

Table 1. Compilation of neutron star LMXB radio/X-ray observations.

Source name	D (kpc)	D reference	Comments	Flux references
4U 1728–34	4.6	[1]		[1]
4U 0614+09	3	[2]		[2,3]
4U 1636–536	6	[3]		[4]
4U 1735–44	8.5	[4]		[4]
4U 1705–440	7.6	[4]		[4]
GS 1826–24	6.0	[4]		[5]
4U 1608–52	3.3	[4]		[2,6]
XTE J1739–285	10	[4]		[7]
2S 0918–549	5.4	[5]		[4,8]
4U 1702–429	7.1	[5]		[9,10]
1H 1905+00	10	[5]		[9,10]
4U 1812–12	6.6	[6]		[11]
SLX 1735–269	6	[7]		[11]
1E 1724–307	4.1	[8]		[11]
4U 1850–08	6.8	[9]		[9,10]
1RXH J173523.7–354013	9.5	[10]		[5]
AX J1754.2–2754	9.2	[11]		[5]
XMMU J174716.1–281048	8.4	[12]		[5]
MXB 1730–335	8.8	[13]		[12,13]
RXS J180408.9–342058	5.8	[14]		[14]
EXO 1745–28	5.9	[15]		[15]
MAXI J1421–613	7	[16]		[16–18]
Cen X-4	1.2	[17]		[19–21]
XTE J1759–220	12	see table notes		see table notes
GRS 1741.9–2853	7.2	[18]		[22]
XMM J174457–2850.3	6.5	[19]		[22]
4U 2129+1 (M15 X-2)	10.3	[20]		[23]
M15 X-3	10.3	[20]	see table notes	[24,25]
SAX J1748.9–2021	8.5	[21]	iAMXP	[26]
HETE J1900.1–2455	4.7	[4]	iAMXP	[27]
Aql X-1	5.2	[5]	iAMXP	[28–32]
IGR J17062–6143	7.3	[22]	AMXP	[5]
SAX J1808.4–3658	2.5	[23]	AMXP	[33–36]
IGR J00291+5934	3	[24]	AMXP	[37–41]
XTE J0929–314	5	[25]	AMXP	[42–44]
IGR J17511–3057	5	[26]	AMXP	[45,46]
Swift J0911.9–6452	10.4	[27]	AMXP	[47]
IGR J16597–3704	9.1	[15]	AMXP	[48]
XSS J12270–4859	1.4	[28]	tMSRP	[49,50]
PSR J1023+0038	1.4	[29]	tMSRP	[51,52]
IGR J18245–2452	5.5	[30]	tMSRP	[53]

Notes. Only hard state data is used in this work. M15 X-3 has been argued to be a neutron star based on its quiescent X-ray properties (Heinke et al. 2009). For XTE J1759–220, Brandt et al. (2007) reports an X-ray burst with a peak flux of 0.5 Crab (3–10 keV). Assuming a bolometric correction factor of 3 and $L_{\text{edd}} = 3.8 \times 10^{38} \text{ erg s}^{-1}$, this gives $D < 12$ kpc. For this source the X-ray flux is obtained from Goldoni et al. (2003), whereas the radio flux is taken from the webpage of Michael Rupen.*. We use the following abbreviations for source types: tMSRP = transitional millisecond radio pulsar (switch between radio pulsar and LMXB states), (i)AMXP = (intermittent) accreting millisecond X-ray pulsar. All other sources were regarded atolls (in a hard state).

Distance references: 1=Galloway et al. (2003), 2=Brandt et al. (1992), 3=Galloway et al. (2006), 4=Galloway et al. (2008), 5=Jonker & Nelemans (2004), 6=Muno et al. (2005), 7=Molkov et al. (2005), 8=Barbuy et al. (1998), 9=Cudworth (1988), 10=Degenaar et al. (2010), 11=Chelovekov & Grebenev (2007), 12=Degenaar et al. (2011), 13=Kuulkers et al. (2003), 14=Chenevez et al. (2012), 15=Valenti et al. (2007), 16=Serino et al. (2015), 17=Chevalier et al. (1989), 18=Trap et al. (2009), 19=Degenaar et al. (2014), 20=van den Bosch et al. (2006), 21=Ortolani et al. (1994), 22=Keek et al. (2017), 23=in ’t Zand et al. (2001), 24=Galloway et al. (2005), 25=Galloway et al. (2002), 26=Altamirano et al. (2010), 27=Correnti et al. (2016), 28=Roy et al. (2015), 29=Deller et al. (2012), 30=Harris (1996).

Flux references: 1=Migliari et al. (2003), 2=Migliari & Fender (2006), 3=Migliari et al. (2010), 4=Berendsen et al. (2000), 5=van den Eijnden et al. in prep., 6=Miller-Jones & Migliari (2013), 7=Rupen et al. (2005c), 8=in ’t Zand et al. (2005), 9=Christian & Swank (1997), 10=Grindlay & Seaquist (1986), 11=Muno et al. (2005), 12=Rutledge et al. (1998), 13=Moore et al. (2000), 14=Gusinskaia et al. (2017), 15=Tetarenko et al. (2016), 16=Coriat et al. (2014a), 17=Coriat et al. (2014b), 18=Kennea et al. (2014), 18=?, 20=Hjellming et al. (1988), 21=Tudor et al. (2017), 22=Wijnands et al. (2006), 22=Miller-Jones et al. (2011), 23=Strader et al. (2012), 24=Arason et al. (2015), 26=Miller-Jones et al. (2010b), 27=Rupen et al. (2005b), 28=Rupen et al. (2004a), 29=Tudose et al. (2009), 30=Miller-Jones et al. (2010a), 31=Miller-Jones & Sivakoff (2013), 32=Zhang & Yu (2013), 33=Gaensler et al. (1999), 34=Rupen et al. (2002b), 35=Rupen et al. (2005a), 36=Patruno et al. (2008), 37=Pooley (2004), 38=Markwardt et al. (2004), 39=Rupen et al. (2004b), 40=Fender et al. (2004), 41=Linares et al. (2008), 42=Rupen et al. (2002a), 43=Remillard et al. (2002), 44=Rupen et al. (2002a), 45=Miller-Jones et al. (2009), 46=Papitto et al. (2009), 47=Tudor et al. (2016), 48=Tetarenko et al. (2018), 49=de Martino et al. (2010), 50=Hill et al. (2011), 51=Bogdanov et al. (2015), 52=Bogdanov et al. (2017), 53=Ferrigno et al. (2014).

REFERENCES

- Altamirano D., Watts A., Linares M., Markwardt C. B., Strohmayer T., Patruno A., 2010, [MNRAS](#), **409**, 1136
- Arnason R. M., Sivakoff G. R., Heinke C. O., Cohn H. N., Lugger P. M., 2015, [ApJ](#), **807**, 52
- Barbuy B., Bica E., Ortolani S., 1998, [A&A](#), **333**, 117
- Berendsen S. G. H., Fender R., Kuulkers E., Heise J., van der Klis M., 2000, [MNRAS](#), **318**, 599
- Bogdanov S., et al., 2015, [ApJ](#), **806**, 148
- Bogdanov S., et al., 2017, arXiv:1709.08574,
- Brandt S., Castro-Tirado A. J., Lund N., Dremmin V., Lapshov I., Syunyaev R., 1992, [A&A](#), **262**, L15
- Brandt S., Budtz-Jørgensen C., Gotz D., Hurley K., Frontera F., 2007, The Astronomer's Telegram, 1054
- Chelovekov I. V., Grebenev S. A., 2007, [Astronomy Letters](#), **33**, 807
- Chenevez J., et al., 2012, [ATel](#), 4050
- Chevalier C., Ilovaisky S. A., van Paradijs J., Pedersen H., van der Klis M., 1989, [A&A](#), **210**, 114
- Christian D. J., Swank J. H., 1997, [ApJS](#), **109**, 177
- Coriat M., Tzioumis T., Corbel S., Fender R., 2014a, [ATel](#), 5759
- Coriat M., Tzioumis T., Corbel S., Fender R., 2014b, [ATel](#), 5802
- Correnti M., Gennaro M., Kalirai J. S., Brown T. M., Calamida A., 2016, [ApJ](#), **823**, 18
- Cudworth K. M., 1988, [AJ](#), **96**, 105
- Degenaar N., et al., 2010, [MNRAS](#), **404**, 1591
- Degenaar N., Wijnands R., Kaur R., 2011, [MNRAS](#), **414**, L104
- Degenaar N., et al., 2014, [ApJ](#), **792**, 109
- Deller A. T., et al., 2012, [ApJ](#), **756**, L25
- Fender R., De Bruyn G., Pooley G., Stappers B., 2004, [ATel](#), 361
- Ferrigno C., et al., 2014, [A&A](#), **567**, A77
- Gaensler B. M., Stappers B. W., Getts T. J., 1999, [ApJ](#), **522**, L117
- Galloway D. K., Chakrabarty D., Morgan E. H., Remillard R. A., 2002, [ApJ](#), **576**, L137
- Galloway D. K., Psaltis D., Chakrabarty D., Muno M. P., 2003, [ApJ](#), **590**, 999
- Galloway D. K., Markwardt C. B., Morgan E. H., Chakrabarty D., Strohmayer T. E., 2005, [ApJ](#), **622**, L45
- Galloway D. K., Psaltis D., Muno M. P., Chakrabarty D., 2006, [ApJ](#), **639**, 1033
- Galloway D., Muno M., Hartman J., Psaltis D., Chakrabarty D., 2008, [ApJS](#), **179**, 360
- Goldoni P., et al., 2003, The Astronomer's Telegram, 153
- Grindlay J. E., Seaquist E. R., 1986, [ApJ](#), **310**, 172
- Gusinskaia N. V., et al., 2017, [MNRAS](#), **470**, 1871
- Harris W., 1996, [AJ](#), **112**, 1487
- Heinke C., Cohn H., Lugger P., 2009, [ApJ](#), **692**, 584
- Hill A., et al., 2011, [MNRAS](#), **415**, 235
- Hjellming R. M., Calovini T. A., Han X. H., Cordova F. A., 1988, [ApJ](#), **335**, L75
- Jonker P., Nelemans G., 2004, [MNRAS](#), **354**, 355
- Keek L., Iwakiri W., Serino M., Ballantyne D. R., in 't Zand J. J. M., Strohmayer T. E., 2017, [ApJ](#), **836**, 111
- Kennea J. A., Krimm H. A., Evans P. A., Romano P., Mangano V., Curran P., Yamaoka K., Negoro H., 2014, [ATel](#), 5780
- Kuulkers E., den Hartog P., in 't Zand J., Verbunt F., Harris W., Cocchi M., 2003, [A&A](#), **399**, 663
- Linares M., Tudose V., Migliari S., 2008, [ATel](#), 1667
- Markwardt C. B., Galloway D. K., Chakrabarty D., Morgan E. H., Strohmayer T. E., 2004, [ATel](#), 360
- Migliari S., Fender R. P., 2006, [MNRAS](#), **366**, 79
- Migliari S., Fender R. P., Rupen M., Jonker P. G., Klein-Wolt M., Hjellming R. M., van der Klis M., 2003, [MNRAS](#), **342**, L67
- Migliari S., et al., 2010, [ApJ](#), **710**, 117
- Miller-Jones J. C. A., Migliari S., 2013, [ATel](#), 5113
- Miller-Jones J. C. A., Sivakoff G. R., 2013, The Astronomer's Telegram, 5148
- Miller-Jones J. C. A., Jonker P. G., Dhawan V., Briskin W., Rupen M. P., Nelemans G., Gallo E., 2009, [ApJ](#), **706**, L230
- Miller-Jones J. C. A., et al., 2010a, [ApJ](#), **716**, L109
- Miller-Jones J. C. A., Heinke C. O., Sivakoff G. R., Pooley D., Homan J., Altamirano D., 2010b, [ATel](#), 2377
- Miller-Jones J. C. A., Sivakoff G. R., Heinke C. O., Altamirano D., Kuulkers E., Morii M., 2011, The Astronomer's Telegram, 3378
- Molkov S., Revnivtsev M., Lutovinov A., Sunyaev R., 2005, [A&A](#), **434**, 1069
- Moore C. B., Rutledge R. E., Fox D. W., Guerriero R. A., Lewin W. H. G., Fender R., van Paradijs J., 2000, [ApJ](#), **532**, 1181
- Muno M. P., Belloni T., Dhawan V., Morgan E. H., Remillard R. A., Rupen M. P., 2005, [ApJ](#), **626**, 1020
- Ortolani S., Barbuy B., Bica E., 1994, [A&AS](#), **108**
- Papitto A., Riggio A., Burderi L., di Salvo T., D'Ai A., Iaria R., Menna M. T., 2009, [ATel](#), 2220
- Patruno A., Hartman J. M., Wijnands R., van der Klis M., Chakrabarty D., Morgan E. H., Markwardt C. B., 2008, [ATel](#), 1760
- Pooley G., 2004, [ATel](#), 355
- Remillard R. A., Swank J., Strohmayer T., 2002, [IAU Circ.](#), 7893
- Roy J., et al., 2015, [ApJ](#), **800**, L12
- Rupen M. P., Dhawan V., Mioduszewski A. J., 2002a, [IAU Circ.](#), 7893
- Rupen M. P., Dhawan V., Mioduszewski A. J., Stappers B. W., Gaensler B. M., 2002b, [IAU Circ.](#), 7997
- Rupen M. P., Mioduszewski A. J., Dhawan V., 2004a, [ATel](#), 286
- Rupen M. P., Dhawan V., Mioduszewski A. J., 2004b, [ATel](#), 364
- Rupen M. P., Dhawan V., Mioduszewski A. J., 2005a, [ATel](#), 524
- Rupen M. P., Mioduszewski A. J., Dhawan V., 2005b, [ATel](#), 530
- Rupen M. P., Mioduszewski A. J., Dhawan V., 2005c, [ATel](#), 604
- Rutledge R., Moore C., Fox D., Lewin W., van Paradijs J., 1998, [ATel](#), 8
- Serino M., et al., 2015, [PASJ](#), **67**, 30
- Strader J., Chomiuk L., Maccarone T. J., Miller-Jones J. C. A., Seth A. C., Heinke C. O., Sivakoff G. R., 2012, [ApJ](#), **750**, L27
- Tetarenko A. J., et al., 2016, [MNRAS](#), **460**, 345
- Tetarenko A. J., et al., 2018, [ApJ](#), **854**, 125
- Trap G., et al., 2009, [A&A](#), **504**, 501
- Tudor V., et al., 2016, [ATel](#), 8914
- Tudor V., et al., 2017, [MNRAS](#), **470**, 324
- Tudose V., Fender R. P., Linares M., Maitra D., van der Klis M., 2009, [MNRAS](#), **400**, 2111
- Valenti E., Ferraro F. R., Origlia L., 2007, [AJ](#), **133**, 1287
- Wijnands R., et al., 2006, [A&A](#), **449**, 1117
- Zhang W., Yu W., 2013, [ATel](#), 5136
- de Martino D., et al., 2010, [A&A](#), **515**, A25
- in 't Zand J., et al., 2001, [A&A](#), **372**, 916
- in 't Zand J., Cumming A., van der Sluys M., Verbunt F., Pols O., 2005, [A&A](#), **441**, 675
- van den Bosch R., de Zeeuw T., Gebhardt K., Noyola E., van de Ven G., 2006, [ApJ](#), **641**, 852