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Star-Formation Driven Outflows in Starbursting Disk Galaxies with the DUVET Survey

Outflowing gas driven by star formation plays an important part in regulating the subsequent star formation. However the details of this star formation feedback process are still unclear, particularly in starbursting environments. To better constrain feedback models, high resolution IFU observations are needed to spatially resolve star-formation driven outflow properties and link these to co-located galaxy properties. I will present results from our pilot observations for the DUVET (Deep near-UV observations of Entrained gas in Turbulent galaxies) Survey of starbursting galaxies using the IFU Keck Cosmic Web Imager (KCWI). DUVET aims to use hyper-sensitive observations of starbursting disks to probe the subgrid physics of feedback models. We have measured the spatial distribution of outflows in these galaxies at sub-kpc resolution. Our pilot observations reveal that (1) outflows are ubiquitous in these galaxies, with all lines-of-sight having gas flows. (2) We find that for our pilot galaxy, two-thirds of the outflowing ionised gas mass originates from a peak which covers 10% of the galaxy area, and this peak is not co-located with the galaxy centre. (3) Using our observed outflows, we are able to discriminate between widely used models of feedback in galaxies. DUVET's sub-kpc resolution observations allow us to rigorously test feedback prescriptions to help reveal how feedback regulates star formation. MAVIS will allow us to measure outflows with higher spectral resolution, in galaxies which are further away. This will increase the parameter space of galaxies we are able to observe and in which we can test feedback prescriptions.

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