X04b **Spitzer and miniTAO View of Starburst and AGN Properties in LIRGs**

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Luminous infrared galaxies (LIRGs) are among the most luminous objects in the local universe and are thought to be powered by star formation, AGN, or a combination of both. They are largely enshrouded by thick layers of dust, which makes their study difficult at optical wavelengths. The Paα emission line at 1.8751 μm is the strongest hydrogen recombination line at infrared wavelengths, where dust extinction is less severe, and hence provides a good and direct tracer of the physical conditions in these systems. We have performed Paα narrowband imaging of a sample of LIRGs with mini TAO/ANIR, and compared the measured fluxes with mid-infrared tracers of star formation from Spitzer/IRS spectral data. We find a clear correlation between Paα and [NeII] emission at 12.81 μm, both tracers of star formation activity. On the other hand, [NeIII] at 15.5 μm does not correlate as well with Paα, specially in galaxies previously known to host AGNs. We compare our [NeIII]/[NeII] and [NeIII]/Paα line ratios with state-of-the-art radiative transfer models. We find that the starbursts in our sample are consistent with suprasolar metallicities and ages of 3-5 Myr. This is good agreement with results from optical diagnostics, although slightly older ages are inferred when optical lines are used. We argue that this difference can be caused by an actual age gradient in these galaxies, with the optically visible younger populations surrounding the younger, embedded populations only spotted at mid-infrared wavelengths.