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Impact of blending on weak lensing measurements with Rubin-LSST

Upcoming deep optical surveys, such as the Vera C. Rubin Observatory Legacy Survey of Space and Time (LSST), will scan the sky to unprecedented depths, detecting billions of galaxies. However, this amount of detections will lead to the apparent superposition of galaxies in the images, a phenomenon known as blending, that can affect the accurate measurement of individual galaxy properties. In particular, galaxy shapes play a crucial role in estimating the masses of large-scale structures, such as galaxy clusters, through weak gravitational lensing.
This talk introduces a new catalog matching algorithm, friendly, designed for detecting and characterizing blends in simulated LSST data for the Dark Energy Science Collaboration (DESC) Data Challenge 2. The aim of this algorithm is to combine several matching procedures, as well as a probabilistic method to quantify blended systems.
By removing the resulted 27% of galaxies affected by blending from the dataset, we demonstrate that the amplitude of the excess surface mass density $\Delta\Sigma$ weak lensing profile —potentially biased low due to blending —may be partially corrected.

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