

Developments for future tracking systems based on Medipix based read-out chips

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The developments within the Medipix collaboration on hybrid pixel detectors for many applications outside the world of high energy physics over the last decade have led to interesting design features that are now being considered or even applied in tracking systems for ATLAS and LHCb. Especially, the development of chips with timing capabilities such as Timepix3 has triggered this return to high energy physics. The Timepix3 chip can be applied for gaseous tracking systems in e.g. ATLAS, while a descendent of the Timepix3 chip, the Velopix chip is being designed for the upgrade of the LHCb vertex detector. In this contribution, the next generation is contemplated. What are the requirements we want to aim for and how do we deal with the possibilities new technologies like 3D integration offer us and the implications of increasing complexity such as the increase of power density and the necessary cooling?

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