X07a The molecular gas fraction of radio galaxies at $z \sim 5$

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High-redshift radio galaxies are among the most massive objects with active star formation activity, containing stellar masses of more than 10^{11} $M_{\odot}$, and exhibiting powerful radio jets in the early universe. Recent studies have found that the star formation rates of these objects are not as high as that of galaxies on the main sequence, suggesting that they are on the road to being quenched, due to the jet-induced positive feedback loop, which can deplete the gas reservoirs in the galaxies, leading to the negative feedback ultimately. It appears that the molecular gas fraction f_g, which is defined as $M_{H_2}/(M_* + M_{H_2})$, plays a key role in this scenario. And indeedly, previous CO observations show that f_g of radio galaxies at $2 < z < 4$ are <0.3, appearing to support this scenario. However, in the literature, the only CO observation of a radio galaxy, J0924−2201 at $z = 5.2$, shows a 10^{11} $M_{\odot}$ gas reservoir, corresponding to a high f_g of 0.5, which is similar to those on the main sequence at similar redshifts. In order to resolve this discrepancy, we conducted a CO(1–0) survey of seven most distant radio galaxies at $4.5 < z < 5.7$ with the Jansky Very Large Array. Our results show that except for J0924−2201, the molecular gas fractions of all radio galaxies at $z \sim 5$ are low (<0.3), supporting the scenario suggested by the previous study.