

R&D on the Next Generation of Large Area Silicon Tracking at the Future Linear Collider

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The goal of the SiLC (Silicon tracking for the Linear Collider) international R&D Collaboration is to develop the next generation of large area Silicon tracking systems for the Future Linear Collider. Both the ILC and the CLIC cases are considered with a synergy with the LHC upgrades. Higher performances, easy to build and lower material budget are among the main objectives. The R&D topics include new Silicon microstrips sensors (active edge planar, larger size, smaller pitch and thinner), strixels (short strips) 3D technology based and 3D pixels for certain cases. Direct connection of the FE readout electronics onto the sensors is addressed with 3D vertical interconnection as final goal. A mixed mode deep submicron electronics is developed with fully digitized signal processing, a sophisticated control system allowing full functioning programmability, high flexibility and fault tolerance, time stamping, integrated calibrations and power cycling. Alignment, cooling and integration issues are studied. The advances on these various fronts and the related test beam results performed in the framework of the EUDET E.U project are presented in this poster.

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