Forum on Tracking Detector Mechanics 2022



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Thermal pretest @ the front-end electronic area of the STT detector

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Within the Panda experiment, the STrawTube - detector (STT) is one of the innermost detectors at the interaction point for recording information of the generated events. In order to record as much data as possible in high quality, a high detector recording density is provided. This leads to the minimum packing space for the required electronic hardware in the STT setup. One aspect in the overall design is the thermal load due to the power consumption, internally as well as of the adjoining detectors. For this purpose, an experimental setup with similar geometric dimensions was produced at the IKP.

The basic framestructure of the setup consists of sectional exchangeable aluminum elements. The frame is used like the final design for support forces, cable routing and card positioning. To represent the internal thermal power dissipation, 29 layers in total have been installed within three sectors. Each layer was equipped with the appropriate number of resistors to represent the front-end card number. In order to determine the influence of the respective factors, the experimental setup was set up sequentially in different variations. Our experience and results will be discussed.

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