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Masking bright objects with LSST

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The Legacy Survey of Space and Time (LSST) is an ambitious project with the objective of mapping the observable universe over a ten-year period. This will be achieved through the utilisation of the Simonyi telescope, which is equipped with six distinct filters. The telescope will survey the entire visible sky in three days. However, the presence of bright objects, particularly stars, represents a significant obstacle to the extraction of valuable insights from LSST data. The presence of these objects will saturate the LSST sensors, resulting in the introduction of biases in object detection and flux measurement within a radius that is dependent on the magnitude of the objects in question. The creation of masks to cover the most affected regions is necessary, yet it is a challenging task due to the difficulty in identifying and characterising these objects. Our method, based on that used for HSC-SSP, has been applied to a catalogue derived from simulated LSST images. The resulting masks cover approximately two percent of the area under study. Their impact is currently being investigated in the Dark Energy Science Collaboration (DESC), particularly within galaxy cluster detection algorithms such as AMICO and redMaPPer. This approach will be used with the first on-sky LSST data, scheduled for 2024-2025.

Auteur principal: AMOUROUX, Nathan

Orateur: AMOUROUX, Nathan

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