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The bibliographical entries for *Individual Stars* and *Collections of Data* are categorized according to the following coding scheme:

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**Abbreviations**

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AD	accretion disk	HMXB	high-mass x-ray binary	QPO	quasi-periodic oscillation
BH	black hole	IP	intermediate polar	RV	radial velocity
CB	close binary	LC	light curve	SB	spectroscopic binary
CV	cataclysmic variable	LMXB	low-mass x-ray binary	WD	white dwarf
EB	eclipsing binary	NS	neutron star	WR	Wolf-Rayet star

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## Individual Stars

$\lambda$ And	<i>Mirtorabi, M.T., Wasatonic, R., Guinan, E.F.</i> 2003, AJ 125, 3265. (1aoi, 2e)
Z And	<i>Skopal, A.</i> 2003, A&A 401, L17. (1ao) Eclipse discovered. <i>Tomov, N. A., Taranova, O. G., Tomova, M. T.</i> 2003, A&A 401, 669. (1ao) Mass ejection during outburst of symbiotic binary.
RX And	<i>Godon, P., Sion, E.M.</i> 2003, ApJ 586, 427. (2b,5) Model mass of WD 1.2 solar masses.
GZ And	<i>Yang, Y., Liu, Q.</i> 2003, A&A 401, 631. (1ao, 2abc) Anomalously low luminosity for primary.
HP And	<i>Nogami, D. et al.</i> (7 authors) 2003, IBVS 5416. (3cd) HP And is a galaxy.
LL And	<i>Littlefair, S.P., Dhillon, V.S., Martín, E.L.</i> 2003, MNRAS 340, 264. (1b, 2eg, 6) Brown dwarf secondaries in CVs.
AE Aqr	<i>Meintjes, P.J., Venter, L.A.</i> 2003, MNRAS 341, 891. (1r, 2eg, 5) Modelling the non-thermal radio outbursts.
FF Aqr	<i>Vaccaro, T.R., Wilson, R.E.</i> 2003, MNRAS 342, 564. (1ab, 2abce) Investigating the role of fluorescence in UV active binaries.
FO Aqr	<i>Williams, G.</i> 2003, PASP 115, 618. (1a, 2g) Oscillation timings; spin-up of WD.
HU Aqr	<i>Schwöpe, A. D. et al.</i> (5 authors) 2003, A&A 402, 201. (1ab, 2g) Eclipsing polar. <i>Watson, C.A. et al.</i> (4 authors) 2003, MNRAS 341, 129. (1b, 2abg) Roche tomography and system parameters.
CI Aql	<i>Hachisu, I., Kato, M.</i> 2003, ApJ 588, 1003. (5) Successful model of this system applied to RX J0513.9-6951.
V417 Aql	<i>Shengbang, Q.</i> 2003, A&A 400, 649. (1f, 2c)
V603 Aql	<i>Borczyk, W., Schwarzenberg-Czerny, A., Szkody, P.</i> 2003, A&A 405, 663. (1ux) Variability study, new classification.
V1333 Aql (Aql X-1)	<i>Yu, W. et al.</i> (4 authors) 2003, ApJ 589, L33. (1bx) Hard X-ray flares in this NS system similar to those with BH's.
V1343 Aql (SS 433)	<i>McCormick, D.G., Spencer, R.E., Fender, R.P.</i> 2003, Ap&SS 288, 97. (1d)
V1487 Aql (GRS 1915+105)	<i>Das, T.K.</i> 2003, ApJ 588, L89. (5) Modelled shocked accretion flow in regulating QPO's. <i>Fender, R.P.</i> 2003, Ap&SS 288, 79. (1d, 2g) Circular polarization (see also General). <i>Fender, R.P.</i> 2003, MNRAS 340, 1353. (5) Uses and limitations of relativistic jet proper motions. <i>Fuchs, Y., Mirabel, I.F., Claret, A.</i> 2003, A&A 404, 1011. (1i, 2g) Mid-infrared observations. <i>Greenhough, J. et al.</i> (5 authors) 2003, MNRAS 340, 851. (1x, 2aceg) Identification of a 12-17 d time-scale in X-ray observations.
V1494 Aql	<i>Iijima, T., Esenoglu, H.H.</i> 2003, A&A 404, 997. (1b) Spectral evolution of nova.
BF Ara	<i>Kato, T. et al.</i> (8 authors) 2003, MNRAS 341, 901. (1av, 2cdg) Photometric study.
V821 Ara	<i>Buxton, M., Vennes, S.</i> 2003, MNRAS 342, 105. (1b, 2abce) Spectro-

(GX339-4)	scopic observations and orbital modulation. <i>Corongiu, A. et al.</i> (6 authors) 2003, A&A 408, 347. (1x) X-ray spectroscopy.
UX Ari	<i>Aarum Ulvås, V., Engvold, O.</i> 2003, A&A 402, 1043. (1bo) <i>Aarum Ulvås, V., Henry, G. W.</i> 2003, A&A 402, 1033. (1ao)
FS Aur	<i>Toumassian, G. et al.</i> (9 authors) 2003, PASP 115, 725. (1ab, 2c) Markedly discordant spectroscopic and photometric periods.
IU Aur	<i>Özdemis, S. et al.</i> (5 authors) 2003, A&A 403, 675. (1aof, 2abc)
SV Cam	<i>Zboril, M., Djurašević, G.</i> 2003, A&A 406, 193. (1a, 2e) Spot activity study.
BY Cam	<i>Mouchet, M. et al.</i> (13 authors) 2003, A&A 401, 1071. (1bu, 2e)
WY Cnc	<i>Heckert, P.A.</i> 2003, IBVS 5419. (1a, 2c) 2001 and 2003 photometry.
GZ Cnc	<i>Tappert, C., Bianchini, A.</i> 2003, A&A 401, 1101. (1abo, 2ac)
BH CVn (HR 5110)	<i>Ransom, R.R. et al.</i> (7 authors) 2003, ApJ 587, 390. (1er,2b) Emission region with a core-halo morphology.
$\eta$ Car	2003, IAU Circ. 8100 (1b) Changes of spectral feature. 2003, IAU Circ. 8137 (1x) Highest X-ray flux. 2003, IAU Circ. 8146 (1x) X-ray eclipse ingress? 2003, IAU Circ. 8154 (1x) X-ray fading. 2003, IAU Circ. 8160 (1ix) Continuous fading. 2003, IAU Circ. 8162 (1bor) Deepest phase.
V574 Car (WR30a)	<i>Paardekooper, S.J. et al.</i> (6 authors) 2003, A&A 404, L29. (1a, 2e) Dramatic brightness changes.
AB Cas	<i>Soydugan, F. et al.</i> (4 authors) 2003, AJ 126, 393. (2c) Period study.
V662 Cas (2S 0114 +650) (LS I +65 010)	<i>Koenigsberger, G. et al.</i> (5 authors) 2003, Rev. Mex. Astron. Astrofis. 39, 17. (1bc, 2eg) Line profile variability; circumbinary gas.
V741 Cas	<i>Griffin, R.F.</i> 2003, Observatory 123, 129. (1b, 2ac) Spectroscopic orbit of eclipsing system.
$\gamma$ Cep	<i>Hatzes, A. et al.</i> (6 authors) 2003, Astron. Nachr. 324, Suppl. 2/2003, 1. (1b) high precision RV observations reveal possible planet.
VV Cep	<i>Pollmann, E.</i> 2003, IBVS 5398. (1b, 2e) Outside eclipse spectroscopy.
EE Cep	<i>Mikolajewski, M. et al.</i> (6 authors) 2003, IBVS 5412. (1abf, 3d) The start of the 2003 eclipse.
GW Cep	<i>Qian, S.</i> 2003, MNRAS 342, 1260. (1a, 2c, 6) Orbital period variations.
V497 Cep	<i>Yakut, K. et al.</i> (8 authors) 2003, A&A 405, 1087. (1ab, 2b) NGC 7160 member.
VY Cet	<i>Qian, S.</i> 2003, MNRAS 342, 1260. (1a, 2c, 6) Orbital period variations.
BR Cir (Cir X-1)	<i>Clark, J.S., et al.</i> (4 authors) 2003, A&A 400, 655. (1bi, 2g)
TV Col	<i>Retter, A. et al.</i> (8 authors) 2003, MNRAS 340, 679. (1ao, 2abcg) A new superhump period.
RW Com	<i>Yang, Y., Liu, Q.</i> 2003, PASP 115, 748. (1af, 2c)
AL Com	<i>Szkody, P. et al.</i> (5 authors) 2003, AJ 126, 1451. (1bci, 2e) HST spectra 5.5 years after superoutburst.
CC Com	<i>Yang, Y., Liu, Q.</i> 2003, PASP 115, 748. (1af, 2c)

GP Com	<i>Morales-Rueda, L. et al.</i> (6 authors) 2003, A&A 405, 249. (1b, 2g) Doppler tomography.
LM Com	<i>Shimansky, V.V., Borisov, N.V., Shimanskaya, N.N.</i> 2003, AZh 80, 830. (1bc, 2abe).
V691 CrA	<i>Cowley, A.P. et al.</i> (4 authors) 2003, AJ 125, 2163. (1ab, 2abe) LMXB.
U CrB	<i>Yerli, S.K. et al.</i> (5 authors) 2003, MNRAS 342, 1349. (1ab, 2abce) Orbital and system parameters. Evolutionary status.
CP Cru (Nova 1996)	<i>Lyke, J.E. et al.</i> (18 authors) 2003, AJ 126, 993. (1boi, 2f) Abundance anomalies.
Q Cyg (Nova 1876)	<i>Kafka, S. et al.</i> (4 authors) 2003, AJ 126, 1472. (1b, 2ce) P Cygni profiles indicate outflow.
CG Cyg	<i>Kjurkchieva, D.P., Marchev, D.V., Ogloza, W.</i> 2003, A&A 400, 623. (1abo, 2ab)
CH Cyg	<i>Hofmann, K.-H. et al.</i> (21 authors) 2003, Astron. Nachr. 324, Suppl. 2/2003, 68. (1i) Near IR interferometry.
V700 Cyg	<i>Qian, S.</i> 2003, MNRAS 342, 1260. (1a, 2c, 6) Orbital period variations.
V1341 Cyg (Cyg X-2)	<i>Clarkson, W.I. et al.</i> (4 authors) 2003, MNRAS 343, 1213. (1x, 2acg) Long-term properties of accretion discs. <i>Vrtilek, S.D. et al.</i> (7 authors) 2003, PASP 115, 1124. (1bcux, 2g) Simultaneous ASCA and HST/GHRS observations.
V1357 Cyg (Cyg X-1) (HD 226868)	<i>Barrio, F.E., Done, C., Nayakshin, S.</i> 2003, MNRAS 342, 557. (1x, 2eg, 5) Accretion geometries. <i>Gierliński, M., Zdziarski, A.A.</i> 2003, MNRAS 343, L84. (1x, 2eg) Discovery of millisecond flares. <i>Félix Mirabel, I., Rodrigues, I.</i> 2003, Science 300, 1119. BH formed in situ. <i>Pottschmidt, K. et al.</i> (9 authors) 2003, A&A 407, 1039. (1x) Long term variability study. <i>Tarasov, A. E., Brocksopp, C., Lyuty, V. M.</i> 2003, A&A 402, 237. (1box, 2g) <i>Yao, Y. et al.</i> (4 authors) 2003, ApJ 594, L43. (1bx) New method of resolving X-ray halos around point sources.
V1521 Cyg (Cyg X-3)	<i>Stark, M.J., Saia, M.</i> 2003, ApJ 587, L101. (1bx, 2b) Model mass of compact object less than 3.6 solar masses.
HR Del (Nova 1967)	<i>Selvelli, P., Friedjung, M.</i> 2003, A&A 401, 297. (1u, 2e)
AA Dor (LB 3459)	<i>Hilditch, R.W. et al.</i> (4 authors) 2003, MNRAS 344, 644. (1ai, 2abe) Improved photometric model. <i>Rauch, T., Karl, C., Werner, K.</i> 2003, Astron. Nachr. 324, Suppl. 2/2003, 71. (1b) Rotational velocity of sdOB primary from VLT UVES spectra. <i>Rauch, T., Werner, K.</i> 2003, A&A 400, 271. (1bu, 2a) Rotational velocity of sdOB primary.
AG Dra	<i>Friedjung, M. et al.</i> (4 authors) 2003, A&A 400, 595. (2c) Pulsation period of cool component.
EP Dra	<i>Bridge, C.M. et al.</i> (6 authors) 2003, MNRAS 341, 863. (1a, 2eg) Variability in the accretion stream and accretion region.
EX Dra	<i>Shafter, A.W., Holland, J.N.</i> 2003, PASP 115, 1105. (1af, 2ag)

GK Dra	<i>Griffin, R.F., Boffin, H.M.J.</i> 2003, Observatory 123, 203. (1b, 2ac) Spectroscopic orbit of eclipsing pulsating star. <i>Zwitter, T. et al.</i> (8 authors) 2003, A&A 404, 333. (1ab, 2b) Study for GAIA mission.
S Equ	<i>Soydugan, F. et al.</i> (4 authors) 2003, AJ 126, 393. (2c) Period study.
EF Eri	<i>Harrison, T.E. et al.</i> (7 authors) 2003, AJ 125, 2609. (1aio, 2e) Secondary appears to be irradiated brown dwarf.
$\alpha$ Gem	<i>Stelzer, B., Burwitz, V.</i> 2003, A&A 402, 719. (1bx) Both A and B resolved in simultaneous <i>CHANDRA</i> and <i>XMM-Newton</i> observations.
U Gem	<i>Godon, P., Sion, E.M.</i> 2003, ApJ 586, 427. (2g, 5) Modelled mass accretion rate on WD.
OW Gem	<i>Mikolajewski, M., Galan, C., Graczyk, D.</i> 2003, IBVS 5445. (1af, 2a) Multicolour observations of primary and secondary eclipses. <i>Terrell, D. et al.</i> (8 authors) 2003, AJ 126, 902. (1aio, 2b) Double supergiant binary is an evolutionary puzzle.
AK Her	<i>Awadalla N.S.</i> 2003, Ap&SS 286, 401. (1a, 2c) Period study.
AM Her	<i>Watson, C.A. et al.</i> (4 authors) 2003, MNRAS 341, 129. (1b, 2abg) Roche tomography and system parameters.
DQ Her (Nova 1934)	<i>Mukai, K., Still, M., Ringwald, F.A.</i> 2003, ApJ 594, 428. (1abx) Soft X-rays arise from accretion disk wind?
HZ Her (Her X-1)	<i>Clarkson, W.I. et al.</i> (4 authors) 2003, MNRAS 343, 1213. (1x, 2acg) Long-term properties of accretion discs. <i>Leahy, D.A.</i> 2003, MNRAS 342, 446. (1u, 2eg) Modelling the EUV emission. <i>Manchanda, R. K.</i> 2003, A&A 4001, 1111. (1bx) <i>Naik, S., Paul, B.</i> 2003, A&A 401, 265. Comparison with LMC X-4.
RT Lac	<i>Çakırlı, Ö. et al.</i> (6 authors) 2003, A&A 405, 733. (1a) Long-term photometric behaviour.
EM Lac	<i>Qian, S.</i> 2003, MNRAS 342, 1260. (1a, 2c, 6) Orbital period variations.
UV Leo	<i>Zwitter, T. et al.</i> (8 authors) 2003, A&A 404, 333. (1ab, 2b) Study for GAIA mission.
XY Leo	<i>Yakut, K. et al.</i> (4 authors) 2003, A&A 401, 1095. (1ao, 2ac)
UZ Lib	<i>Gondoin, P.</i> 2003, A&A 400, 249. (1bx, 2e)
$\beta$ Lyr	<i>Leone, F. et al.</i> (5 authors) 2003, A&A 405, 223. (1d) Phase dependent magnetic field.
V511 Lyr	<i>Griffin, R.F.</i> 2003, Observatory 123, 129. (1b, 2ac) Spectroscopic orbit of eclipsing system.
V524 Mon	<i>Samec, R.G., Loflin, T.S.</i> 2003, IBVS 5404. (1af, 2c, 3d) First CCD observations of dwarf CB.
V616 Mon	<i>Hynes, R.I. et al.</i> (6 authors) 2003, MNRAS 340, 447. (1a, 2eg, 3b) Study of the short-time-scale flaring.
V838 Mon	2003, IAU Circ. 8110 (1x) Evidence against nova-like outburst.
UY Mus	<i>McKenzie, R., Samec, R.G., Faulkner, D.G.</i> 2003, IBVS 5405. (1ac, 3d) CCD observations of the short period near contact system.
GR Mus (X 1254-690)	<i>Boirin, L., Parmar, A.N.</i> 2003, A&A 407, 1079. (1x) Discovery of narrow X-ray absorption features.
GU Mus (GRS 1124-68)	<i>Hynes, R.I. et al.</i> (6 authors) 2003, MNRAS 340, 447. (1a, 2eg, 3b) Study of the short-time-scale flaring.

IM Nor	<i>Khruzina, T.S. et al</i> (5 authors) 2003, AZh 80, 675. (1a, 2b, 5). <i>Woudt, P.A., Warner, B.</i> 2003, MNRAS 343, 313. (1a, 2aceg) High-speed photometry.
V841 Oph	<i>Diaz, M.P., Ribiero, F.M.A.</i> 2003, AJ 125, 3359. (1b, 2ac)
V2502 Oph (HR 6844)	<i>Fekel, F.C., Henry, G.W.</i> 2003, AJ 125, 2156. (1ab, 2ae) Primary is $\gamma$ Dor variable.
V2573 Oph	2003, IAU Circ. 8166 (1ab, 3b) New nova. 2003, IAU Circ. 8167 (1a) Additional magnitudes. 2003, IAU Circ. 8175 (1b) Nova emission lines. 2003, IAU Circ. 8186 (1bi) No emission features in infrared.
$\chi^1$ Ori	<i>König, B. et al.</i> (5 authors) 2003, Astron. Nachr. 324, Suppl. 2/2003, 11. (1o) Direct detection of 0.15 $M_{\odot}$ companion of 1.01 $M_{\odot}$ primary with Keck NRC2 adaptive optics system.
ER Ori	<i>Kim, C.-H. et al.</i> (5 authors) 2003, AJ 126, 1555. (1af, 2ac) Mass transfer rate, light-time orbit of third body.
V1309 Ori	<i>Katajainen, S. et al.</i> (9 authors) 2003, MNRAS 340, 1. (1abdx, 2abceg) UBVRI photopolarimetry and modelling. <i>Schwarz, K., Reinsch, K., Burwitz, V.</i> 2003, Astron. Nachr. 324, Suppl. 2/2003, 29. (1x) X-ray light curve of eclipsing magnetic CV.
NP Pav	<i>Cerruti, M.A.</i> 2003, Rev. Mex. Astron. Astrofis. 39, 141. (1a, 2ab)
II Peg	<i>Gu, S.-H. et al.</i> (4 authors) 2003, A&A 405, 763. (1b, 2e) Doppler imaging.
IP Peg	<i>Watson, C.A. et al.</i> (4 authors) 2003, MNRAS 341, 129. (1b, 2abg) Roche tomography and system parameters.
MS Peg	<i>Shimansky, V.V., Borisov, N.V., Shimanskaya, N.N.</i> 2003, AZh 80, 830. (1bc, 2abe).
$\beta$ Per	<i>Drake, J.J.</i> 2003, ApJ 594, 496. (1bx) C and N abundances indicate Algol b must have lost at least half of its initial mass.
GK Per	<i>Bianchini, A. et al.</i> (4 authors) 2003, PASP 115, 474. (1bc, 2g) Magnetic accretion during 2002 outburst.
RR Pic	<i>Schmidtbreick, L., Tappert, C., Saviane, I.</i> 2003, MNRAS 342, 145. (1b, 2ceg) Doppler tomography of the emission distribution.
AO Psc	<i>Williams, G.</i> 2003, PASP 115, 618. (1a, 2g) Oscillation timings; spin-up of WD.
V348 Pup	<i>Froning, C.S., Long, K.S., Baptista, R.</i> 2003, AJ 126, 964. (1bcu, 2g) HST observations of nova-like CV.
VW Pyx	<i>Exter, K.M., Pollacco, D.L., Bell, S.A.</i> 2003, MNRAS 341, 1349. (1ab, 2abe) A first model of the planetary nebula binary.
WZ Sge	<i>Long, K.S. et al.</i> (6 authors) 2003, ApJ 591, 1172. (1bu) FUSE observations of 2001 outburst. <i>Osaki, Y.</i> 2003, PASJ 55, 841. (1o, 2g, 5) Helical tomography of an AD, a new method for analyzing complex superhump LCs for the 2001 superoutburst. <i>Sion, E.M. et al.</i> (11 authors) 2003, ApJ 592, 1137. (1bu) Unexpected outburst of dwarf nova.
V4006 Sgr	2003, IAU Circ. 8113 (1a, 3b) Possible nova. 2003, IAU Circ. 8115 (7) No new nova.
V4134 Sgr	<i>Angelini, L., White, N.E.</i> 2003, ApJ 586, L71. (1bx) Detection of a fossil

- (4U 1755-33)  
V4580 Sgr  
(SAX J1808.4-3658)
- jet evidence of BH.  
*Burderi, L. et al.* (5 authors) 2003, A&A 404, L43. (1a) Study of optical counterpart.  
*Menna, M.T. et al.* (5 authors) 2003, ApJ 589, 503. (1bu) Coupling between periodic and aperiodic variability.  
*Poutanen, J., Gierliński, M.*, 2003, MNRAS 343, 1301. (1x, 2beg) On the nature of the X-ray emission and physical parameters.
- V4641 Sgr
- 2003, IAU Circ. 8180 (1r) Renewed radio activity.  
*Butt, Y.M., Maccarone, T.J., Prantzos, N.* 2003, ApJ 587, 748. (5) Suggest misaligned jets induce light element nucleosynthesis.  
*Chaty, S. et al.* (6 authors) 2003, MNRAS 343, 169. (1aboi, 2be) A model based on photometric and spectroscopic observations.  
*Goranskii, V.P., Barsukova, E.A., Burenkov, A.N.* 2003, AZh 80, 805. (1abc, 2ab).
- V4742 Sgr
- Morgan, G.E., Ringwald, F.A., Prigge, J.W.* 2003, MNRAS 344, 521. (1ab, 2ef) Spectroscopic study.
- V4743 Sgr
- 2003, IAU Circ. 8107 (1x) Spectral features.  
2003, IAU Circ. 8131 (1aox) V-magnitudes and X-ray features.  
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2003, IAU Circ. 8176 (1aox) Substantial change in light curve.  
*Morgan, G.E., Ringwald, F.A., Prigge, J.W.* 2003, MNRAS 344, 521. (1ab, 2ef) Spectroscopic study.  
*Ness, J.-U. et al.* (5 authors) 2003, Astron. Nachr. 324, Suppl. 3/2003, 139. (1x) 22 min oscillations detected in X-ray light curve of super-soft source.  
*Ness, J.-U. et al.* (17 authors) 2003, ApJ 594, L127. (1abx) Low transmission spectrometer observation shows 22 minute oscillation.  
*Nielbock, M., Schmidtobreick, L.* 2003, A&A 400, L5. (1br, 2e) Millimeter radiation from nova.
- V4745 Sgr
- 2003, IAU Circ. 8123 (1ab, 3b) Possible new nova.  
2003, IAU Circ. 8124 Designation of nova.  
2003, IAU Circ. 8126 (1a) R and V magnitudes.  
2003, IAU Circ. 8127 (1a) Magnitudes and colours.  
2003, IAU Circ. 8155 (1ao) Optical brightening.  
2003, IAU Circ. 8160 (1a) Additional photometry.
- U Sco
- Kato, M., Hachisu, I.* 2003, ApJ 587, L39. (5) Suggest very fast bipolar mass outflow.
- V818 Sco  
(Sco X-1)
- Abramowicz, M.A. et al.* (4 authors) 2003, A&A 404, L21. (5) 2:3 resonance in kHz QPOs.  
*Barnard, R., Church, M.J., Balucińska-Church, M.* 2003, A&A 405, 237. (1x) Study of X-ray flaring.  
*Bradshaw, C.F., Geldzahler, B.J., Fomalont, E.B.* 2003, ApJ 592, 486. (1abx) Spectral changes.  
*Vanderlinde, K.W., Levine, A.M., Rappaport, S.A.* 2003, PASP 115, 739. (1ax, 2c) Detection of orbit by RXTE all-sky monitor.
- V1033 Sco  
(GRO J1655-40)
- Butt, Y.M., Maccarone, T.J., Prantzos, N.* 2003, ApJ 587, 748. (5) Suggest misaligned jets induce light element nucleosynthesis.  
*Fender, R.P.* 2003, MNRAS 340, 1353. (5) Uses and limitations of relativistic jet proper motions.



	<i>Stevens, J.A. et al.</i> (5 authors) 2003, MNRAS 342, 623. (1r, 2eg, 5) Study of the radio flaring behaviour.
V475 Sct	2003, IAU Circ. 8190 (3b) Possible nova. 2003, IAU Circ. 8191 (1b) Spectroscopic features. 2003, IAU Circ. 8199 (1be) Classification as normal nova. 2003, IAU Circ. 8200 (1a) Designation of new nova.
MS Ser	<i>Alekseev, I., Yu., Kozlova, O. V.</i> 2003, A&A 403, 205. (1abd) Spots and active regions.
RW Sex	<i>Prinja, R.K. et al.</i> (7 authors) 2003, MNRAS 340, 551. (1u, 2aeg) UV observations and disc wind model.
HK Tau	<i>Duchêne, G. et al.</i> (4 authors) 2003, A&A 400, 559. (1er) Circumstellar disk around A and B.
V471 Tau	<i>Drake, J.J., Sarna, M.J.</i> 2003, ApJ 594, L55. (1bx) Evidence for common envelope phase.
V711 Tau (HR 1099)	<i>García-Alvarez, D. et al.</i> (7 authors) 2003, A&A 402, 1073. (1abo)
V781 Tau	<i>Zwitter, T. et al.</i> (8 authors) 2003, A&A 404, 333. (1ab, 2b) Study for GAIA mission.
V1094 Tau	<i>Griffin, R.F., Boffin, H.M.J.</i> 2003, Observatory 123, 203. (1b, 2ac) Spectroscopic orbit of eclipsing star.
V1154 Tau	<i>Dallaporta, S., Munari, U., Zwitter, T.</i> 2003, IBVS 5413. (1a, 2c) New EB within a triple system.
RW Tri	<i>Poole, T. et al.</i> (5 authors) 2003, MNRAS 340, 499. (1b, 2abe) Orbital elements and component star masses.
CF Tuc	<i>Innis, J.L. et al.</i> (4 authors) 2003, IBVS 5444. (1a, 2c) Period change in RS CVn binary.
BE UMa	<i>Raguzova, N.V., Shugarov, S.Yu., Ketsaris, N.A.</i> 2003, AZh 80, 535. (1a, 2ab, 5).
HH UMa	<i>Pribulla, T. et al.</i> (4 authors) 2003, IBVS 5414. (1af, 2c) New contact binary.
IY UMa	<i>Smak, J.</i> 2003, Acta Astronomica 53, 167. (2g) Disk eclipse.
KS UMa	<i>Olech, A. et al.</i> (6 authors) 2003, Acta Astronomica 53, 175. (1a, 2c, 3d) Superhump period change in dwarf nova.
KV UMa (XTE J1118+480)	<i>Frontera, F. et al.</i> (8 authors) 2003, ApJ 592, 1110. (1bx) BeppoSAX observations. <i>Kanbach, G. et al.</i> (5 authors) 2003, Astron. Nachr. 324, Suppl. 2/2003, 23. (1ox) Correlated X-ray/optical variability of transient X-ray binary. <i>Malzac, J. et al.</i> (4 authors) 2003, A&A 407, 335. (1aox) Study of optical and X-ray flickering. <i>McClintock, J.E. et al.</i> (6 authors) 2003, ApJ 593, 435. (1boux) Black hole binary in quiescence.
LP UMa (GSC 3822-1056)	<i>Csizmadia, Sz., Bíró, I.B., Borkovits, T.</i> 2003, A&A 403, 637. (1ao, 2ac) Recently formed over-contact binary.
RW UMi (Nova 1956)	<i>Bianchini, A. et al.</i> (6 authors) 2003, PASP 115, 811. (1a, 2cg) Quasi-periodic oscillations of post-nova.
GP Vel (Vela X-1) (4U 0900-40)	<i>La Barbera, A. et al.</i> (4 authors) 2003, A&A 400, 993. (1bx) BeppoSAX observations of HMXB. <i>Quaintrell, H. et al.</i> (8 authors) 2003, A&A 401, 313. (1bo, 2ab)

MR Vel (RX J0925.7-4758)	<i>Mennickent, R.E., Matsumoto, K., Diaz, M.</i> 2003, A&A 402, 315. (1bi, 2ef)
MM Vel	<i>Hynes, R.I. et al.</i> (6 authors) 2003, MNRAS 340, 447. (1a, 2eg, 3b) Study of the short-time-scale flaring.
V382 Vel (Nova 1999)	<i>Augusto, A., Diaz, M.P.</i> 2003, AJ 125, 3349. (1b, 2ef) Spectral evolution.
$\eta$ Vir	<i>Hummel, C.A. et al.</i> (10 authors) 2003, AJ 125, 2630. (1e, 2ab) Spectroscopic subsystem resolved with NPOI.
AW Vir	<i>Qian, S.</i> 2003, MNRAS 342, 1260. (1a, 2c, 6) Orbital period variations.
HV Vir	<i>Ishioaka, R. et al.</i> (15 authors) 2003, PASJ 55, 683. (1a) Period increase of superhumps found in the 2002 superoutburst.
BP Vul	<i>Torres, G., Guibault, P.R.</i> 2003, IBVS 5421. (1af, 2c) Times of minimum determined from archival photographic plates.
ER Vul	<i>Çakırlı, Ö. et al.</i> (4 authors) 2003, A&A 400, 257 (1b, 2ab) <i>Duemmler, R. et al.</i> (5 authors) 2003, A&A 402, 745. (1bo, 2abc) <i>Kjurkchieva, D.P., Marchev, D.V., Zola, S.</i> 2003, A&A 404, 611. (1ab, 2b)
QQ Vul	<i>Kafka, S., Honeycutt, R.K.</i> 2003, AJ 125, 2188. (1a, 2g) Changes in light curve over 10 years. <i>Watson, C.A. et al.</i> (4 authors) 2003, MNRAS 341, 129. (1b, 2abg) Roche tomography and system parameters.

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## HR, HD, HDE, BD, CoD, CPD, SAO Objects

HR 1099	(see V711 Tau)
HR 5110	(see BH CVn)
HR 6844	(see V2502 Oph)
HD 434	<i>Budaj, J. et al.</i> (6 authors) 2003, IBVS 5423. (1b, 2b) Presence of the secondary spectrum.
HD 21771/2	<i>Griffin, R.F., Carquillat, J.-M., Ginestet, N.</i> 2003, Observatory 123, 69. (1b, 2a) Composite spectrum.
HD 23642	<i>Torres, G.</i> 2003, IBVS 5402. (1a, 3b) Discovery of bright EB in Pleiades.
HD 23850	<i>Paczynski, B.</i> 2003, Acta Astronomica 53, 209. (1be) Distance to Pleiades.
HD 27149	<i>Tomkin, J.</i> 2003, Observatory 123, 1. (1b, 2ab)
HD 36402 (Sk -67°104)	<i>Koenigsberger, G., Moffatt, A.F.J., Auer, L.H.</i> 2003, Rev. Mex. Astron. Astrofis. 39, 213. (1bu, 2e) Atmosphere and wind study.
HD 66066A	<i>González, J.F., Lapasset, E.</i> 2003, A&A 404, 365. (1b, 2a) Spectroscopic orbit of cluster binary.
HD 100054B	<i>Ginestet, N. et al.</i> (4 authors) 2003, MNRAS 342, 61. (1b, 2abc) Orbital elements and physical parameters.
HD 108642	<i>Budaj, J. et al.</i> (6 authors) 2003, IBVS 5423. (1b, 2b) Presence of the secondary spectrum.
HD 112914	<i>Boffin, H.M.J., Pourbair, D.</i> 2003, Observatory 123, 126. (2ab) Reanalysis of astrometry using spectroscopic orbit.
HD 153919	<i>Boroson, B. et al.</i> (4 authors) 2003, ApJ 592, 516. (1abx)

(4U 1700-37)	<i>Hammerschlag-Hensberge, G., van Kerkwijk, M. H., Kaper, L.</i> 2003, A&A 407, 685. (1u, 2a) Orbit revisited.
HD 187258	<i>Ginestet, N. et al.</i> (4 authors) 2003, MNRAS 342, 61. (1b, 2abc) Orbital elements and physical parameters.
HD 191110	<i>Catanzaro, G., Leone, F., Leto, P.</i> 2003, A&A 407, 669. (1bc, 2af) Abundance analysis.
HD 219542	<i>Sadakane, K., Ohkubo, M., Honda, S.</i> 2003, PASJ 55, 1005. (1a, 2f) Differential abundance analysis of A and B components.
HD 226868	(see V1357 Cyg)
HD 315031	<i>González, J.F., Lapasset, E.</i> 2003, A&A 404, 365. (1b, 2a) Spectroscopic orbit of cluster binary.
BD+14°5016	<i>Maciejewski, G., Ligeza, P., Karska, A.</i> 2003, IBVS 5400. (1ab, 2b) Spectroscopic and photometric solution.
BD+05°706	<i>Torres, G. et al.</i> (5 authors) 2003, AJ 125, 3237. (1abox, 2abe)
CPD - 41° 7742	<i>Sana, H. et al.</i> (4 authors) 2003, A&A 405, 1063. (1b, 2a) High-resolution optical spectroscopy.

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### X-ray sources with constellation names

Aql X-1	(see V1333 Aql)
Cir X-1	(see BR Cir)
Cyg X-1	(see V1357 Cyg)
Cyg X-2	(see V1341 Cyg)
Cyg X-3	(see V1521 Cyg)
Her X-1	(see HZ Her)
Sgr X-1 (GX 3+1)	<i>den Hartog, P. R. et al.</i> (9 authors) 2003, A&A 400, 633. (1x, 2e) BeppoSAX data for LMXB.
Sco X-1	(see V818 Sco)
Vel X-1	(see GP Vel)

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### Object names including RA and DEC

RX J0048.4-7332	(see SMC X-3)
RX J0058.2-7231	<i>Schmidtke, P.C., Cowley, A.P., Levenson, L.</i> 2003, AJ 126, 1017. (2cg) Anaylsis of MACJO and OGLE photometry reveals periodicities.
2S 0114 +650	(see V662 Cas)
PSR J0218+4232	<i>Bassa, C.G., van Kerkwijk, M.H., Kulkarni, S.R.</i> 2003, A&A 403, 1067. (1abo, 2b) WD companion of pulsar.
RX J0513.9-6951	<i>Hachisu, I., Kato, M.</i> 2003, ApJ 588, 1003. (5) Clue to transition mechanism between optical high and low states. <i>Hachisu, I., Kato, M.</i> 2003, ApJ 590, 445. (5) First example of accretion wind evolution.
1RXS J062518.2+733433	<i>Araujo-Betancor, S. et al.</i> (5 authors) 2003, A&A 406, 213. (1ab) New intermediate polar.
EXO 0748-676	<i>Jimenez-Garate, M.A., Schulz, N.S., Marshall, H.L.</i> 2003, ApJ 590, 432. (1bx, 2g) Study of photoionized plasma above AD.

RX J0806.3+1527	<i>Hakala, P. et al.</i> (7 authors) 2003, MNRAS 343, L10. (1ar, 2ac) Period analysis. <i>Strohmayer, T.E.</i> 2003, ApJ 593, L39. (1abx, 2bc) Double-degenerate binary shows high frequency variation.
4U 0900-40	(see GP Vel)
RX J0925.7-4758	(see MR Vel)
XTE J0929-314	<i>Juett, A.M., Galloway, D.K., Chakrabarty, D.</i> 2003, ApJ 587, 754. (1bx) Observed during 2002 outburst.
XTE J1118+48	(see KV UMa)
GRS 1124-68	(see GU Mus)
X 1254-690	(see GR Mus)
SDSS J132723.39+652854.2	<i>Wolfe, M.A. et al.</i> (6 authors) 2003, PASP 115, 1118. (1abd, 2ac) Probable new SW Sex star.
PSR B1534+12	<i>Konacki, M., Wolszczan, A., Stairs, I.H.</i> 2003, ApJ 589, 495. (5) Method developed to detect geodetic spin precession.
XTE J1550-564	2003, IAU Circ. 8100 (1x) New outburst. 2003, IAU Circ. 8102 (1ao) High speed photometry. <i>Gierliński, M., Done, C.</i> 2003, MNRAS 342, 1083. (1gx, 2eg) The X-ray/ $\gamma$ -ray spectrum in the very high state.
IGR J16318-4848	<i>Matt, G., Guainazzi, M.</i> 2003, MNRAS 341, L13. (1x, 2e) Study of the properties of the absorbing and line-emitting material.
IGR J16320-4751 (AX J1631.9-4752)	2003, IAU Circ. 8096 (1x) Spectral transitions similar to x-ray binaries. <i>Rodriguez, J. et al.</i> (7 authors) 2003, A&A 407, L41. (1x) Accurate X-ray position.
IGR J16358-4726	2003, IAU Circ. 8097 (1g) Discovery of variable source. 2003, IAU Circ. 8109 (1x) Spin or orbital oscillation?
XTE J1650-500	<i>Homan, J. et al.</i> (8 authors) 2003, ApJ 586, 1262. (1bx, 2b) BH mass estimate of 8.2 solar masses.
GRO J1655-40	(see V1033 Sco)
MXB 1659-29	<i>Wijnands, R. et al.</i> (6 authors) 2003, ApJ 594, 952. (1abx) Observation of neutron star-eclipsing binary in quiescence.
4U 1700-37	(see HD 153919)
4U 1708-40	<i>Migliari, S. et al.</i> (9 authors) 2003, MNRAS 342, 909. (1x, 2eg) Discovery of type I X-ray bursts.
RX J170930.2-263927	<i>Jonker, P.G. et al.</i> (5 authors) 2003, MNRAS 341, (XTE J1709-267) 823. (1x, 2abe) Analysis of Chandra observations.
4U 1728-34	<i>Galloway, D.K. et al.</i> (4 authors) 2003, ApJ 590, 999. (1abx) Thermonuclear X-ray bursts as distance indicators: systematic trends and symmetry in bursts. <i>Migliari, S. et al.</i> (7 authors) 2003, MNRAS 342, L67. (1rx, 2eg) Evidence for disc-jet coupling. <i>Shaposhnikov, N., Titarchuk, L., Haberl, F.</i> 2003, ApJ 593, L35. (1ax, 2bg)
MXB 1730-335	<i>Mahasena, P. et al.</i> (4 authors) 2003, PASJ 55, 827. (1x) Type II burst properties of the rapid burster.
PSR J1740-5340	<i>Sabbi, E. et al.</i> (7 authors) 2003, ApJ 589, L41. (1bo) H alpha profile studied - no AD, but evaporating stream.
1E 1743.1-2843	<i>Porquet, D. et al.</i> (7 authors) 2003, A&A 406, 299. (1x) BH candidate.

IGR J17464-3213 (XTE J17464-3213)	2003, IAU Circ. 8105 (1r) Radio counterpart of BH candidate.
GRS 1747-312	2003, IAU Circ. 8112 (1ir) Infrared counterpart. <i>in't Zand, J.J.M. et al.</i> (9 authors) 2003, A&A 406, 233. (1x) First detection of thermonuclear X-ray bursts.
XTE J1751-305	<i>Jonker, P.G. et al.</i> (17 authors) 2003, MNRAS 344, 201. (1abi, 2g, 3c) Search for optical and near-infrared counterpart.
4U 1755-33	(see V4134 Sgr)
XTE J1807-294	2003, IAU Circ. 8095 (1x, 2c) Shortest period accreting millisecond pulsars. 2003, IAU Circ. 8113 (1x) Orbital modulation barely visible. <i>Campana, S. et al.</i> (5 authors) 2003, ApJ 594, L39. (1abx) XMM-Newton observations of 5.25 ms pulsar in binary at outburst.
SAX J1808.4-3658	(see V4580 Sgr)
XTE J1810-197 (CXOU J180951.1-194351)	2003, IAU Circ. 8168 (1gx) New pulsating source. 2003, IAU Circ. 8190 (1x) An isolated neutron star?
4U 1812-12	<i>Barret, D., Olive, J. F., Oosterbroek, T.</i> 2003, A&A 400, 643. (1x) Simultaneous BeppoSAX and RXTE observations of NS XB.
XTE J1814-338	2003, IAU Circ. 8144 (1x, 3b) New millisecond accreting pulsar. 2003, IAU Circ. 8154 (1ox, 3b) Possible counterpart. 2003, IAU Circ. 8155 (1b) Spectroscopic features.
4U 1820-30	<i>Šimon, V.</i> 2003, A&A 405, 199. (1x) Long-term X-ray activity study.
X1822-371	<i>Casares, J. et al.</i> (5 authors) 2003, ApJ 590, 1041. (1bo, 2bg) Bowen fluorescence used to analyze companion star.
RX J1826.2-1450	<i>Reig, P. et al.</i> (4 authors) 2003, A&A 405, 285. (1x) Long-term X-ray variability study.
PSR B1913+16	<i>Konacki, M., Wolszczan, A., Stairs, I. H.</i> 2003, ApJ 589, 495. (5) Method developed to detect geodetic spin precession.
GRS 1915+105	(see V1487 Aql)
AC211/X2127+119	<i>Torres, M.A.P., Callanan, P.J., Garcia, M.R.</i> 2003, MNRAS 341, 1231. (1b, 2beg) Time-resolved optical Spectroscopy.

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### Galactic objects with other designations

B 1620-26	<i>Sigurdsson, S. et al.</i> (5 authors) 2003, Science 301, 193. (3b) Pulsar has WD and planet companions.
3C 66B	<i>Sudou, H. et al.</i> (4 authors) 2003, Science 300, 1263. (1er, 2bc) Super-massive BH binary.
GSC 3822-1056	(see LP UMa)
GX 3+1	(see Sgr X-1)
GX 5-1	<i>Bandyopadhyay, R.M., Shahbaz, T., Charles, P.A.</i> 2003, MNRAS 340, L13. (1abi, 2eg) Spectroscopic identification of the IR counterpart.
GX 13+1	<i>Schnerr, R.S. et al.</i> (7 authors) 2003, A&A 406, 221. (1x) Peculiar spectral behaviour.
GX 339-4	(see V821 Ara)
Hodge 53-47	<i>Morrell, N. et al.</i> (4 authors) 2003, MNRAS 341, 583. (1ab, 2abc) Photometric and spectroscopic study.
LB 3459	(see AA Dor)

LS I +65 010	(see V662 Cas)
LSS 1135	<i>Corti, M., Niemela, V., Morrell, N.</i> 2003, A&A 405, 571. (1b,3b) O-type binary in association.
Nova in Crux	2003, IAU Circ. 8184 (3b) Possible new nova. 2003, IAU Circ. 8185 (1bv) Spectroscopic features. 2003, IAU Circ. 8188 (1aov) Additional magnitudes.
SS 433	(see V1343 Aql)
Var 73 Dra	<i>Nogami D. et al.</i> (16 authors) 2003, A&A 404, 1067. (1a) In-the-gap SU UMa-type dwarf nova.
Variable near UGC 10700	2003, IAU Circ. 8153 (1o, 3b) New variable star. 2003, IAU Circ. 8158 (1b) Actually a galactic CV.
WR30a	(see V574 Car)

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### Extragalactic variables, SN, x-ray sources

LMC X-2	<i>Smale, A.P., Homan, J., Kuulkers, E.</i> 2003, ApJ 590, 1035 (1abx) Complete Z diagram.
LMC X-4	<i>Clarkson, W.I. et al.</i> (4 authors) 2003, MNRAS 343, 1213. (1x, 2acg) Long-term properties of accretion discs. <i>Naik, S., Paul, B.</i> 2003, A&A 401, 265. (1bx) Comparison with Her X-1.
Nova LMC 1995	<i>Orio, M. et al.</i> (4 authors) 2003, ApJ 594, 435. (1abx) Observations of bright super soft X-ray source.
LW55 V7	<i>Kaluzny, J., Rucinski, S.M.</i> 2003, AJ 126, 237. (1a, 3b) New EB in LMC cluster.
Nova in LMC	2003, IAU Circ. 8160 (1ab, 3b) Possible classical nova.
SMC X-3 (RX J0048.4-7332)	<i>Kahabka, P.</i> 2003, Astron. Nachr. 324, Suppl. 2/2003, 88. (1x) ROSAT detection of symbiotic nova in SMC as super-soft X-ray source.
Sk -67°18	<i>Koenigsberger, G., Moffatt, A.F.J., Auer, L.H.</i> 2003, Rev. Mex. Astron. Astrofis. 39, 213. (1bu, 2e) Atmosphere and wind study.
Sk -67°104	(see HD 36402)
Novae in M31	2003, IAU Circ. 8155 (1ao) Two possible novae. 2003, IAU Circ. 8157 (1a) Another possible nova. 2003, IAU Circ. 8165 (1ao) Magnitudes of possible novae.
Nova in M33	2003, IAU Circ. 8195 (3b) Possible new nova. 2003, IAU Circ. 8199 (1a) Additional V-magnitudes.
Nova in NGC 6822	2003, IAU Circ. 8141 (3b) Possible new nova. 2003, IAU Circ. 8158 (1b) Actually a red star.
RX J004717.4-251811	<i>Pietsch, W., Haberl, F., Vogler, A.</i> 2003, A&A 402, 457. (1bx, 2c) Eclipses in HMXB outside the Local Group.

## General

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Schwarzschild black holes from turbulent magnetized discs.

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