

OPTICAL PROPERTIES OF SOFT X-RAY SELECTED BRIGHT NEW ROSAT AGN

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Abstract. Optical identification of bright sources from the ROSAT All-Sky Survey has led to the discovery of 40 new Seyfert galaxies with very soft X-ray spectra. Nearly half of these are narrow-line Seyfert 1 ($H\beta$ -FWHM < 2000 km/s) with strong optical FeII emission, suggesting the presence of an unseen hard X-ray component. The remainder are Sy1.5 and a few broad-line Sy1.

Key words: Soft X-ray, narrow-line Seyfert 1

Our Sample results an from optical identification program of bright soft X-ray sources (PSPC countrate > 0.5 cts/s; galactic latitude $|b| > 20^\circ$, HR1 < 0.0) from the ROSAT All-Sky Survey. Of a total of 314 sources, 122 were not previously known. There are 60 known and 48 new AGN in this soft X-ray selected sample. For these we started a program to obtain better X-ray spectra via pointed ROSAT PSPC observations and to acquire optical spectra of higher resolution ($\sim 5\text{\AA}/\text{mm}$). From a quick classification of the identification spectra we found that most of our soft X-ray selected AGN show rather "narrow" broad permitted lines and qualify as "Narrow-Line Seyfert 1" (nLS1) type AGN ($\sim 50\%$ nLS1, $\sim 30\%$ S1.5). For comparison the known AGN with hard X-ray spectra (HR1 > 0.0) are mostly Seyfert 1 type galaxies with decidedly broad permitted lines.

Our X-ray observations suggest the absence of intrinsic absorption within the individual AGN. From our optical spectra we find, that the AGN with relatively narrow permitted lines (nLS1) always show very strong FeII emission and weak emission from the NLR. On the contrary, the Seyfert 1.5 galaxies show weak or absent FeII emission but strong lines from the NLR. The FeII emission of the Seyfert 1 with broad lines is visible but not as strong as the FeII emission of the nLS1s. This leads to the following conclusions:

- 1) The continuum "seen" by the NLR gas is weaker in nLS1 than in Sy1.5 and Sy1.
- 2) The continuum "seen" by the nl-BLR is harder than the very soft X-ray spectra detected by the PSPC (FeII requires deeply penetrating hard ionizing photons).
- 3) The BLR of nLS1 is probably at a larger distance to the central object than the BLR of a typical Seyfert 1 galaxy. Alternatively broader components are intrinsically present but obscured. Nevertheless, soft X-rays are able to escape. If the latter model applies, we should expect polarized light from the hidden broad wings. So far, no such study has been performed for nLS1.