

Silicon detector technologies for the IDEA detector

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The tracking system of the IDEA detector concept consists of different silicon detector subsystems: a vertex detector, an inner tracker and a silicon wrapper between the drift chamber and the calorimeters. Various technologies are being explored and optimized, depending on the physics and operating conditions of the systems. The high-granularity and low-power ARCADIA prototypes have recently demonstrated excellent performance which will make them suitable for the high demanding vertex region. Multi-chips systems of ATLASPIX3 DMAPS have been tested with electron beams and quad-module prototypes have been realized, targeting the large area tracking system. For the silicon wrapper, an alternative solution using resistive LGADs, providing both precision tracking and TOF capabilities, to improve the particle identification performance, is also explored.

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