

ALMA reveals large molecular gas reservoirs in recently-quenched galaxies

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Abstract. We still do not understand the physical mechanisms that are responsible for suppressing star formation in galaxies. Observations of post-starburst galaxies, whose spectra indicate that an intense period of star formation was followed by rapid quenching, are the ideal sample to probe the quenching process. We have conducted an ALMA survey of CO(2-1) in 13 of these recently- quenched galaxies at $z \sim 0.7$ – high enough redshift that these galaxies likely just concluded their primary epoch of star formation, but low enough redshift for follow-up observations to be feasible. Our observations reveal a stunning diversity of molecular gas properties: despite a uniform optical selection and low apparent SFRs, the detected galaxies span a factor of > 30 in CO luminosity and have inferred gas fractions ranging from $< 1\%$ to 20% . These observations indicate that quenching does not require the total removal or depletion of molecular gas. No current models of the quenching process can fully explain our results.
