

Status of PHENIX Silicon Pixel Detector

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The PHENIX detector at RHIC has been equipped Silicon Pixel Detector for identifying the bottom and charm particle by measuring secondary vertex point in the $\sqrt{s_{NN}} = 200\text{GeV}$ Au-Au collisions and $\sqrt{s} = 500\text{GeV}$ polarized collisions, with Silicon stripixel detectors. The detector consists of 50×400 micron pixel sensors, bump bonded readout chips, high density readout flexible print circuit board and carbon composite holders. 25 micron aluminum wires connect among readout chips and print circuit boards. They are encapsulated by the silicone adhesives to protect mechanically and vibration force from Lorentz force in the strong magnetic field. Due to differences in CTE between the pixel stave and the silicone encapsulant, thermal cycling promoted the breaking of wire bonds. The encapsulated silicone and wires were removed from broken ladders, bonding pad were cleaned, and then wires were bonded. Since Silicone has 300 ppm/deg expansion coefficient and other materials have 30 ppm/deg, another Silicone, which has similar expansion coefficient, but is much softer, was chosen. New re-assembled ladders was tested with some heat shock test and survived. We would like to report the status of the PHENIX Silicon Pixel Detector operations as well as the repairing process of the broken wires.

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