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Development of ultra-fast diamond-sensor based systems for advanced accelerator diagnostics

Friday 13 September 2024 10:50 (30 minutes)

The Advanced Accelerator Diagnostics collabora-tion has been developing diamond-sensor based high bandwidth position-sensitive diagnostics for applica-tion at next generation XFELs and other accelerator facilities. A pass-through diagnostic with 50 MHz rate capability has demonstrated pulse-by-pulse position sensitivity of 1% of delivered beam width. Progress has been made in upgrading this diagnostic approach to multi-GHz operation, involving an integrated detec-tion system design making use of a compact signal path and proximate high-bandwidth readout ASIC. Preliminary results are presented on the performance of both the signal path and ASIC. Possible additional applications, including precision event timing and plasma ignition diagnosis, are introduced.

Footnotes

Funding Agency

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Yes

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