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High Rate, High Resolution Beam Telescope to Investigate 3D pCVD Diamond Detectors

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In order to investigate the general functionality and the rate behaviour of irradiated and non-irradiated diamond detectors a stand-alone modular beam telescope was developed at ETH Zurich based on CMS Pixel Chips. The talk is going to briefly describe the basic functionality of the full telescope and its individual hardware parts and focus attention on the recent upgrades. Many parts of the telescope were electronically upgraded and additional features added to increase the quality of the signals. The key upgrade of the telescope will include a mechanical setup which allows tilting of the planes in x and y direction to exploit the charge sharing between pixels. This will increase the tracking resolution required to probe 3D diamond detectors. A simulation of the resolution as well as some conclusive results will also be shown.

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