The MicroVertex Detector project in the PANDA experiment.

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The fixed target experiment PANDA will ~~make~~ use ~~of~~ cooled antiproton beams of unprecedented quality that will be available at the Facility for Antiproton and Ion Research (FAIR) in Darmstadt.
~~It~~ includes the Micro Vertex Detector (MVD) [1], as innermost ~~detector of the tracking system~~, in particular ~~able to detect~~ secondary vertices of short-lived particles. Due to the forward boost of the particles the MVD layout is asymmetric with four barrels surrounding the interaction point and six disks in the forward direction. The inner layers are composed of hybrid epitaxial silicon pixels and the outer ones of double sided silicon strips, with about 10.3^6 pixels and 162x10^3 strips channels.
PANDA features a triggerless architecture, therefore the MVD has to run with a continuous data transmission at a high interaction rate (about 10^7 interactions/s) ~~where hits~~ have precise timestamps (the experiment clock is 160 MHz). In addition, the energy loss of the particles in the sensor should be measured.
To cope with these requirements, custom readout chips are under development for both hybrid pixel (ToPix in 130 nm CMOS technology) and double sided silicon strip (PASTA in 110 nm CMOS technology) devices.
The powering and cooling of the readout are challenging since the MVD volume is limited by the surrounding detectors. The MVD will work at room temperature ~~in order~~ to simplify the layout which foresees the routing of cables and cooling pipes and the services ~~only~~ in the backward region.
The simulations show that the main component affecting the material budget of this detector is the cabling [1]. The present MVD layout ~~foresees inteconnections made of aluminium~~ instead of copper ~~material~~ in the active volume.
Support structures are made of carbon fibers and highly thermal conductive carbon foam with embedded cooling pipes underneath the readout chips. ~~A study for using~~ carbon paper to increase the cooling efficiency and ~~to~~ decrease the material budget is ~~foreseen~~.
The design of the MVD is in an advanced stage. Detector prototypes have been built and tested to validate the design of each component~~s~~ and the triggerless readout.
The MVD technological aspects will be reported.

[1] PANDA Collaboration, Technical Design report for the PANDA Micro Vertex Detector, arXiv:1207.6581 v2, 2011