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Imaging and Imagination, how to exploit semiconductor technology for particle physics

Main Points

Semiconductor technology can be exploited to achieve innovation in visualization and analysis for particle physics experiments. Memory chips as well as recent CMOS imager chips present similarities to particle detectors. Fine-grained, sub-micron position measurements with sub-ns timing precision could become possible in a relatively large fiducial volume. Miniaturization of functional blocks allows in-situ integration of information processing. This can lead to alternatives for trigger generation. Related developments in chip power management and micromechanics also present opportunities. Contacts with the nanoelectronics world have to be cultivated, even if practical and economical accessibility of the most advanced technologies proves difficult.

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