

## AGN Search From Multicolor Photometric Observations of Faint ROSAT X-ray Sources in a One Square Degree Field

Suijian Xue, Xu Zhou and Haotong Zhang

*National Astronomical Observatories, Chinese Academy of Sciences.  
A20 Datun Rd., Chaoyang District, Beijing 100012*

**Abstract.** We report that a volume-limited, X-ray selected AGN sample, including 49 QSO like and starburst galaxies (SBs) at the 0.1-2.4 keV flux level of  $\gtrsim 5.3 \times 10^{-14}$  ergs cm $^{-2}$ s $^{-1}$  was formed with photometric redshifts.

### 1. Introduction

75 cataloged X-ray sources from a medium deep ROSAT survey (Molthagen et al. 1997) were found in a 1 sq.deg. field, centered at 09:56:24.46, +47:35:08.4 (J2000). The field has been heavily CCD imaged with 15 intermediate-band filters covering the wavelength range 3360-9745 Å. Full identification of the sample sources will not only extend the results of the ROSAT All-Sky Survey to a fainter limit, but also test recent results of Chandra Deep Surveys in a different larger sky field.

### 2. Results

In total we have made 67 optical identifications from 75 X-ray sources with several extragalactic populations. The result is summarized in Table 1., and the procedure of identification illustrated in Figure 1.

Table 1. Identification Summary

Population	Numbers	Fraction (%)
All	75	100.0
AGNs	25	33.3
SBs	24	32.0
Galaxies	9	12.0
Stars	9	12.0
Unknown	8	10.7

### References

Molthagen, K., Wendker H.J., & Briel U.G. 1997, A&AS, 126, 509

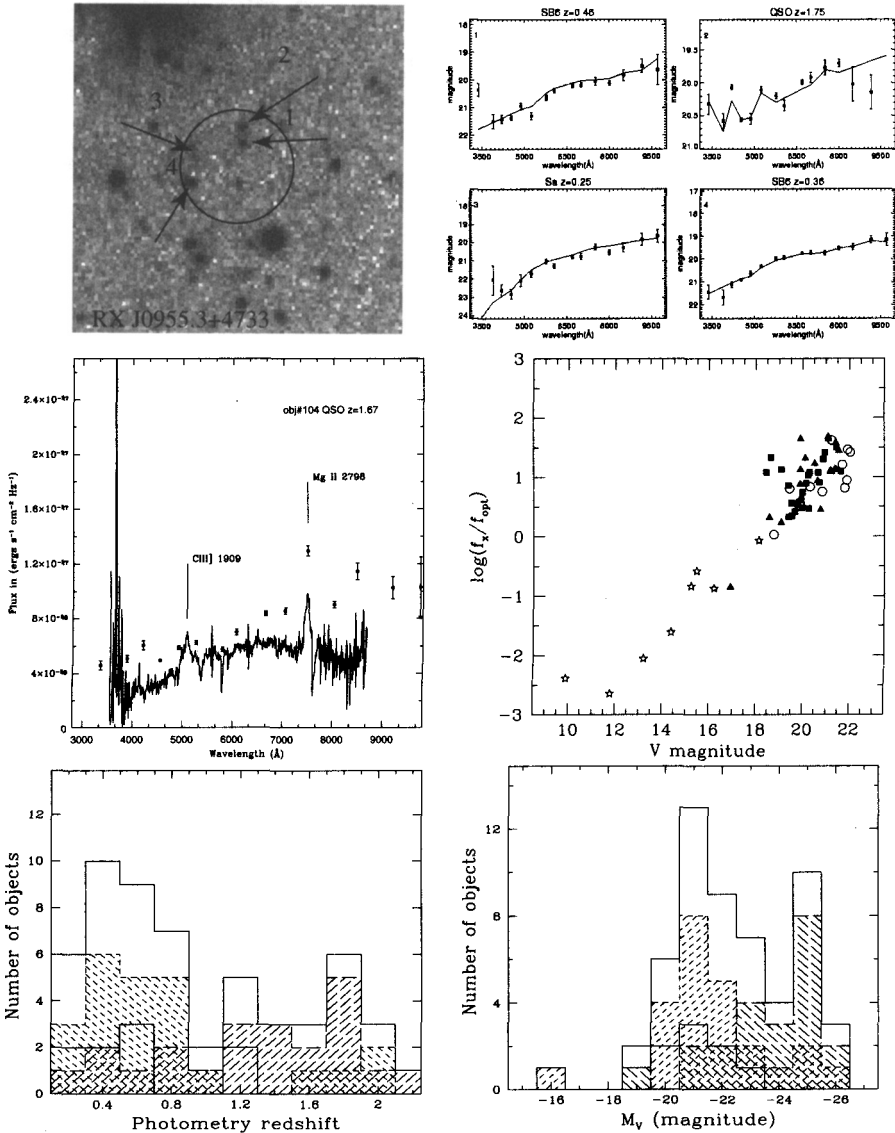


Figure 1. The procedure of source identification shown as an example in *top left*: 4 optical associations were found within the error circle of RX J0955.3+4733 and their SEDs were measured in 15 colors; *top right*: 4 sources were classified based on SED fitting with AGN, normal galaxy and star SED templates; *middle left*: Object 2 was identified with RX J0955.3+4733, and the follow-up spectrum confirms it is a new QSO at  $z = 1.67$ . *Middle right*: X-ray to optical flux ratio vs. visual magnitude of the sample. AGNs: solid squares; SBs: solid triangles; normal galaxies: circles; stars: stars. *Bottom left & right*: the redshift and visual luminosity distributions of identified extragalactic populations. Thick Solid: the total; long dashed: QSOs; short dashed: SBs; thin solid: normal galaxies.