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Persistence and anti-persistence in Euclid and SVOM

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The Euclid and SVOM missions rely on advanced infrared detectors to achieve their ambitious scientific goals. Euclid's NISP instrument, equipped with 16 H2RG detectors, aims to map billions of galaxies in the near-infrared, while SVOM's CAGIRE camera, based on the French ALFA 2k×2k SWIR detector, enables rapid ground-based follow-up of gamma-ray bursts. CPPM has played a key role in characterizing and assessing the performance of both detector systems. A major challenge for these missions is persistence and anti-persistence, memory effects that distort pixel response after illumination. In Euclid, these effects introduce photometric and spectrometric biases, whereas in SVOM, they can also trigger false transient detections. Quantifying and understanding these phenomena is therefore critical to ensuring mission success. In this work, I analyze persistence and anti-persistence in both detector technologies. Using datasets from their scientific performance characterization, I developed a robust and reproducible methodology to measure these effects. This approach combines differential ramp construction, Savitzky–Golay filtering, and flux measurements to investigate the influence of detector temperature, illumination wavelength, signal level, and flux history. I will present this methodology, explaining how persistence and anti-persistence signals were isolated with minimal assumptions. The results provide quantitative insights into the amplitude, temporal evolution, and environmental dependencies of these effects across both detector types. These findings establish an empirical foundation for developing future correction strategies or pixel-level detector models, ensuring that Euclid and SVOM can meet their scientific objectives with the required precision.

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