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Large area hybrid detectors based on Medipix3RX: commissioning and characterization at Sirius beamlines

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Pixel detectors with low noise, fast speed, and small pixel size are necessary for many X-ray imaging and many diffraction experiments at synchrotron facilities. For X-ray imaging, photon-counting hybrid technologies have significant advantages. The PIMEGA detector line, which employs Medipix3RX chips, delivers 55 x 55 mm² pixel size, with high frame rates, and noise-free detection, satisfying most application challenges.

Several commissioning experiments have been carried out using these detectors at the Sirius beamlines, such as Carnáuba (Coherent X-ray Nanoprobe Beamline) and Cateretê (Coherent and Time-Resolved Experiments). The Cateretê beamline was the first to employ one fully mounted module of PIMEGA 540D, whereas the Carnáuba beamline received a PIMEGA 135D. Here, we present some results from detector characterization and application experiments, highlighting its distinctive properties.

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