



# The relation of optical/UV and X-ray emission in low-luminosity active galactic nuclei

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(Submitted on 15 Jul 2011)

We study the relation of optical/UV and X-ray emission in the low luminosity active galactic nuclei (LLAGNs), using a sample of 49 sources including 28 local Seyfert galaxies and 21 low-ionization nuclear emission-line regions (LINERs) with the optical/UV spectral luminosity at the wavelength  $\lambda=2500\text{\AA}$ ,  $23.0 \leq \log L_{\nu}(2500\text{\AA}) (\text{erg/s/Hz}) \leq 27.7$ , and the X-ray spectral luminosity at 2 keV,  $20.5 \leq \log L_{\nu}(2 \text{ keV}) \leq 25.3$ . The strong correlations are found between the X-ray luminosity and the optical/UV to X-ray index,  $\alpha_{\text{ox}}$ , with the optical/UV luminosity, with the slopes very similar to the findings for the luminous AGNs in the previous works. The correlation between  $\alpha_{\text{ox}}$  and  $L_{\nu}(2 \text{ keV})$  is very weak as that found for the luminous AGNs in the majority of previous similar works. We also study the relation between  $\alpha_{\text{ox}}$  and the Eddington ratio  $L_{\text{bol}}/L_{\text{Edd}}$  for our sample and find a significant anti-correlation for the sources with  $L_{\text{bol}}/L_{\text{Edd}} \lesssim 10^{-3}$ , which is opposite to the correlation between the two variables for the luminous AGNs. Using the advection dominated accretion flow (ADAF) model, we roughly reproduce this anti-correlation for the two variables for the LLAGNs. This result strongly supports the ADAF as a candidate accretion mode in LLAGNs.

Comments: 21 pages, 1 table, 5 figures. Accepted for publication in ApJ

Subjects: **High Energy Astrophysical Phenomena (astro-ph.HE)**

Cite as: **arXiv:1107.2979 [astro-ph.HE]**

(or **arXiv:1107.2979v1 [astro-ph.HE]** for this version)

## Submission history

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[v1] Fri, 15 Jul 2011 01:27:13 GMT (27kb)

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