

Bachelor's or Master's thesis dedicated to semiconductor-based particle detectors for ALICE

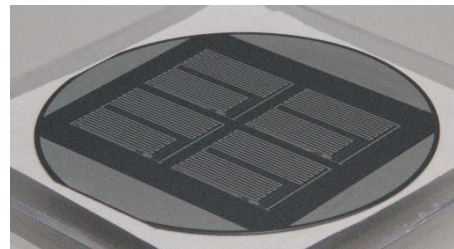


Topic

Design of a “Dummy” Module for the Outer Tracker of ALICE 3

The AG Ketzer is currently seeking motivated master's students to join our exciting research projects. Our working group is involved in developing the upgrade of the outer tracking system of the ALICE detector which is currently based on a gaseous detector (a time projection chamber, TPC). For the future, we plan to build the outer tracker with silicon-based chips, so-called Monolithic Active Pixel Sensors (MAPS).

For this project, we developed a “dummy” chip (MADHAT) which is a prototype for the final chip. Its main purpose is to emulate the realistic power dissipation in order to assess different cooling solutions. A picture of a wafer with four MADHATs is shown on the right side.



For the cooling studies, we plan to produce 40 modules with 320 MADHATs in total.

The project is mainly divided into two sub-projects:

1. Design of a modular flex PCB
2. Development of software to readout the module

Already now, the first cooling studies are performed by our colleagues. In order to make them more reliable, the next step is the usage of the MADHAT for these studies. Therefore, we are looking for motivated students to join our group soon.

Possible contents of a master 's or bachelor's thesis:

- Design of a flex PCB with Altium or similar programs
- Develop the software to readout temperatures using microcontrollers
- MADHAT production in the FTD clean room using photolithographic methods

Interested?

Feel free to contact us:

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