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Developing Silicon Strip Detectors with a large-scale commercial foundry

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Silicon-based sensors are well established as tracking devices in modern particle detectors. The high spatial resolution and the comparable low costs make them best suited for large scale applications like the CMS Tracker. However, the required quantities often exceed the capabilities of academic institutions and therefore commercial vendors are assigned with the production. Since 2009 the Institute of High Energy Physics (HEPHY) in Vienna is developing a production process for planar silicon strip sensors on 6 inch wafers with the semiconductor manufacturer Infineon. Up to now, four runs with several batches of wafers, each comprising six different sensors, were manufactured and characterized. The next project milestone will be sensors produced on 8 inch p-type wafers.

A summary of the 6 inch campaign will be given in this talk. The focus will be on a defect most of the sensors show, which caused an area of defective strips. Techniques to cure affected sensors as well as the evocation of the defective area at the manufacturer and in the laboratory will be discussed. Along with results from electrical characterization, results gained from beam tests at the SPS at CERN will be presented.

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