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## Mechanical design of the PHENIX VTX and FVTX vertex detectors

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An ambitious physics program now seems possible with the addition of two new vertex detectors to the PHENIX experiment at the RHIC accelerator at Brookhaven National Laboratory. The VTX barrel detector consists of two inner layers of AC-coupled pixel detectors surrounding the Beryllium beam-pipe, followed by two layers of DC-coupled single sided strip-pixel detectors, the VTX detector is currently installed into PHENIX. The second phase will see the installation of Forward Vertex detectors (FVTX) at the ends, these detectors consist of 4 hermetic layers of Silicon wedges with AC-coupled mini-strips spaced on 75 micron pitch in the radial direction. This talk will focus on the mechanical design and construction of both of these detectors along with the critical use of a 3D-CAD program to verify their integration with the overall experiment. The VTX and FVTX detector design made use of carbon fiber technology for both the detector ladder “staves” as well as the overall support structure, because of its stability and strength to mass ratio. Using this type of material is becoming a standard in high precision tracking detectors in order to reduce their overall radiation length. Both detectors make use of a single phase cooling system using 3M NOVEC-7200 fluoroarbon.

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