

R19a **Spatially-resolved [CI] study in Arp 220**

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While carbon monoxide has been widely used as a molecular gas tracer, recent observations demonstrate that atomic carbon [CI] is a good indicator of total molecular gas mass. Most of these results are, however, global characteristics averaged across whole galaxies. We thus investigate the spatially-resolved relation between [CI] (1-0) and CO (1-0) emission at 100pc scales in Arp 220 using ALMA. Arp 220 is a well-studied late-stage merger in the nearby universe and commonly used as a template for high-z starburst galaxies. We conduct pixel-by-pixel comparison between [CI] and CO, and find that the [CI] luminosity correlates roughly with the CO. However, the correlation are different between the two progenitors of Arp 220. This could be caused by the differences in the opacity, abundance ratio, AGN feedback, and excitation condition. We also find that the diffuse gas traced by [CI] is associated with the outflows in the western nucleus. The molecular gas mass estimated using the standard [CI]-to-H₂ conversion factor is several times larger than the previous measurement using the CO observations. These results suggest that the relation between [CI] and CO varies at 100 pc scales in at least extreme environment.