

## Microchannel Cooling for Vertex and Tracking detectors

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In this contribution a novel cooling concept for light-weight position-sensitive detectors is proposed. Our solution is based on a micro-channel cooling circuit that is integrated in the silicon sensor. Results are presented of a characterization of the cooling performance of several mechanical samples fabricated at HLL in Munich. A moderate flow of order 1 l/h of mono-phase cooling liquid is found to be sufficient to evacuate a power dissipation of several tens of Watts with a minimal temperature gradient between coolant and the sensor surface. The liquid flow has no significant impact on the mechanical stability of the sensor. A finite-element simulation can provide an adequate description of the cooling performance and is used to extrapolate the results to a more realistic environment.

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