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Fueling the Brightest AGN: Characterizing Their Hot Gas Environments and the Accretion of Cooling Gas Onto Their SMBHs MICHAEL CALZADILLA, Univ of South Florida, CHRISTINE JONES, FELIPE ANDRADE-SANTOS, Harvard-Smithsonian Center for Astrophysics, DAN EVANS, National Science Foundation, WILLIAM FORMAN, ANDY GOULDING, REINOUT VAN WEEREN, Harvard-Smithsonian Center for Astrophysics — Over their lifetimes, Active Galactic Nuclei (AGN) switch from a radiatively bright QSO phase to a radiatively dim phase, where most of their energy output is in the form of mechanical feedback (Churazov et al. 2005). For Supermassive Black Holes (SMBHs) in the cores of galaxy clusters, it is clear cooling cluster gas is sufficient to fuel the observed AGN outbursts. However, the question of fueling an AGN outburst in a poorer environment is not so clear. We present Chandra observations for five powerful radio sources selected from the 3CRR catalog and not in rich clusters, and compare their X-ray characteristics to their radio morphologies. We find that hot gaseous atmospheres surrounding these AGN are common, and that cooling flows are present in three of our sources. Our results indicate that the cooling gas surrounding the AGN and stellar mass loss are sufficient to fuel these AGN, and thus that galaxy mergers are not required to supply the accreting gas. In addition, our measured Eddington ratios for the SMBHs suggest that the source 3C47 is in transition from radiatively bright to radiatively dim, which can provide further insight into how AGN evolve.

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