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# Kinematic analysis of a large sample of interacting galaxies at cosmic noon

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Studies of resolved kinematics can provide key insights into the impact of mergers on galaxy dynamical stability and gas turbulence. Studies of low redshift and simulated galaxies have found that merging events can cause enhanced star formation, complex, non-disc-like rotation and increased turbulence. Work has also been done to study the impact of mergers at higher redshift ($z > 1$), however detailed kinematic analysis has primarily been restricted to a small number of deep observations of massive systems. One reason for this is the observational effect of beam smearing which impacts observed kinematics by smoothing over signatures of gas motions and artificially increasing the inferred disk-scale turbulence. Most methods used to account for beam smearing have been optimised for disk-like galaxies at higher redshift and therefore have not been designed for merging galaxies.

Aiming to overcome this, we have adapted the existing HI-line fitting code *ROHSA* with regularisation to create a spatially non-parametric kinematic analysis tool *ROHSA-SNAPD*, which allows beam smearing to be accounted for without assuming an intrinsic rotation model. This makes it now possible to study the kinematics of larger samples of disrupted and merging galaxies at $z > 1$.

We will introduce *ROHSA-SNAPD* and demonstrate its ability to recover the intrinsic kinematics of simulated galaxies, from pre- to post-merger states. We will then present results from applying *ROHSA-SNAPD* to integral field spectroscopy surveys at cosmic noon (z ˜ 1 –3), quantifying differences in star formation and velocity dispersion between interacting vs. isolated galaxies.

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