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## The Mu3e experiment: Toward construction of the HV-MAPS vertex detector

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The Mu3e experiment searches for the lepton flavour violating decay  $\mu \rightarrow eee$  with an ultimate aimed sensitivity of 1 event in  $10^{16}$  decays. This goal can only be achieved by reducing the material budget per tracking layer to  $X/X_0 \approx 0.1\%$ . High-Voltage Monolithic Active Pixel Sensors (HV-MAPS) which are thinned to  $50\ \mu\text{m}$  serve as sensors. Gaseous helium is chosen as coolant. This talk presents results of recent studies related to the sensor prototypes, the helium cooling, and module prototyping. The recent chip submission MuPix10 has proven its functionality regarding efficiency and time resolution.

The helium cooling system for the inner tracker could be verified using a full-scale prototype. Both findings will be used this spring to operate demonstrator modules equipped with 6 sensors inside the Mu3e magnet.

### Time Zone

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**Session Classification:** PD5: Tracking Detectors