes)

The ATLAS Endcap Outer Pixel mechanical structure for the High Luminosity LHC is coming to its final stages of design. In this presentation I will report on past and current R&D of the global and local supports.

I will describe the design of the local support structure mechanics, the production techniques developed. The results from thermal and mechanical FEA will be compared with data taken on full-scale final prototypes. The global mechanics comprises three concentric cylinders which are split at the top and bottom centreline. I will describe two alternative methods of half-cylinder manufacture, discuss their relative merits and consider which is the most appropriate for this application.

In addition I will present experimental results of the metrology of prototype thin walled half-cylinders manufactured from pre-pregs with M55J fibre and LTM110 and EX-1515 resins. The geometric data will be compared with the tooling and the CAD model. Data on the vibrational response of the half-cylinder prototypes will be compared to simple models using classical laminate theory and FEA. Finally, I will present a summary of other work being done within the collaboration in order to produce a fully working endcap.

Presenter: Mr SUTCLIFFE, Peter (University of Liverpool (GB))