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Completion of mass production of silicon pixel ladders for PHENIX silicon vertex tracker (VTX)

The PHENIX detector had been upgraded with the silicon vertex tracker (VTX) to extend its physics capability in both the heavy ion and spin programs at Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory. The main role of VTX is precision measurement of heavy flavor.
The VTX comprises a four-layer barrel detector built from two inner silicon pixel detector and two outer silicon strip detector. A silicon pixel ladder is the basic component of a silicon pixel detector. The two inner layers of the silicon pixel detectors are made up of 30 silicon pixel ladders. Each silicon pixel detector consists of four pixel hybrid sensors, two readout buses and a support board for cooling of sensor modules. Each components are glued with epoxy resin, and the pixel hybrid sensors and readout buses are connected electrically with bonding wires. In order to avoid increase of material budget, it is needed to reduce the thickness of resin. Furthermore, it is required to assemble with a precision less than 25 um. In satisfying these requirements, the mass production of silicon pixel detectors had been successfully completed.
This poster provides details of mass production of silicon pixel ladders.

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