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Temperature dependent thermal conductivity measurements and their effects on the thermal management predictions for Silicon Detector Support Structures

Thursday 9 October 2025 14:20 (20 minutes)

We present measurements of the temperature dependent thermal conductivities for carbon composite laminates, thermal interface material, carbon foam and adhesives used for the construction of the Tracker Forward Pixel detector support structures as designed for the HL-LHC CMS upgrade project. The simulation set up for thermal performance using temperature dependent properties is described and comparative simulation results are presented to highlight the effects of temperature dependent material properties. First efforts to measure the thermal contact resistance using Laser Flash Analysis method are presented for co-cured facesheet to carbon foam interface and titanium pipe glued to carbon foam interface.

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