

## S27a Discovery of Dying Active Galactic Nucleus in Arp 187: Experience of Drastic Luminosity Decline within $10^4$ yr

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Arp 187 is one of the fading active galactic nuclei (AGNs), whose AGN activity is currently decreasing in luminosity. We investigate the observational signatures of AGN in Arp 187, which trace various physical scales from less than 0.1 pc to the nearly 10 kpc, to estimate the long-term luminosity change over  $10^4$  yr. The Very Large Array 5 GHz and 8 GHz images and the ALMA 133 GHz images reveal bimodal jet lobes with  $\sim 5$  kpc size and the absence of the central radio core. The 6dF optical spectrum shows that Arp 187 hosts a narrow line region with the estimated size of  $\sim 1$  kpc, and the line strengths give the AGN luminosity of  $L_{\text{bol}} = 1.5 \times 10^{46}$  erg s $^{-1}$ . On the other hand, the current AGN activity estimated from the AGN torus emission gives the upper bound of  $L_{\text{bol}} < 2.2 \times 10^{43}$  erg s $^{-1}$ . The absence of the radio core gives the more strict upper bound of the current AGN luminosity of  $L_{\text{bol}} < 8.0 \times 10^{40}$  erg s $^{-1}$ , suggesting that the central engine is already quenched. These multiwavelength signatures indicate that Arp 187 hosts a “dying” AGN: the central engine is already dead, but the large-scale AGN indicators are still observable as the remnant of the past AGN activity. The central engine has experienced the drastic luminosity decline by a factor of  $\sim 10^{3-5}$  fainter within  $\sim 10^4$  yr, which is roughly consistent with the viscous timescale of the inner part of the accretion disk within  $\sim 500$  yr.