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MAPS R&D for tracking and calorimetry at future e+e- colliders

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SLAC National Accelerator Laboratory has led developed MAPS in several technologies, both for high-energy physics applications and for as well as ultra-fast photon science. SLAC is now leading a collaborative effort to develop MAPS for future colliders, with a strong synergy with the CERN DRD 7.6 project. SLAC has participated with engaged with international efforts led by CERN and ALICE in the 65 nm development with a and submission of a pixel sensor prototype in the ER1 run (within the CERN WP1.2 collaboration) and is contributing effort to the ALICE ITS3 testing team.

Simulation efforts are ongoing to inform the final requirements for the ASIC., currently, SLAC is investigating challenges of wafer-scale designs optimized for detectors at future e+e- machines, focusing in particular on the silicon tracker and calorimetry. This is a general challenge for MAPS application at any of the future Higgs Factories. This effort will help identify the risks that wafer-scale MAPS pose at system-level, particularly power transmission to the sensors, power distribution on the sensor, data paths on the sensor, and power pulsing, all with the goal of retiring to retire the high-risk technological challenges of such developments.

Early Career

Yes

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