

Optical Identification of the ROSAT All-Sky Survey Sources in Two $2^\circ \times 2^\circ$ Fields¹

Y. Zhao,² J. Zhong, J. Wei, J. Hu, and Q. Li

*Beijing Astronomical Observatory, Chinese Academy of Sciences,
Beijing 100080, China*

Abstract. We used the CCD camera and spectrograph of the 2.16-m telescope of Beijing Astronomical Observatory to identify the *ROSAT* All-Sky survey sources in two $2^\circ \times 2^\circ$ fields. Of a total of 16 X-ray sources, we identified 13 of them as follows: two QSOs, two Seyfert galaxies, two active galaxies, two clusters of galaxies, and five late-type stars. Three X-ray sources remained unidentified.

1. Introduction

During the *ROSAT* All-Sky Survey (RASS), about 80,000 X-ray sources were detected (Voges et al. 1996). Almost all sources need to be identified optically. At the Beijing Astronomical Observatory (BAO), we have been carrying out a program of optical identification for northern RASS X-ray sources at high Galactic latitudes in collaboration with the Max-Planck-Institut für Extraterrestrische Physik (MPE) and BAO. Here we present preliminary results of the optical identification of RASS X-ray sources in two $2^\circ \times 2^\circ$ fields. There are total 16 RASS X-ray sources in these selected fields. All of these sources are detected by *ROSAT* above the 3σ level and are thus likely to be real.

2. Observations

The observations are carried out at the BAO 2.16-m telescope with a spectrograph and a CCD camera. We first obtained identification charts from the POSS plates and chose the optical candidates in the error boxes of the RASS sources. We obtained multicolor photometry of all optical candidates for each RASS source and obtained spectra of those candidates with $V \leq 19$ mag. Finally the optical counterpart of each source was confirmed. The results are listed in Table.

Of the total of 16 RASS sources, we identified 13 RASS sources as following: two QSOs, two Seyfert galaxies, two active galaxies, two clusters of galaxies, and five late-type stars. Three RASS sources remained unidentified.

¹This work is supported by the National Natural Science Foundation of China.

²Visiting Astronomer in Max-Planck-Institut für Extraterrestrische Physik, Germany.

Table 1. Observations of ROSAT PSPC Sources

Object	V	$B-V$	$V-R$	$V-I$	z	Classification
RX1043+4207	...	...	...	...	...	late-type star
RX1044+4213	14.33	0.88	0.52	0.92	...	late-type star
RX1046+4125	18.75	0.13	0.01	0.54	0.45	QSO
RX1046+4139	7.8	...	...	...	...	late-type star
RX1046+4239	16.99	1.24	0.39	0.72	0.08	active galaxy
RX1051+4127	14.89	1.19	0.80	3.30	...	dM star
RX1052+4044	...	...	...	...	...	unidentified
RX1057+4316	17.91	0.07	0.40	0.60	0.32	QSO
RX1058+4244	19.07	0.80	0.31	1.56	...	unidentified
RX1100+4417	18.24	0.96	0.32	1.48	0.22	active galaxy
RX1101+4251	20.37	0.73	0.78	1.89	...	unidentified
RX1102+4350	16.65	0.95	0.58	0.98	0.05	Seyfert galaxy
RX1102+4347	14.56	2.00	1.54	3.60	...	dMe star
RX1105+4412	...	...	...	...	...	cluster of galaxies
RX1105+4414	...	...	...	...	...	cluster of galaxies
RX1106+4242	...	...	...	...	0.23	Seyfert galaxy

3. Discussion

The 13 identified RASS sources could be divided into following classes: stars (39%), AGN and active galaxies (46%), and clusters (15%). These percentages are consistent with results of other programs for optical identification of RASS sources (Voges et al. 1996).

References

Voges, W., et al. 1996, Röntgenstrahlung from the Universe, MPE Report 263, p. 637.