

# Divinus Lux Observatory Bulletin: Report #18

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**Abstract:** This report contains theta/rho measurements from 92 different double star systems. The time period spans from 2008.989 to 2009.200. Measurements were obtained using a 20-cm Schmidt-Cassegrain telescope and an illuminated reticle micrometer. This report represents a portion of the work that is currently being conducted in double star astronomy at Divinus Lux Observatory in Flagstaff, Arizona.

The double star measurements contained in this report form part of a series of articles that have been continuously released at Divinus Lux Observatory since the spring of 2001. The primary emphasis of the astronomical research at the observatory has been focused upon double star work since that time. The purpose of these efforts is to help provide current information for the maintenance of the Washington Double Star Catalog (WDS). Because valuable research can be conducted with modest and inexpensive equipment, others who are seeking to initiate a research program are encouraged to join in this rewarding endeavor.

As has been done in previous articles, the selected double star systems, which appear in this report, have been taken from the 2001.0 version of the Washington Double Star Catalog, with published measurements that are no more recent than ten years ago. Several systems are included from the 2006.5 version of the WDS as well. There are also some noteworthy items that are discussed pertaining to the following table.

Consistent with what has been mentioned in previous reports, there are a couple of double stars that have displayed significant theta/rho shifts, during the past ten years, because of proper motions by both of the components. First of all, proper motions by the components, for ENG 25, have caused what appears to

be a 2 degrees increase in the theta value from that which was reported in 1999. Even though a theta value of 20.2 degrees was measured, there is some uncertainty about this result because the WDS and Hipparcos/Tycho catalogs suggest an extrapolated value of 18.4 degrees for the date of 2009.044. Additional measurements of this double star would help to determine which theta value is more accurate.

Proper motions by the component stars, in HJ 807 AB, have caused a rho value increase of approximately 5.5% since 1999. The theta value has increased by one degree during this period.

The table below also contains listings for possible common proper motion double stars that do not appear to have been previously cataloged. The first such pair is labeled as ARN 104 (07158-0048), which is located near STF 1056 in Monoceros. The second listed pair is identified as ARN 105 (08400+2009), which is located in the M44 open star cluster in Cancer.

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NAME	RA DEC	MAGS	PA	SEP	DATE	NOTES
HJ 712	05498+0605	9.4 9.8	84.7	9.38	2009.044	1
ENG 25	06061+3525	6.1 10.1	20.2	150.10	2009.044	2
STF 854	06085+0548	8.8 9.8	321.1	5.43	2009.044	3
GAL 399	06215-1625	9.3 9.5	330.3	19.26	2009.082	4
H 37AB	06321+0458	10.2 10.6	82.0	5.43	2009.044	5
STF 986	06549+0930	8.2 9.0	163.5	5.43	2009.082	6
HJ 3902AB	06574-1821	10.1 10.2	236.3	14.81	2009.082	7
AG 130AB	07016+3950	10.6 10.7	151.9	13.33	2009.044	8
ARN 104*	07158-0048	10.1 10.5	226.8	21.73	2009.044	9
HJ 2386	07283+0345	10.3 10.5	251.2	6.91	2009.082	10
HJ 763	07384+0958	10.1 10.5	212.5	7.41	2009.082	11
STF1123	07415+3325	9.2 9.7	165.7	3.46	2009.082	12
BAL2311	07468+0245	9.5 9.6	223.1	8.89	2009.082	13
STF1185	08071+0121	9.5 10.2	94.0	3.95	2008.992	14
ES 144AB	08080+4611	9.3 9.5	337.0	6.42	2009.085	15
HJ 782	08163-1134	9.2 10.6	236.5	13.83	2008.989	16
BHA 56	08233-1804	9.9 10.4	270.9	18.76	2008.989	17
STT 191	08248+2009	7.3 8.6	191.7	37.53	2008.992	18
SCJ 9	08258+0557	10.4 10.4	330.5	3.95	2008.992	19
FEN 14	08267-1910	10.3 10.3	309.5	4.44	2008.992	20
STF1238	08319+3309	9.1 10.7	320.5	29.13	2008.989	21
STF1234	08331+5521	7.7 9.5	64.6	24.69	2009.085	22
ARN 105*	08400+2009	8.9 9.7	153.7	91.34	2009.085	23
STF1254AB	08404+1940	6.4 10.4	54.9	20.74	2009.085	24
STF1254AC	08404+1940	6.4 7.6	343.4	64.19	2008.085	24
STF1254AD	08404+1940	6.4 9.2	43.3	82.95	2008.085	24
STF1261	08407-1156	7.6 9.5	302.9	29.63	2008.989	25
H 107	08425-0830	7.0 10.5	151.1	93.32	2008.989	26
STF1256	08430+4918	8.6 10.5	216.3	28.14	2008.989	27
ENG 38AB	08433+2128	4.7 10.2	66.5	115.54	2008.992	28
STF1268	08467+2846	4.0 6.0	307.5	30.61	2008.992	29
HJ 4140	08491-1325	9.2 10.6	285.2	10.37	2008.989	30
HJ 2314	08504-0002	10.2 10.7	133.4	16.29	2008.989	31
STF1282	08508+3504	7.5 7.8	279.0	3.46	2009.085	32
AG 156	08508+3418	10.2 10.4	249.8	10.86	2008.992	33

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NAME	RA DEC	MAGS	PA	SEP	DATE	NOTES
STT 96AB	08520+2543	7.5 8.4	313.1	49.38	2008.992	34
STT 96AC	08520+2543	7.5 10.7	266.7	35.01	2008.992	34
ES 1083	09013+4843	10.6 10.6	336.2	6.42	2009.008	35
AG 160	09051+3931	9.8 9.8	60.0	3.95	2009.085	36
AG 161	09057+3227	10.1 10.5	224.0	4.44	2009.008	37
HJ 1164AB	09081+4510	9.5 9.8	174.2	5.93	2009.008	38
POU3029	09082+2353	10.0 10.3	315.5	7.90	2009.008	39
HJ 807AB	09124-0709	9.6 10.0	289.9	15.31	2009.085	40
BU 908A-BC	09143-0817	9.1 10.7	182.6	60.73	2009.008	41
WEI 21	09149-0845	7.3 10.5	15.3	26.17	2009.008	42
BGH 4CA	09207-0742	7.4 9.2	326.4	135.29	2009.008	43
HJ 810AC	09212+2728	10.4 10.7	26.0	22.22	2009.008	44
STF1358	09309+4441	7.8 9.2	175.2	23.70	2009.008	45
HJ 2503	09445+4830	10.4 10.7	158.5	37.03	2009.008	46
STF1396AB	09564+1040	8.8 10.4	129.5	3.95	2009.101	47
STF 6AB	10084+1158	1.4 8.1	307.5	175.78	2009.101	48
STF1416	10123-1605	7.6 9.3	277.0	11.85	2009.101	49
CHE 148	10284+0310	10.0 10.3	64.5	4.94	2009.104	50
HU 635	10285+4733	10.4 10.7	174.0	4.44	2009.101	51
STF1443	10333+3740	9.8 9.9	160.1	5.43	2009.101	52
STF1447	10338+2321	7.5 8.8	124.5	4.44	2009.104	53
STF1448AC	10344+2136	7.4 9.5	259.2	10.86	2009.101	54
FIL 26	10457-0130	10.0 10.1	260.4	20.74	2009.101	55
STF1490	10566+1739	8.6 10.4	100.9	17.28	2009.200	56
STF1495	10598+5854	7.1 8.7	36.3	34.07	2009.101	57
STF1509	11065-1325	7.3 9.3	16.3	33.08	2009.104	58
STF1544	11313+5942	7.3 8.0	90.5	12.34	2009.200	59
STF1558AB-C	11367+2128	9.8 9.8	276.7	43.45	2009.104	60
STT 239	11442+2513	6.0 10.4	30.7	35.54	2009.200	61
TDS8014AC	11454-1128	9.7 10.5	237.1	38.51	2009.104	62
STF1579AB-D	11551+4629	6.7 7.0	113.7	63.20	2009.104	63
STF3076	11566-0514	10.2 10.6	54.5	5.93	2009.200	64
ES 2642	12280+4753	10.1 10.3	257.2	28.14	2009.121	65
BAL1162	12432+0000	10.0 10.7	303.3	14.81	2009.121	66
STF1679AB	12460+4949	9.6 9.9	206.5	5.93	2009.121	67

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NAME	RA DEC	MAGS	PA	SEP	DATE	NOTES
STF1683	12517-0608	8.3 10.6	197.3	15.31	2009.121	68
BRT2731	12519-1404	9.9 9.9	74.5	3.95	2009.121	69
STF1692	12560+3819	2.9 5.5	230.2	18.76	2009.200	70
HJ 2628	12584+5822	8.4 10.6	26.4	31.11	2009.121	71
HJ 2649	13184+5420	10.2 10.5	345.4	20.74	2009.162	72
STF1744AB	13239+5456	2.2 3.9	153.2	14.32	2009.200	73
STF1746	13282+0928	7.6 10.4	245.5	22.71	2009.162	74
STF1750	13304-0628	6.1 10.6	16.2	29.13	2009.162	75
STF1766	13372+3005	9.3 10.7	67.4	20.24	2009.162	76
STF1762	13376-1048	9.3 9.8	276.5	4.44	2009.162	77
STF1764AB	13377+0223	6.7 8.5	31.6	15.80	2009.162	78
STF1764AC	13377+0223	6.7 10.4	138.5	171.83	2009.162	78
WAL 64AD	13377+0223	6.7 10.6	142.6	207.38	2009.162	78
WNC 5	13455-0301	10.2 10.2	163.0	3.95	2009.162	79
STF1791	13568+1426	9.3 10.6	158.8	21.23	2009.162	80
BGH 49	14031-1736	8.7 9.1	24.7	139.24	2009.164	81
STT 274	14067+3447	7.0 10.4	54.9	12.84	2009.164	82
STF1821	14135+5147	4.5 6.6	237.4	13.83	2009.181	83
STF1811	14135-0900	8.7 10.7	332.2	42.46	2009.164	84
STF 26AB	14162+5122	4.7 7.3	33.0	39.00	2009.181	85
ENG 51	14193+1300	5.4 10.7	219.1	163.93	2009.164	86
A 1618AB	14218+4229	10.4 10.6	161.5	3.95	2009.181	87
ES 609AC	14375+4743	10.1 10.1	117.5	78.51	2009.164	88
HU 477	14490-1700	9.7 9.8	212.6	4.94	2009.181	89
HJ 1261	14539+5734	10.4 10.5	17.0	8.89	2009.164	90
HJ 4720	14573-0551	10.4 10.5	212.5	12.84	2009.181	91
STF1921	15120+3840	8.5 8.7	282.4	30.61	2009.181	92

\* Not listed in the WDS Catalog.

#### Notes

1. In Orion. Sep. & p.a. increasing. Spect. A0.
2. In Auriga. Sep. & p.a. increasing. Spect. G0V.
3. In Orion. Relatively fixed. Spect. A2.
4. In Canis Major. Separation decreasing; position angle increasing.
5. In Monoceros. Relatively fixed. Spect. A3V.
6. In Monoceros. Common proper motion; p.a. decreasing. Spect. A2.
7. In Canis Major. Sep. & p.a. increasing. Spect. A2.
8. In Auriga. Separation slightly decreasing. Spect. A4V.

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9. In Monoceros. Possible common proper motion. Near STF 1056.
10. In Canis Minor. Common proper motion; sep. & p.a. increasing.
11. In Canis Minor. Position angle increasing. Spect. G5.
12. In Gemini. Common proper motion; p.a. increasing. Spect. F8.
13. In Canis Minor. Relatively fixed.
14. In Canis Minor. Common proper motion; p.a. decreasing. Spect. K0, K0.
15. In Lynx. Separation decreasing. Spect. G5, G5.
16. In Puppis. Sep. increasing; p.a. decreasing. Spect. F2.
17. In Puppis. Position angle slightly decreasing. Spect. F5.
18. In Cancer. Relatively fixed. Common proper motion. Spect. A5, A5.
19. In Hydra. Relatively fixed. Common proper motion. Spect. F8.
20. In Puppis. Common proper motion. Sep. increasing; p.a. decreasing.
21. In Cancer. Relatively fixed. Common proper motion. Spect. A2.
22. In Lynx. Sep. increasing; p.a. decreasing. Spect. K1III, F8.
23. In M44 in Cancer. Possible common proper motion pair. Spect. A5, G5.
24. In M44 in Cancer. All components = relfix; c.p.m. Spect. K0III, F2, A0, F2.
25. In Hydra. Relatively fixed. Common proper motion. Spect. G5.
26. In Hydra. Separation increasing. Spect. B9.
27. In Ursa Major. Sep. & p.a. increasing. Spect. K2.
28. Gamma or 43 Cancri. Separation increasing. Spect. A1IV, G5.
29. Iota Cancri. Relatively fixed. Common proper motion. Spect. G7.5III, G8II.
30. In Hydra. Common proper motion; p.a. slightly increasing. Spect. F2.
31. In Hydra. Relatively fixed. Common proper motion. Spect. F8.
32. In Lynx. Common proper motion; p.a. decreasing. Spect. F8, F8.
33. In Lynx. Position angle slightly decreasing. Spect. G0, G0.
34. In Cancer. AB = sep. inc. AC = p.a. inc. Spect. AB = K2III, F8.
35. In Ursa Major. Common proper motion; p.a. decreasing.
36. In Lynx. Position angle decreasing. Spect. G5.
37. In Cancer. Sep. & p.a. slightly increasing.
38. In Lynx. Common proper motion; p.a. decreasing. Spect. K0.
39. In Cancer. Relatively fixed. Common proper motion. Spect. F5, F5.
40. In Hydra. Sep. & p.a. increasing. Spect. G, G.
41. In Hydra. Sep. inc.; p.a. decreasing. Spect. F8.
42. In Hydra. Separation decreasing. Spect. A1III.
43. In Hydra. Relatively fixed. Common proper motion. Spect. F8, K0.
44. In Cancer. Sep. increasing; p.a. decreasing. Spect. K0, F5.
45. In Ursa Major. Position angle increasing. Spect. M4.
46. In Ursa Major. Position angle decreasing. Spect. K0, F8.
47. In Leo. Relatively fixed. Common proper motion. Spect. A0, A0.
48. Regulus (Leo). Relatively fixed. Common proper motion. Spect. B7V, G.
49. In Hydra. Relatively fixed. Common proper motion. Spect. A3III.
50. In Sextans. Position angle increasing. Spect. K2.
51. In Ursa Major. Common proper motion. Sep. increasing; p.a. decreasing.
52. In Leo Minor. Common proper motion. Sep. & p.a. increasing. Spect. G0, G0.
53. In Leo. Relatively fixed. Common proper motion. Spect. A2, A2.
54. In Leo. Relatively fixed. Common proper motion. Spect. K0, F8.

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55. In Sextans. Position angle decreasing. Spect. G, G.
56. In Leo. Relatively fixed. Common proper motion. Spect. A3, F8.
57. In Ursa Major. Position angle decreasing. Spect. K2III, K0.
58. In Crater. Relatively fixed. Spect. K0III.
59. In Ursa Major. Relatively fixed. Spect. A5, A2.
60. In Leo. Relatively fixed. Common proper motion. Spect. F8, F5.
61. In Leo. Position angle increasing. Spect. K4III.
62. In Crater. Relatively fixed. Common proper motion. Spect. G0.
63. In Ursa Major. Relatively fixed. Spect. A3V, B9.
64. In Virgo. Common proper motion; sep. & p.a. increasing.
65. In Canes Venatici. Relatively fixed. Common proper motion.
66. In Virgo. Relatively fixed. Common proper motion. Spect. F8, G.
67. In Canes Venatici. Separation increasing. Spect. F6IV, F8.
68. In Virgo. Relatively fixed. Common proper motion. Spect. K0, K0.
69. In Corvus. Sep. & p.a. slightly increasing. Spect. G8.
70. Cor Caroli in Canes Venatici. Common proper motion; sep. dec. Spect. A0, A0.
71. In Ursa Major. Sep. increasing; p.a. decreasing. Spect. F5.
72. In Ursa Major. Separation decreasing. Spect. K0, K0.
73. Mizar in Ursa Major. Common proper motion; p.a. inc. Spect. A2V, A2V.
74. In Virgo. Sep. & p.a. decreasing. Spect. K0.
75. 72 Virginis. Sep. & p.a. decreasing. Spect. F2V.
76. In Canes Venatici. Common proper motion; sep. increasing. Spect. G8V, G5.
77. In Virgo. Common proper motion; sep. & p.a. decreasing. Spect. G5.
78. In Virgo. AB = relfix.; cpm. AC = relfix. AD = sep. decreasing. Spect. K2III.
79. In Virgo. Common proper motion; sep. & p.a. decreasing. Spect. G0.
80. In Bootes. Relatively fixed. Common proper motion. Spect. G5.
81. In Virgo. Relatively fixed. Common proper motion. Spect. G0, G5.
82. In Canes Venatici. Common proper motion; p.a. decreasing. Spect. G9III, K0.
83. Kappa or 17 Bootis. Sep. & p.a. increasing; c.p.m. Spect. A7V, F1V.
84. In Virgo. Sep. & p.a. increasing. Spect. F0.
85. Iota / 21 Bootis. Relatively fixed. Common proper motion. Spect. A7IV, K0V.
86. 18 Bootis. Sep. & p.a. increasing. Spect. F5IV.
87. In Bootes. Common proper motion; sep. slightly increasing.
88. In Bootes. Relatively fixed. Spect. G5, K0.
89. In Libra. Separation increasing. Spect. K1III.
90. In Draco. Relatively fixed. Common proper motion.
91. In Libra. Relatively fixed. Common proper motion.
92. In Bootes. Common proper motion; p.a. slightly decreasing. Spect. A2, A2.