

30 Years of Photodissociation Regions:

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HELLO-PDR: FIR Lines from local and z=1-3 Galaxies

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Are the physical conditions of star-forming interstellar medium (ISM) in high redshift galaxies different from those in low redshift galaxies? And are these differences responsible for the prolific star-formation at $z \approx 2$? We address these questions with a relatively unbiased survey of [CII] line emission of highly lensed galaxies at redshift $z=1-3$ from the Herschel Extreme Lensing Line Observations (HELLO) survey. Those lensed galaxies are bright in rest-frame UV and represent the star-forming galaxies with modest intrinsic luminosities ($L_{FIR} \approx 10^{10-11} L_{\odot}$). We compare their FIR lines ([CII], [OI], [CI]) with PDR models and derive gas densities n and UV fluxes G_0 at PDRs. We also explore model independent correlations amongst star formation, FIR continuum, FIR emission lines, and metallicities for this sample. We will also discuss comparison with a sample of local galaxies with a suite of [CII]158 μm , [OI]63 μm , [CI]370 μm , and multi-J CO emission lines detected.

REFERENCES