

Poster Contributions: X-Rays and Higher Energies

X-RAY LOUD AGN WITH OPTICAL STARBURST OR SEYFERT 2 PROPERTIES

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Abstract. The Hamburg Sternwarte is conducting a large area identification program of ROSAT All Sky Survey (RASS) sources on objective prism plates taken with the Schmidt telescopes on Calar Alto and La Silla (Bade et al., 1992, MPE-Report 235, 377). With follow-up observations redshifts and a more detailed classification of the emission line spectrum of 284 AGN were derived until August 1992.

14 objects show not the typical spectra of QSO's and Seyfert 1 galaxies with a BLR. With our spectral resolution of 9 – 12 Å no difference in line width between the Balmer and the forbidden lines could be detected. From the emission line ratios these galaxies have to be classified as starburst or Seyfert 2 galaxies, but in some cases various line ratios give ambiguous results. Two objects (RX J05047–2541 and RX J10119–1635) have strong Balmer absorption lines and Balmer continuum emission down to the Balmer discontinuity indicating the classification as a post starburst galaxy.

In contrast to already known starburst or Seyfert 2 galaxies all objects (except RX J11178+2918) are X-ray loud with $L_X > 10^{43} \text{ erg s}^{-1}$ ($H_0 = 50 \text{ km s}^{-1} \text{ Mpc}^{-1}$, $q_0 = 0$), 5 objects showing even soft X-ray emission in excess of $\log(L_X) = 44$. The analysis of the RASS data of 5 X-ray brighter objects yielded a good description of the photon spectra with a steep power law (Γ around 2.5) modified only by low energy absorption from our own galaxy.

These results resemble the soft X-ray properties of Seyfert 1 galaxies proposing an AGN in these galaxies. This assumption is supported by the short variability time scale of one object (RX J17260+7431, Schaeidt, 1993, Ph. D. thesis) that can only be understood if the X-ray emission comes from a compact object.

In combination we have a contradictory classification for the two wavelength regions. Similar emission line galaxies have also been found by identifying serendipitous EINSTEIN sources (Stocke et al., 1991, ApJS 76, 813) but there the authors suspected a broad line base which could only be tested with higher quality spectra. A broad line base cannot be ruled out for all of our emission line spectra. Therefore we plan spectroscopy with higher resolution for these objects. Perhaps we are dealing with optically hidden AGN. Support for this assumption is given by the fact that two of the most X-ray luminous sources of this sample are also IRAS sources suggesting large amounts of absorbing dust around the possible AGN. Boller et al., 1993, have found 10 of these objects within the IRAS point source catalogue.