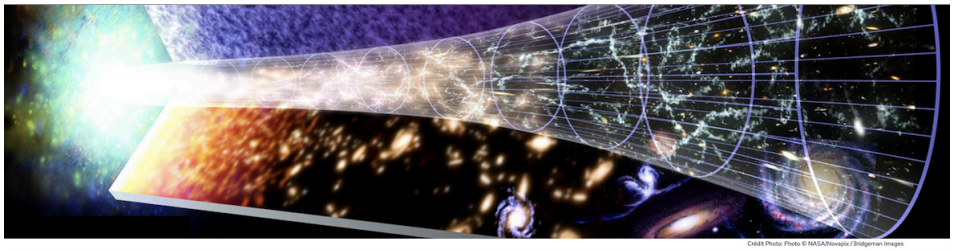

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Impact of blending on weak lensing measurements with Rubin/LSST

Thursday, May 23, 2024 9:20 AM (20 minutes)

"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. This amount of detections will however cause the apparent superposition of galaxies on the images, called blending, thereby impacting the measurements of individual galaxy properties such as redshifts or shapes, as well as the number of detected galaxies. However, galaxy shapes are key quantities used to estimate the masses of large-scale structures, such as galaxy clusters, through weak gravitational lensing.
This talk will present a new catalog matching algorithm, called friendly, for the detection and characterization of blends in simulated LSST data for the Dark Energy Science Collaboration (DESC) Data Challenge 2. The purpose of this matching algorithm is to combine several matching procedures, as well as a probabilistic method to quantify blended systems.
By removing the resulted 27\% of galaxies impacted by blending from the data, we show that the amplitude of the excess surface mass density $\Delta\Sigma$ weak lensing profile, which could be biased low due to blending, may be partially corrected. This would also result in impacting clusters weak lensing mass estimates and cosmological parameters."

Presenter: RAMEL, Manon