| Name                  | Countrate | T | $L_{Bol}$  | Type | Period |
|----------------------|-----------|---|------------|------|--------|
|                      | (cts/s)   | (keV) | (erg/s)    |      | (days) |
| **Galactic Sources** |           |     |            |      |        |
| RX J0019.8+2156      | 2.0       | 25–37 (wd) | (3 – 9) · 10^{37} | CBSS | 1.0 – 1.35 |
| RX J0925.7-4758      | 1.0       | 70–75 (wd) | (3 – 7) · 10^{37} | CBSS | 3.55 – 4.03 |
| GQ Mus               | 0.1       | 25–35 (bb) | (1 – 2) · 10^{38} | N    | 0.0588  |
| I E 1339.8+2837      | 0.01 – 1.1 | 20–45 (bb) | 1.2 · 10^{34} – 1.2 · 10^{36} |      |        |
| AG Dra               | 0.01 – 1.0 | 10–15 (bb) | 9.5 · 10^{36} | Sy   | 549 – 554 |
| U Sco                |           | 74–76 (wd) | (8 – 60) · 10^{36} | RN   | 1.2306  |
| RX Tel               | 0.18      | 12 (wd)     | 1.3 · 10^{37} | Sy   |        |
| V Sge                | 0.001 – 0.02 | < 80 (bb) | (1 – 10) · 10^{36} | CV   | 0.514195 |
| V1974 Cyg            | 0.03 – 76 | 30–51 (wd) | 2 · 10^{38} | N    | 0.0812  |
| V751 Cyg             | 0.039 – 0.11 | 15 (bb)    | 6.5 · 10^{36} | VY Sc|        |
| **Large Magellanic Cloud** |       |     |            |      |        |
| RX J0439.8-6809      | 1.35      | 20–25 (wd) | (10 – 14) · 10^{37} | CBSS | 0.1404  |
| RX J0513.9-6951      | < 0.06 – 0.2 | 30–40 (bb) | (0.1 – 6) · 10^{37} | CBSS | 0.76278 |
| Nova LMC 1995        | 0.061     | 20–40 (wd) | 1.5 · 10^{38} | N    |        |
| RX J0527.8-6954      | 0.004 – 0.25 | 18–45 (bb) | (1 – 10) · 10^{37} | CBSS | 0.3926  |
| RX J0537.7-7034      | < 0.002 – 0.02 | 18–70 (bb) | (0.6 – 2) · 10^{37} | CBSS | 0.125   |
| CAL 83               | < 0.035 – 0.98 | 39–60 (wd) | < 2 · 10^{37} | CBSS | 1.04    |
| CAL 87               | 0.09      | 63–84 (wd) | (6 – 20) · 10^{37} | CBSS | 0.44267 |
| RX J0550.0-7151      | < 0.02 – 0.9 | 25–40 (bb) |            |      |        |
| **Small Magellanic Cloud** |       |     |            |      |        |
| 1E 0035.4-7230       | 0.33      | 40–50 (wd) | (0.8 – 2) · 10^{37} | CBSS | 0.1719  |
| RX J0048.4-7332      | 0.19 – 0.33 | 25–45 (wd) | (1 – 8) · 10^{38} | Sy   |        |
| 1E 0056.8-7154       | 0.29      | 30–40 (wd) | 2 · 10^{37} | PN   |        |
| RX J0058.6-7146      | < 0.001 – 0.7 | 15–70 (bb) | 2 · 10^{36} |      |        |
| **Andromeda Galaxy (M31)** |       |     |            |      |        |
| RX J0037.4+4014      | 0.8 · 10^{-3} | 26–37 (wd) |            |      |        |
| RX J0037.4+4015      | 0.3 · 10^{-3} | < 34 (wd) |            |      |        |
| RX J0038.6+4020      | 1.7 · 10^{-3} | 28–38 (wd) |            |      |        |
| RX J0039.4+4050      | 2.9 · 10^{-3} | 49 (wd) |            |      |        |
| RX J0039.6+4054      | 0.4 · 10^{-3} | < 36 (wd) |            |      |        |
| RX J0039.7+4030      | 2.0 · 10^{-3} | < 38 (wd) |            |      |        |
| RX J0040.0+4100      | 2.0 · 10^{-3} | 52–58 (wd) |            |      |        |
| RX J0040.1+4021      | 0.5 · 10^{-3} | > 51 (wd) |            |      |        |
| Name                | Value    | Uncertainty | Distance | Notes |
|---------------------|----------|-------------|----------|-------|
| RX J0040.4+4004     | 0.8 \cdot 10^{-3} | 28 – 36 (wd) |          |       |
| RX J0040.7+4015     | 1.3 \cdot 10^{-3} | 28 – 38 (wd) |          |       |
| RX J0041.5+4040     | 0.3 \cdot 10^{-3} | 31 – 34 (wd) |          |       |
| RX J0041.8+4015     | 3.2 \cdot 10^{-3} | 45 (wd) |          |       |
| RX J0041.8+4059     | 0.5 \cdot 10^{-3} | 29 – 35 (wd) |          |       |
| RX J0042.4+4044     | 1.7 \cdot 10^{-3} | 28 – 38 (wd) |          |       |
| RX J0042.4+4048     | 0.6 \cdot 10^{-3} | 39 – 62 (wd) |          |       |
| RX J0042.6+4043     | 1.6 \cdot 10^{-3} | > 55 (wd) |          |       |
| RX J0042.6+4159     | 1.8 \cdot 10^{-3} | > 63 (wd) |          |       |
| RX J0042.8+4115     | 40.1 \cdot 10^{-3} | 65 (wd) |          |       |
| RX J0043.3+4120     | 6.7 \cdot 10^{-3} | 59 – 62 (wd) |          |       |
| RX J0043.5+4207     | 2.2 \cdot 10^{-3} | 32 – 39 (wd) |          |       |
| RX J0043.7+4127     | 1.2 \cdot 10^{-3} | 46 – 60 (wd) |          |       |
| RX J0043.9+4151     | 0.9 \cdot 10^{-3} | 43 (wd) |          |       |
| RX J0044.0+4118     | 2.5 \cdot 10^{-3} | 32 – 39 (wd) |          |       |
| RX J0044.2+4026     | 7 \cdot 10^{-5} | > 69 (wd) |          |       |
| RX J0044.4+4200     | 1.2 \cdot 10^{-3} | 47 – 56 (wd) |          |       |
| RX J0045.4+4154     | < 10^{-5} – 0.03 | 72 – 73 (wd) | (5 – 10) \cdot 10^{37} |       |
| RX J0045.4+4219     | 1.2 \cdot 10^{-3} | 51 – 59 (wd) |          |       |
| RX J0045.5+4206     | 3.1 \cdot 10^{-3} | 35 – 40 (wd) | 7 \cdot 10^{37} |       |
| RX J0046.1+4136     | 0.3 \cdot 10^{-3} | > 51 (wd) |          |       |
| RX J0046.2+4138     | 1.1 \cdot 10^{-3} | 29 – 38 (wd) |          |       |
| RX J0046.2+4144     | 2.1 \cdot 10^{-3} | 27 – 38 (wd) |          |       |
| RX J0046.3+4238     | 3.1 \cdot 10^{-3} | 53 – 62 (wd) |          |       |
| RX J0047.6+4132     | 0.3 \cdot 10^{-3} | > 60 (wd) |          |       |
| RX J0047.6+4205     | 0.3 \cdot 10^{-3} | < 34 (wd) |          |       |

**NGC 55**

| Name    | Value    | Uncertainty | Notes     |
|---------|----------|-------------|-----------|
| RX J0016.0-3914 | 0.0045 | 23 ± 30 (bb) | (9) \cdot 10^{37} |
Catalog of supersoft X-ray sources

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Abstract

This catalog comprises an up-to-date (December 1999) list of luminous (>10^{36} erg/s), binary supersoft X-ray sources. This electronic version (including the accompanying Web-pages) supersedes the printed version of Greiner (1996).

Key words: supersoft X-ray sources – binaries – hydrogen burning
95.80.+p Catalogues, atlases, databases; 97.80.Gm Cataclysmic binaries; 97.80.Jp X-ray binaries; 98.62.Mw Infall, accretion, and accretion disks;

1 Introduction

After the discovery of supersoft X-ray sources with Einstein Observatory observations, the ROSAT satellite with its PSPC detector has discovered about four dozen new supersoft sources and has thus established luminous supersoft X-ray sources (SSS) as a new class of objects. Though many different classes of objects emit supersoft X-ray radiation (defined here as emission dominantly below 0.5 keV which corresponds to effective temperatures of the emitting objects of <50 eV), we consider here sources with bolometric luminosities in the range 10^{36} – 10^{38} erg/s. Optical observations have revealed the binary nature of several of these objects. A white dwarf (WD) model, the so-called close-binary supersoft source (CBSS) model, is perhaps the most promising (van den Heuvel et al. 1992; Rappaport, DiStefano, Smith 1994, Kahabka & van den Heuvel 1997). It invokes steady-nuclear burning on the surface of an accreting WD as the generator of these systems’ prodigious flux. Indeed, SSS temperatures and luminosities as derived from the X-ray data suggest an effective radius comparable to that of WDs. Eight SSSs have orbital periods between approximately 4 hrs and 3.5 days. These are the candidates for the CBSS model. Mass transfer rates derived from the CBSS model are in the right range for steady nuclear burning of the accreted matter.
This catalog comprises an up-to-date (December 1999) list of luminous (> 10^{36} \text{ erg/s}) supersoft X-ray sources. We include in this catalog accreting binary sources of high luminosity which are thought to be in a state of (steady or recurrent) hydrogen burning. Since CAL 83, the prototype, is known to have an ionisation nebula (Pakull and Motch 1989), and further supersoft binaries are expected to also have one, we include also sources associated with very luminous planetary nebulae. Not included are the low-luminosity objects like single (i.e. non-interacting) white dwarfs and magnetic cataclysmic variables, and PG 1159 stars which reach similar luminosities but form a rather distinct class (e.g. Dreizler et al. 1995). Excluded are also supersoft active galactic nuclei which reach luminosities up to 10^{45} \text{ erg/s}, and the recently found examples of large-amplitude outbursts of supersoft X-ray emission which have been interpreted as tidal disruption events (e.g. Komossa & Greiner 1999). Since most of the new sources are X-ray discoveries, the final inclusion in the group of luminous close binary supersoft sources has to await the optical identification. Only then a distinction is possible among the various and quite different types of objects which show a supersoft X-ray spectrum (i.e. emission only below 0.5 \text{ keV}) but have different luminosities. Due to this fact of necessary follow-up optical observations, it can well happen that a source is included in an early version of the catalog but later turns out to be of a different type. An example is RX J0122.9–7521 which has long been thought to be a SMC supersoft source (Kahabka et al. 1994), but has been identified as a galactic PG 1159 star (Cowley et al. 1995, Werner et al. 1996), and therefore has been removed from this catalog.

2 Einstein, ROSAT and beyond...

The two most famous supersoft X-ray sources, CAL 83 and CAL 87 (Long et al. 1981), have been discovered with Einstein satellite observations. ROSAT observations established these sources as a distinct class in the early nineties, and the majority of the X-ray measurements have been performed with the ROSAT position sensitive proportional counter (PSPC) during 1990-1995, yielding a source position accuracy of about 25''. The PSPC with its spectral resolution of about 50% below 1 keV has been used in nearly all cases to discover the supersoft X-ray spectrum. During the years 1995-1999 the high-resolution imager (HRI) on ROSAT has been used to improve the coordinates of the newly detected sources down to typically 10'' and to monitor the long-term X-ray intensity. At these soft energies, the HRI count rates are typically a factor of 7.5–8 smaller than those of the PSPC (David et al. 1994, Greiner et al. 1996a). Since 1997, some of the brightest supersoft X-ray sources have been also observed with the low-energy concentrator spectrometer (LECS) onboard BeppoSAX. As of the time of this writing, there is only one SSS (U
Sco) which has not been observed by ROSAT, and consequently has no entry in the "ROSAT count rate" field.

With the Chandra and XMM missions starting regular observations, a wealth of new information on the X-ray properties of these supersoft sources can be expected, as well as new discoveries. In particular, the better energy resolution, throughput and location accuracy will improve our understanding. Therefore, this will most probably not be the last version of a SSS catalog.

3 Organisation of the catalog

The catalog is organised as follows: The catalog consist of four major parts: a master table, a bibliography, a query form, and the individual source pages. While the master table should provide some basic numbers, the individual source pages are thought to provide some more parameters as well as the links to the details behind these numbers like graphs and references.

- The master table gives an overview of all sources with their main characteristics, including ROSAT PSPC count rate, temperature, luminosity, type of binary and orbital period (if known).
- The bibliography contains relevant papers, sorted chronologically, and alphabetically within each year. It is supposed to be complete for the CBSS type sources, while for the other sources only those papers where included which provided input for the source parameters. An attempt has been made to provide a direct link to all papers which are electronically available (either directly from the journal pages or through ADS).
- The query form allows you to interactively create new tables for a subsample of sources and arbitrary parameters of your choice.
- The individual source tables provide information on a variety of source parameters, including figures (e.g. of spectra or light curves) and links to references. All source related numbers appear in red, and links in blue. Blue "numbers" correspond to the reference with the same number at the bottom of the page, and the underlying link points to the bibliography. Blue "words" contain links to figures which will open in a separate window (this separate window is used for all subsequent links too). The data are organized as follows:
  - The top part contains the name, coordinates (equinox 2000.0), the type of binary, the ROSAT count rate, a link to the discovery paper and a finding chart. The "Discovery" reference refers to the first paper which realised the luminous supersoft X-ray emission. Some of the sources have been known already for decades at this time, so there may be many references listed which appeared earlier than the "Discovery" reference. If a source is not optically identified, the R.A./Dec. numbers are the X-ray positions
with uncertainties as given in the above section of ROSAT related issues. Otherwise, the optical positions are given with typical uncertainties of 1". All coordinates are equinox 2000.0.

- The next (table) block contains general data of the system like distance, orbital period, brightness and color. The radial velocity amplitude is given for the HeII 4686 A line; note that it is common in CBSS that other emission lines as well as the Balmer absorption lines have quite different velocity amplitudes! The right column provides links to spectra in all wavelength ranges. For sources supposed to belong to an external galaxy, the galaxy name is given instead of the presently known distance. This is motivated by recent changes in the distance determination of the LMC. This in turn also affects the distance to M31 because the distance ratio of LMC and M31 is more accurately known than the corresponding absolute distances. Note that different authors may have used different distances for sources within the same galaxy, so that a simple comparison of the luminosities may be misleading! The galactic absorbing column \( \text{NH}_{gal} \) is taken from Dickey and Lockman 1990) and is given for comparison with the values derived from the X-ray fits.

- The next table block provides details on the X-ray spectral fitting. Here, a distinction is made between the use of a simple blackbody model versus more sophisticated white dwarf atmosphere models. While in general the blackbody overestimates the bolometric luminosity by a large factor (10–100), it should be noted that there are a variety of white dwarf atmosphere models on the market which have been used by different authors for different sources. Thus, special care is needed when comparing these parameters among different sources!

- The next table block gives hints on the variability of the source, separated into orbital modulation and non-orbital, intrinsic variability. The comments are short, so please use the links to check out the original papers to get a complete picture about the source’s behaviour.

- The final table block applies to only a few sources, for which optical measurements of an ionisation nebula or bipolar outflow or radio measurements have been conducted. The radio fluxes (limits) are given for 3.5 cm.

- Finally, the references are given in full with all co-authors, and stating the important pieces of new information (this reflects purely my subjective view, and you should contact me if something is missing or wrong.) The references are sorted in time of appearance, so that the numbers in the data blocks will not change when the catalog is updated.
4 Warning and Request

I would like to emphasise that every user of this catalog should spare no pains to consult the original papers in order to avoid propagation of my errors in the literature. I will keep this catalog updated, and would appreciate (1) being informed on any errors/omissions users might discover and (2) getting reprints of papers on supersoft sources to be included in the next version.

5 Availability

The full Web-based catalog is available at URL http://www.aip.de/People/JGreiner/sss/ssscat.html.

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Table 1
Summary of all known supersoft X-ray sources with luminosities above $10^{36}$ erg/s excluding PG 1159-type stars and supersoft AGN. Given are for each source the name (column 1), the ROSAT PSPC count rate (2) the best fit X-ray temperature with bb indicating blackbody and wd white dwarf atmosphere models (3), the bolometric luminosity (4), the type of system (5), and the binary period (6).

| Name                  | Countrate(1) | T(2)   | $L_{\text{bol}}$ | Type(3) | Period |
|-----------------------|--------------|--------|------------------|---------|--------|
|                       | (cts/s)      | (eV)   | (erg/s)          |         | (days) |
| **Galactic Sources**  |              |        |                  |         |        |
| RX J0019.9+2156       | 2.0          | 25–37 (wd) | $(3 - 9) \cdot 10^{37}$ | CBSS | 1.0 – 1.35 |
| RX J0925.7-4758       | 1.0          | 70–75 (wd) | $(3 - 7) \cdot 10^{35}$ | CBSS | 3.55 – 4.03 |
| GQ Mus                | 0.1          | 25–35 (bb) | $(1 - 2) \cdot 10^{38}$ | N    | 0.0588 |
| 1E 1339.8+2837        | 0.01 – 1.1   | 20–45 (bb) | $1.2 \cdot 10^{34} - 1.2 \cdot 10^{36}$ |       |        |
| AG Dra                | 0.01 – 1.0   | 10–15 (bb) | $9.5 \cdot 10^{36}$ | Sy    | 549 – 554 |
| U Scorpii             |              | 74–76 (wd) | $(8 - 60) \cdot 10^{36}$ | RN   | 1.2306 |
| RR Tel                | 0.18         | 12 (wd)   | $1.3 \cdot 10^{37}$ | Sy    |        |
| V Sge                 | 0.001 – 0.02 | < 80(bb)  | $(1 - 10) \cdot 10^{37}$ | CV   | 0.514195 |
| V1974 Cyg             | 0.03 – 76    | 30–51 (wd) | $2 \cdot 10^{38}$ | N    | 0.0812 |
| V751 Cyg              | 0.039 – 0.11 | 15 (bb)   | $6.5 \cdot 10^{36}$ | VY Scl |        |
| **Large Magellanic Cloud** |            |        |                  |         |        |
| RX J0439.8-6809       | 1.35         | 20–25 (wd) | $(10 - 14) \cdot 10^{37}$ | CBSS | 0.1404 |
| RX J0513.9-6591       | < 0.06 – 0.2 | 30–40 (bb) | $(0.1 - 6) \cdot 10^{37}$ | CBSS | 0.76278 |
| Nova LMC 1995         | 0.061        | 20–40 (wd) | $1.5 \cdot 10^{38}$ | N    |        |
| RX J0527.8-6954       | 0.004 – 0.25 | 18–45 (bb) | $(1 - 10) \cdot 10^{37}$ | CBSS | 0.3926 |
| RX J0537.7-7034       | < 0.002 – 0.02 | 18–70 (bb) | $(0.6 - 2) \cdot 10^{37}$ | CBSS | 0.125 |
| CAL 83                | < 0.035 – 0.98 | 39–60 (wd) | < $2 \cdot 10^{37}$ | CBSS | 1.04 |
| CAL 87                | 0.09         | 63–84 (wd) | $(6 - 20) \cdot 10^{37}$ | CBSS | 0.44267 |
| RX J0550-7151         | < 0.02 – 0.9 | 25–40 (bb) |                  |       |        |
| **Small Magellanic Cloud** |           |        |                  |         |        |
| 1E 0035.4-7230        | 0.33         | 40–50 (wd) | $(0.8 - 2) \cdot 10^{37}$ | CBSS | 0.1719 |
| RX J0048.4-7332       | 0.19 – 0.33  | 25–45 (wd) | $(1 - 8) \cdot 10^{38}$ | Sy    |        |
| 1E 0056.8-7154        | 0.29         | 30–40 (wd) | $2 \cdot 10^{37}$ | PN   |        |
| RX J0058.6-7146       | < 0.001 – 0.7 | 715–70 (bb) | $2 \cdot 10^{36}$ |       |        |

Andromeda Galaxy (M 31)
| Name               | Countrate$^{(1)}$ | T$^{(2)}$ | $L_{\text{bol}}$ | Type$^{(3)}$ | Period (days) |
|--------------------|------------------|----------|-----------------|--------------|---------------|
| RX J0037.4+4014    | $0.8 \cdot 10^{-3}$ | 26–37 (wd) |                 |              |               |
| RX J0037.4+4015    | $0.3 \cdot 10^{-3}$ | < 34 (wd)  |                 |              |               |
| RX J0038.6+4020    | $1.7 \cdot 10^{-3}$ | 28–38 (wd) |                 |              |               |
| RX J0039.4+4050    | $2.9 \cdot 10^{-3}$ | 49 (wd)    |                 |              |               |
| RX J0039.6+4054    | $0.4 \cdot 10^{-3}$ | < 36 (wd)  |                 |              |               |
| RX J0039.7+4030    | $2.0 \cdot 10^{-3}$ | < 38 (wd)  |                 |              |               |
| RX J0040.0+4100    | $2.0 \cdot 10^{-3}$ | 52–58 (wd) |                 |              |               |
| RX J0040.1+4021    | $0.5 \cdot 10^{-3}$ | > 51 (wd)  |                 |              |               |
| RX J0040.4+4004    | $0.8 \cdot 10^{-3}$ | 28–36 (wd) |                 |              |               |
| RX J0040.7+4015    | $1.3 \cdot 10^{-3}$ | 28–38 (wd) |                 |              |               |
| RX J0041.5+4040    | $0.3 \cdot 10^{-3}$ | 31–34 (wd) |                 |              |               |
| RX J0041.8+4015    | $3.2 \cdot 10^{-3}$ | 45 (wd)    |                 |              |               |
| RX J0041.8+4059    | $0.5 \cdot 10^{-3}$ | 29–35 (wd) |                 |              |               |
| RX J0042.4+4044    | $1.7 \cdot 10^{-3}$ | 28–38 (wd) |                 |              |               |
| RX J0042.4+4048    | $0.6 \cdot 10^{-3}$ | 39–62 (wd) |                 |              |               |
| RX J0042.6+4043    | $1.6 \cdot 10^{-3}$ | > 55 (wd)  |                 |              |               |
| RX J0042.6+4159    | $1.8 \cdot 10^{-3}$ | > 63 (wd)  |                 |              |               |
| RX J0042.8+4115    | $40.1 \cdot 10^{-3}$ | 65 (wd)    |                 |              |               |
| RX J0043.3+4120    | $6.7 \cdot 10^{-3}$ | 59–62 (wd) |                 |              |               |
| RX J0043.5+4207    | $2.2 \cdot 10^{-3}$ | 32–39 (wd) |                 |              |               |
| RX J0043.7+4127    | $1.2 \cdot 10^{-3}$ | 46–60 (wd) |                 |              |               |
| RX J0043.9+4151    | $0.9 \cdot 10^{-3}$ | 43 (wd)    |                 |              |               |
| RX J0044.0+4118    | $2.5 \cdot 10^{-3}$ | 32–39 (wd) |                 |              |               |
| RX J0044.2+4026    | $7 \cdot 10^{-5}$   | > 69 (wd)  |                 |              |               |
| RX J0044.4+4200    | $1.2 \cdot 10^{-3}$ | 47–56 (wd) |                 |              |               |
| RX J0045.4+4154    | $< 10^{-5} - 0.03$ | 72–73 (wd) | (5–10) $\cdot 10^{37}$ |              |               |
| RX J0045.4+4219    | $1.2 \cdot 10^{-3}$ | 51–59 (wd) |                 |              |               |
| RX J0045.5+4206    | $3.1 \cdot 10^{-3}$ | 35–40 (wd) | $7 \cdot 10^{37}$ |              |               |
| RX J0046.1+4136    | $0.3 \cdot 10^{-3}$ | > 51 (wd)  |                 |              |               |
| RX J0046.2+4138    | $1.1 \cdot 10^{-3}$ | 29–38 (wd) |                 |              |               |
| Name                | Countrate$^{(1)}$ | T$^{(2)}$ | $L_{\text{bol}}$ | Type$^{(3)}$ | Period |
|---------------------|------------------|----------|-----------------|-------------|--------|
| RX J0046.2+4144     | $2.1 \cdot 10^{-3}$ | 27 – 38 (wd) |                 |             |        |
| RX J0046.3+4238     | $3.1 \cdot 10^{-3}$ | 53 – 62 (wd) |                 |             |        |
| RX J0047.6+4132     | $0.3 \cdot 10^{-3}$ | > 60 (wd)  |                 |             |        |
| RX J0047.6+4205     | $0.3 \cdot 10^{-3}$ | < 34 (wd)  |                 |             |        |
| **NGC 55**          |                  |          |                 |             |        |
| RX J0016.0-3914     | 0.0045           | 23 ± 30 (bb) | $(9) \cdot 10^{37}$ |            |        |

$^{(1)}$ Countrates in the ROSAT PSPC corrected for vignetting, i.e. absorbed on-axis count rates. Count rates in the HRI have been converted to PSPC rates using a conversion factor of PSPC/HRI = 7.8 (Greiner et al. 1996a).

$^{(2)}$ Temperatures for the M31 sources are the maximum blackbody temperatures derived from the hardness ratios at the appropriate absorbing column (Greiner et al. 1996b).

$^{(3)}$ CBSS = close-binary supersoft X-ray source, N = nova, Sy = symbiotic binary, RN = recurrent nova, CV = cataclysmic variable, PN = planetary nebula.