

Development Activities at PAL-XFEL

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Recent progress has been made in the development of silicon sensors and advanced detector technologies at PAL-XFEL.

For silicon sensor R&D, the third fabrication run of PIN photodiodes has been completed, incorporating multiple anti-reflection coating (ARC) designs optimized for wavelengths ranging from the vacuum ultraviolet to the visible region. Detailed characterization of devices from the second and third fabrication runs is in progress. In parallel, studies of low gain avalanche detectors (LGADs) are being carried out as part of ongoing R&D efforts.

In the PERCIVAL detector collaboration, re-spin sensors have been fabricated and tested. Calibration activities are underway, and analysis of beam test data is ongoing. At PAL-XFEL, calibration setups are being performed using front-side illumination detectors, while back-side illumination detectors are undergoing laboratory tests such as system integration and power-on procedures. These efforts contribute to the optimization of detector architecture and performance evaluation for FEL applications.

These developments demonstrate continuous progress toward establishing reliable silicon sensors and versatile detector systems for soft X-ray beamlines at PAL-XFEL.

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