

Electrical tapes for the ATLAS phase II barrel strip tracker upgrade

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We report on R&D on the electrical bus tapes for the barrel strip tracker of the of the ATLAS phase II upgrade. In this system electrical connections (HV and LV supply, data, control and DCS) are distributed locally on the local supports by 130x12cm² large multi-layer Kapton/Cu flex circuits, which are co-cured with the carbon fibre facesheets of the support structure. The tape design has been carefully optimized to minimize multiple scattering material.

We will describe the design and the manufacture of full-size prototype tapes, and the lessons learned. We will discuss the dimensional accuracy of these large-area flex circuits. We will also outline the co-curing process and the issues encountered in developing the right process for this technique. In preparation for the final mass production we have also developed a fully automated tape testing robot which is used to test the tapes at various production stages and we will describe this system in our presentation.

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