Identification of High-z Mergers through Resolved Mass Distributions

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Abstract

The presence of giant star-forming clumps in $z>1$ disk galaxies strongly limits our ability to visually distinguish between normal galaxies and interacting systems, and thus to characterize the properties and frequency of high redshift mergers. Exploiting deep HUDF/CANDELS observations for a sample of $1.5<z<3$ galaxies, in combination with state-of-the-art numerical simulations of high-z mergers and isolated disks, we have found that structural parameters measured on stellar mass maps can offer a robust proxy for the full kinematic information. The morphological classification based on these mass-derived structural indicators results in a high fidelity sample of close-to-coalescence mergers and cannot be reproduced by H-band measurements alone, which are affected by a higher contamination from clumpy disks. I will discuss how the merger rate derived with this novel selection technique compare with other merger rate estimates to $z\leq 3$. Furthermore, combining the morphological classification with UV and Herschel FIR data, I will present the properties of mass-selected mergers in terms of, e.g., their location on the main sequence of star-forming galaxies and the relative importance of bursts occurring in clump sized or centrally concentrated regions with respect to a more diffuse star formation.