



Contribution ID: 336 Contribution code: WEPCO20

Type: Poster Presentation

Development of Novel, Radiation-Hard, Ultra-Compact Active Beamstops with Integrated X-ray Sensors for Scattering Experiments on High-Brilliance Undulator Beamlines

Wednesday 10 September 2025 16:00 (2 hours)

SenSiC GmbH, a spin-off from the Swiss Light Source (SLS), has developed a new class of beamstopper sensors, termed Beamstopper Integrated Sensors (BIS)[1,2], based on Silicon Carbide (SiC) semiconductor technology. Using custom processing and assembly methods, BIS devices achieve ultra-compact footprints below 1 mm and are designed for both real-time intensity monitoring and four-quadrant beam position sensing. The choice of SiC enables extreme radiation hardness and intrinsic insensitivity to visible light, enhancing sensitivity and signal fidelity by suppressing stray light contributions. BIS sensors have been successfully validated in operational environments: intensity-monitoring devices were tested at the SLS, while position-sensitive variants were deployed at MaxIV. These results demonstrate the robustness and precision of the BIS technology, offering a compact, radiation-resistant solution for integrated beam diagnostics in high-brilliance synchrotron beamlines.

Footnotes

- P. J. Ellis et al. J. Synchrotron Rad. (2003). 10, 287 ** C. E. Blanchet et al. J. Synchrotron Rad. (2015). 22, 461

Funding Agency

I have read and accept the Conference Policies

Yes

Authors: Mr TROVATO, Gabriele (University of Catania); Dr NYGARD, Kim (MAX IV Laboratory); CAMARDA, Massimo (Institute for Microelectronics and Microsystems; STLab srl; SenSiC GmbH)

Co-authors: Dr GROLIMUND, Daniel (Paul Scherrer Institute); Dr SANCHEZ, Dario (Paul Scherrer Institute); Mr BIRRI, Mario (Paul Scherrer Institute); Mr LA ROSA, Niccolò (Paul Scherrer Institute); Dr BUNK, Oliver (Paul Scherrer Institute); Mr MOSCATO, Samuele (University of Catania; STLab srl)

Presenters: Mr TROVATO, Gabriele (University of Catania); CAMARDA, Massimo (Institute for Microelectronics and Microsystems; STLab srl; SenSiC GmbH)

Session Classification: WEP

Track Classification: MC03: Beam Position Monitors