

The role of AGN in galaxy star formation: A case study of a radio galaxy at $z = 2.6$

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Abstract. Radio galaxies are ideal sites to scrutinize AGN feedback physics, as they are massive galaxies with jets that interact with the surrounding ISM. I will present a detailed analysis of the recent star formation history and conditions of a starbursting, massive radio galaxy at $z = 2.6$, PKS 0529-549. In the 8.5-hour VLT/X-Shooter spectrum, we detect unambiguous signatures of stellar photospheric absorption lines originating from OB-stars. Comparison with model spectra shows that more than one burst took place in its recent past: the most recent one at 4–7 Myr, and another aged ≥ 20 Myr. ALMA observations of the [C I] atomic carbon emission line indicates that it has a low molecular gas fraction ($\sim 13\%$) and short depletion time (~ 40 Myr). Most intriguing is the modest velocity dispersion (≤ 50 km/s) of these photospheric lines and the ALMA [C I] cold gas. We attribute its efficient star formation to compressive gas motions, induced by radio jets and/or interaction. Star formation works in concert with the AGN to remove any residual molecular gas and eventually leads to quenching.

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