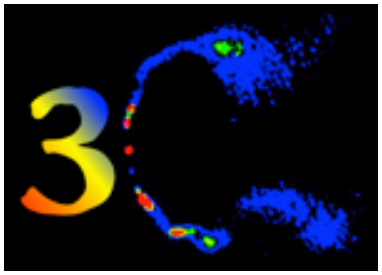

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The cool ISM reservoirs of powerful radio galaxies: a new window on fuelling and triggering

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Although radio AGN play a key role in galaxy evolution through their feedback effect, we still do not fully understand how they are triggered and fuelled. Possibilities range from major, gas-rich mergers on the one hand, to direct accretion of the hot gas from the X-ray haloes of the host galaxies and clusters on the other. The cool ISM reservoirs of the host galaxies provide key information on triggering events. Here I present the results of deep Herschel observations of the 2Jy and 3CR samples which allow the dust masses –a proxy for the cool ISM contents – to be quantified for the first time in substantial numbers of radio galaxies. The results demonstrate that the cool ISM masses of the majority of FRII radio galaxies are an order of magnitude lower than those of ULIRGs (representing gas-rich major mergers), but an order of magnitude higher than those of quiescent elliptical galaxies. Combined with existing information on detailed host galaxy morphologies, environments and star formations rates , this is consistent with triggering in galaxy mergers that are relatively minor in their gas contents in most cases. In contrast, the cool ISM masses of the majority of FRI radio galaxies are substantially lower than their FRII counterparts, consistent with fuelling via direct hot gas accretion or cold gas accretion at low rates from dynamically settled disks. I discuss these results in the context of recent ALMA observations that detect molecular gas disks in some nearby radio galaxies.

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