

10th Anniversary "Trento" Workshop on Advanced Silicon Radiation Detectors

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Status of single-sided 3D detector development at SINTEF

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In order to fulfil the requirements of the tracking detectors for the future upgrades of the LHC experiments such as the ITK detector, the 3D community now has to address the challenges of smaller pixels and thinner substrates. The single-sided approach for 3D detectors, which has been developed at SINTEF MiNaLab in collaboration with Stanford Nanofabrication Facility, allows active edges and thinner sensor substrates. An overview of the 3D detector development at SINTEF will be given with a focus on the efforts to identify the yield factors. A new SINTEF 3D run is currently at the design phase, targeting smaller electrodes (3-4 μm) and pixels (50 x 50 μm^2 and possibly 100 x 25 μm^2) on 6 inch Silicon-on-insulator wafers with device layer thicknesses of 100 μm and 50 μm . Status and planned fabrication processes with a focus on technological aspects related to the yield optimization will be presented.

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