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The strip detector of the PANDA MVD

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PANDA is a key experiment of the future FAIR facility. It will study the collisions between an antiproton beam and a fixed proton or nuclear target. The Micro Vertex Detector (MVD) is the innermost detector of the apparatus and is composed of four concentric barrels and six forward disks, instrumented with silicon hybrid pixels and double-sided silicon microstrips; its main task is the identification of primary and secondary vertices. The main requirements include high spatial and time resolution, trigger-less readout with high rate capability, good radiation tolerance and low material budget.

The design of the strip detector and some recent developments of its components will be presented. Prototypes of double-sided strip sensors were thoroughly characterized with a probe station, during beam tests and with proton and neutron irradiations. The sensors will be read out with a self-triggering ASIC, employing the Time-over-Threshold technique for energy loss measurement. The sensors and readout chips will be supported by a carbon fiber stave, embedding an active cooling system; a flexible multilayer bus will be used to route the signals on the stave towards the DAQ system.

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