Active galactic nucleus (AGN) pairs are an ideal laboratory to study the effects of galaxy merger in the standard paradigm of galaxy formation and evolution. The causal link between galaxy interactions and AGNs for low-luminosity AGNs is still elusive (Hopkins et al. 2014). Observations of AGN pairs help understand galaxy mergers in general and tidally-triggered AGN in particular. Based on large, homogeneous optical survey such as SDSS and the ability of the hard X-ray (2-10 keV) band, to provide the most unambiguous evidence for AGNs, we present an archival X-ray survey of optically selected AGN pairs with a statistically significant sample to confirm their dual AGN nature and study the elusive link between mergers and dual AGNs.

We adopt a sample of spectroscopically identified SDSS AGN pairs via emission-line ratios/widths from Liu et al. (2011) with 0.02 < z < 0.33, projected separations r_p < 100 kpc and line-of-sight velocity offsets Δv < 600 km/s. Among the 1286 AGN pairs candidates, 67 have available *Chandra* /ACIS observation, which is the largest sample of AGN pairs known. We also select control samples of 67 star-forming galaxy pairs with available *Chandra* observation which are spectroscopically dominated by star-forming activities in the optical from a sample of ~3000 SDSS galaxy pairs and 115 single AGNs in isolated galaxies matched in redshift and stellar mass with AGN pairs. We performed point source detection for these observations in 0.5-8(\*F), 0.5-2(\*S), 2-8(\*H) keV bands and measure the intrinsic X-ray luminosity for each nuclei.

With a matching radius of 2", among the 67 pairs, 18 AGN pairs have both nuclei detected in X-ray, 39 AGN pairs have one nucleus detected in X-ray and 10 AGN pairs have no X-ray detection. A total of 75 nuclei have X-ray counterparts, giving a X-ray incidence rate of 56.0±6.5% (75/134). In a control sample of galaxy pairs, only 18 pairs have at lease one of the nuclei detected in X-ray with a X-ray incidence rate of 17.2±3.4% (23/134), which is significantly lower than AGN pairs, indicating only a small fraction of X-ray emission comes from star-forming related processes. In a control sample of single AGNs, 66 out of 115 nuclei are detected in X-ray with a X-ray incidence rate of 57.4±7.1% (66/115). The comparable incidence rate with AGN pairs suggests that mergers may not have too much additional contribution to AGN activities.

The X-ray luminosity increases with decreasing projected separation r_p for AGN pairs with r_p > 10 kpc, suggesting an enhancement of central BH activity. While it decreases when r_p < 10 kpc, which is not consistent with [O III] luminosity trend. That trend may be caused by obscuring, merger-induced gas inflows or gas depletion in the central region of AGNs.

**Reference**


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