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Abstract: This report contains theta/rho measurements from 95 different double star systems. The time period spans from 2004.697 to 2004.770. All 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.

Several weeks ago, I was privileged to experience one of those rare "number 10" nights while I was measuring double stars in the star fields of Cygnus. During this observing session, a couple of aspects of observational astronomy occurred to me that served as a reminder of some factors that most of us know, but sometimes forget.

First of all, most telescopes that are manufactured for serious work perform in an outstanding manner on those nights when the atmosphere provides nearly perfect seeing and transparency to the observer. On such nights, the telescopic field of view can be full of faint stars that appear to be "rock steady." As a consequence, some double stars that are normally too close together, or too faint to measure, are within reach of one's instrumentation. On the night that I referred to above, I was easily able to measure a pair of magnitude +10 stars that were separated by 5 arc seconds. On an average night, such a measurement can present quite a challenge when using an illuminated micrometer. Hence, on a perfect night, one can come to appreciate the fact that his or her telescope <u>does</u> contain high quality optics after all.

Secondly, when one is working in a crowded star field, such as the one that exists in Cygnus, the number of double stars that appear in a "low power" field of view can be almost overwhelming, especially when one is sky sweeping. The temptation may be to forget about the double stars that are on the measuring list for that night, and simply enjoy the sight for its own sake. Maybe that is not such a bad thing to do on occasion. When the sky is nearly perfect, one may also wish to determine what the double star measuring limits really are for one's optics, by selecting the closest and faintest double star that appears to be within range.

Perhaps the point of this discussion is simply to say that one should stop and "smell the roses" once in a while, so that one's research efforts don't get caught up in a stale routine. This is one way to guard against a loss of enthusiasm for this work, especially after a long period of time, which is something that I must also be alert to when working on an extended research project of this sort.

This article contains a listing of double star measurements that are part of a series, which have been continuously reported at Divinus Lux Observatory, since the spring of 2001. As has been done in previous articles, this one includes a continuation of measures that have been taken from the 2001.0 version of the WDS CATALOG, with published measurements that are no more recent than ten years ago. Exceptions to this time stipulation include STF 2758 AB, STF 2725, STF 60 AB, and STF 296 AB, because the theta/rho shifts for these confirmed binary stars are large enough to warrant more frequent measurements. There are also some noteworthy items that are discussed in reference to the following table.

First of all, WFC 365 has displayed a position angle increase of approximately 15.5 degrees and a separation increase of 2.2" (20%) since the last published measurements in 1906. If this double star is a common proper motion pair, which appears to be the case, these shifts might be caused by orbital motion if this system is truly binary in nature. The reason for being cautious in making this statement is because this dou-

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ble star has only had one set of measurements, from 1906, listed in the WDS Catalog

WFC 15 is another double star that has had a position angle increase, possibly because of orbital motion. Since 1957, this common proper motion pair appears to have shown an increase of almost 12 degrees. If this amount of change is real, then the rate of change has recently increased as well. This might imply that the companion star is approaching periastron. Orbital motion is the likely cause of a 2.3 degrees increase in the theta value for STF 60 AB, since 1999. This statement can be made with a greater degree of confidence because this pair is a confirmed visual binary star that has had orbital elements preliminarily determined.

One possible new double star, labeled as ARN 83, is listed in the table because this pair does not appear to have been previously cataloged. While care is usually taken to avoid submitting new double stars that don't share a common proper motion, this particular entry might not meet this constraint. The reason for making this submission is because the separation is decreasing between the components, both stars display the same spectral type, and the magnitudes are similar. Time will reveal whether the decrease in separation is caused by orbital motion or by discordant proper motions.

Also being reported in this article are measurements of double stars that have displayed theta/rho shifts because of proper motions by one or both of the components. Four such systems are HJ 927, BU 764 AB-C, STT 24 AB, and AG 239. For HJ 927, proper motion by the reference point star is responsible for a 3.4% separation increase since 1991. In the case of BU 764 AB-C, proper motion by the "C" component is the primary cause for a 2.3% separation increase since 1910. In regards to STT 24 AB, proper motion by both components has contributed to a 4.2% increase in separation since 1995. For AG239, proper motion by the companion star has brought about a 2.5 degrees decrease in the theta value since 1991.

Additional double stars showing shifts from proper motion include ENG 80 AC, BU 988 AC, and STF 2758 Aa. For ENG 80 AC, a large proper motion by the reference point star has caused a 4.2" decrease in separation since 1991. A large decrease in the position angle, amounting to 5.5 degrees since 1991, has been caused by the proper motion of the "C" component in BU 988AC. Regarding STF 2758 Aa, a large common proper motion by the "AB" components is responsible for decreases of 89 degrees in position angle and 68.5" in separation since 1921! Because the proper motion of "AB" is so large, the "C," "D," "E," and "a" components of STF 2758 are being "left behind." "AC" now shows a separation of 782".2, while the separation value for "AD" is 691".5 according to the Hipparcos/Tycho catalogs. The position angles are 219 and 251 degrees respectively. Listings for these components do not appear in the table because my micrometer cannot measure components that are so widely separated. Measurements for "AE" were previously done on August 16, 2002.

Also worthy of mention are the theta/rho shifts that have been measured in the AG 239, SEI 882 AB/ES 2690 AC, and SEI 1023 star systems. A large proper motion by the companion star, in AG 239, has caused a 2.4 degrees decrease in the theta value since 1991. For the SEI 882 AB/ES2690 AC multiple star system, proper motion by the "A" component towards "C" and away from "B" has caused a 3.3% separation increase for "AB" and a 3.3% separation decrease for "AC" since 1991. In regards to SEI 1023, proper motion by the reference point star is responsible for 2.7% increase in the rho value since 1991.

Proper motions in opposite directions, by both of the components in three double stars, have caused noteworthy theta/rho shifts as well. The first such system to be mentioned is STF 2734, which has displayed a position angle increase of approximately 2.8 degrees since 1991. The second system in this category is WFC 384, which has had only one previous set of measurements in 1895. Partly as a result of this long time period between measurements, a 2.2 degrees theta decrease and a 26% rho increase are being reported. The third such system to be highlighted is A 3108 AB-CD. In this case, a 3.3% separation increase between "AB" and "CD" has occurred since 1991.

Another situation pertaining to "WFC" double stars is being highlighted in this report. While specific work is being done on the "WFC" doubles, it has been noticed that WFC 378 (21063+3839) and STF 2758 AB (21069+3845), also known as 61 Cygni, appear to be the same double star. This conclusion is based upon similarity of coordinates, magnitudes of the components, and theta/rho positions from 1895. Additionally, since there are no other bright double stars in that part of the sky, this would seem to confirm the existence of a duplicate entry in the WDS CATALOG.

As was mentioned in the last report, this one also contains measurements implying that a recent position angle listing in the WDS CATALOG might be anomalous for unknown reasons. Specifically, STF

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232 is listed as having a CATALOG theta value of 75 degrees in 1995, but measurements in 1832, my measurements, and values from the Hipparcos/Tycho Catalogs cluster around a value of 66 degrees. Because these component stars are relatively fixed, the 1995 theta value appears to be all the more suspect. Additional measurements by others would help to determine if this is the case.

Finally, the position angle measurement that is given in the table, for S 750, appears with a value that is deviant from other catalogs listings. While the WDS CATALOG and the Hipparcos/Tycho Catalogs indicate a p.a. value of around 321 degrees, my measurements match up more closely with the 1825 value of 323 degrees. The micrometer was recalibrated during the measuring process to insure that accurate measurements were being obtained for this pair, but the subsequent measurements remained consistent with the initial values. Because the proper motions of the component stars should cause the theta value to decrease, the reason for this discrepancy is unknown.

NAME	RA DEC	MAGS	PA	SEP	DATE	N	NOTES
HLM 25	19320+5259	8.9 9.6	253.8	11.85	2004.751	1n	1
STF2537	19336-0411	9.2 9.5	140.4	20.24	2004.751	1n	2
HJ 5128 AB	19336-1837	8.3 10.4	111.2	21.23	2004.751	1n	3
HJ 1418 AB	19337+5003	9.3 10.2	12.2	30.12	2004.751	1n	4
AG 232	19346+3518	9.2 10.3	278.0	10.86	2004.751	1n	5
STF2544 AC	19371+0819	8.6 9.9	236.9	13.83	2004.751	1n	6
AG 388	19384+5211	9.7 9.9	185.2	7.90	2004.751	1n	7
HJ 893	19395+1012	9.3 10.0	189.7	7.90	2004.754	1n	8
STF2563 AB	19425+1726	8.6 9.5	285.9	5.93	2004.754	1n	9
STF2563 AC	19425+1726	8.6 9.3	321.3	82.95	2004.754	1n	9
HJ 895 AC	19429+0115	8.5 9.6	24.1	30.12	2004.754	1n	10
HO 579 AC	19436-0904	9.2 10.4	155.6	64.19	2004.757	1n	11
STF2565	19453-1314	9.2 9.3	40.3	5.43	2004.757	1n	12
HJ 897	19468+0845	9.7 10.2	290.1	13.83	2004.757	1n	13
AG 239	19478+5154	8.6 9.8	239.6	15.80	2004.751	1n	14
HDS2814	19480-1434	8.5 10.5	139.1	18.27	2004.770	1n	15
KU 124	19487+2048	9.8 10.5	283.7	49.38	2004.770	1n	16
HU 77 AB-C	19506-1047	9.4 9.4	316.5	27.65	2004.770	1n	17
HJ 1443	19515+2522	10.0 9.9##	195.0	18.76	2004.770	1n	18
STF2591	19534-0600	8.7 9.1	106.9	29.63	2004.757	1n	19
STF2602 AB	19563-1321	9.3 9.8	147.8	12.34	2004.757	1n	20
ARG 35	19581+5355	9.0 9.9	226.1	7.41	2004.697	1n	21
KU 126	19583+3147	9.5 9.6	12.9	53.33	2004.697	1n	22
BU 1476 AC	19589-1318	9.5 10.0	193.1	132.33	2004.770	1n	23
ES 1970 AB	19591+3942	9.9 10.1	149.5	17.78	2004.697	1n	24
WFC 365	19593+2215	9.5 9.5	31.6	13.33	2004.699	1n	25
AG 397	20029+1056	8.8 9.6	113.6	28.64	2004.699	1n	26
STF2618	20034+1528	9.4 9.8	116.1	5.43	2004.699	1n	27

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NAME	RA DEC	MAGS	PA	SEP	DATE	N	NOTES
ARG 106	20054+5807	9.7 10.2	179.2	30.61	2004.699	1n	28
HJ 2934 CA	20057+5925	9.5 9.8	264.2	36.54	2004.699	1n	29
HJ 902	20066+0207	9.9 10.1	18.4	6.91	2004.699	1n	30
SEI 882 AB	20069+3115	8.8 10.5	60.5	33.58	2004.754	1n	31
ES 2690 AC	20069+3115	8.8 10.5	251.0	32.59	2004.754	1n	31
HJ 2936	20077+5908	9.5 10.3	250.7	12.84	2004.699	1n	32
SEI 926 AD	20094+3630	8.6 9.5	349.2	29.63	2004.697	1n	33
BLL 45	20095+4752	8.6 9.8	139.4	145.16	2004.697	1n	34
WFC 367	20102+4130	9.5 9.6	298.0	4.94	2004.699	1n	35
ES 87	20102+3644	9.3 10.3	298.0	8.89	2004.697	1n	36
SEI 958	20108+3646	10.0 10.0	323.5	21.73	2004.697	1n	37
ARG 36	20110+5717	8.7 9.9	128.2	7.90	2004.697	1n	38
STF2636	20117-0435	9.4 10.3	203.0	12.34	2004.757	1n	39
SEI1023	20136+3640	9.1 10.5	343.4	28.64	2004.754	1n	40
S 750	20299+2624	8.8 9.0	323.6	68.14	2004.754	1n	41
STF2692 AC	20310+2629	8.8 9.6	301.1	25.68	2004.754	1n	42
HJ 2974	20310+2007	9.6 9.8	296.6	14.32	2004.770	1n	43
HJ 2977	20329+1803	9.4 10.3	317.4	19.75	2004.770	1n	44
A 3108 AB-CD	20329+1357	9.1 9.9	340.3	96.78	2004.770	1n	45
ARN 83 #	20336+2106	8.4 9.1	73.4	58.26	2004.770	1n	46
WFC 374	20396+2018	8.6 10.0	319.7	6.42	2004.713	1n	47
HJ 922	20411+2133	9.7 9.7	312.3	7.41	2004.770	1n	48
HJ 921	20418-0430	9.4 9.6	219.9	9.38	2004.757	1n	49
HLD 40 AB	20434-1929	9.5 10.3	355.8	5.43	2004.757	1n	50
HLD 40 AC	20434-1929	9.5 10.1	257.9	144.18	2004.757	1n	50
BU 1302 AC	20448+2311	8.8 9.4	210.2	54.31	2004.757	1n	51
ES 1449	20452+4337	9.4 9.9	57.2	6.42	2004.754	1n	52
ES 2701	20459+4448	8.7 9.2	80.5	51.35	2004.713	1n	53
STF2725	20462+1554	7.5 8.1	11.7	6.42	2004.732	1n	54
ES 9006	20487+3334	9.0 10.4	94.0	25.68	2004.713	1n	55
HJ 926	20493+2026	9.3 9.9	190.5	5.93	2004.713	1n	56
HDS2970	20507-0929	8.9 10.0	114.1	14.81	2004.713	1n	57
ARG 40	20514+4519	9.3 10.2	251.2	9.38	2004.713	1n	58
ARG 41 AB	20515+5403	9.4 9.5	192.6	10.86	2004.713	1n	59
HJ 3001	20519-1631	9.8 10.4	241.4	6.91	2004.713	1n	60
STF2734	20541+1306	9.3 9.8	223.8	23.70	2004.713	1n	61
HJ 927	20565-0134	9.5 9.8	347.4	37.53	2004.713	1n	62
HWE 101 AB	20575+0036	9.1 10.1	138.9	40.49	2004.713	1n	63

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NAME	RA DEC	MAGS	PA	SEP	DATE	N	NOTES
AG 268	20582+0447	8.6 9.9	287.2	12.34	2004.713	1n	64
BU 764 AB-C	20588-0921	9.2 9.5	111.6	102.70	2004.713	1n	65
BU 764 AB-D	20588-0921	9.2 9.1##	22.2	136.28	2004.713	1n	65
BU 69 AC	21026+2141	8.1 7.9##	241.8	74.06	2004.732	1n	66
SEI1393	21047+3908	9.6 10.4	133.4	26.66	2004.732	1n	67
S 773	21048+3531	8.9 9.5	30.9	85.91	2004.732	1n	68
ENG 80 AC	21053+0704	8.4 9.0	106.4	169.36	2004.732	1n	69
ROE 45 AD	21061+4448	8.1 10.5	241.0	130.35	2004.732	1n	70
ROE 45 BC	21061+4448	10.3 10.5	238.2	123.44	2004.732	1n	70
STF2759	21065+3227	8.6 10.0	332.6	18.76	2004.732	1n	71
STF2758 AB	21069+3845	5.2 6.0	150.9	31.11	2004.732	1n	72
STF2758 AH	21069+3845	5.2 10.0	300.8	72.09	2004.732	1n	72
BU 988 AC	21070+4125	10.0 9.8##	11.5	9.38	2004.732	1n	73
STF2761	21074+2429	9.3 9.7	109.9	5.43	2004.732	1n	74
ABH 141 AD	21078+3421	8.5 10.2	222.6	84.93	2004.732	1n	75
AG 414	21082+4055	9.3 9.6	105.0	5.43	2004.732	1n	76
WFC 384	21391+4421	9.5 10.0	80.8	5.93	2004.713	1n	77
AG 274 AB	21396+2322	9.6 10.5	153.1	9.38	2004.699	1n	78
HJ 5298	21526-1548	9.0 10.2	318.3	66.16	2004.697	1n	79
HJ 616	21550-1158	8.1 10.5	275.0	30.61	2004.697	1n	80
ALL 4	21560+1948	9.2 9.7	207.6	19.26	2004.697	1n	81
BU 1214 AC	21566+3421	9.6 9.9	14.9	106.65	2004.697	1n	82
HJ 1932	00043+4235	8.6 9.4	307.5	6.91	2004.735	1n	83
ES 1488	00475+4214	9.1 9.7	280.9	6.91	2004.738	1n	84
STF 60 AB	00491+5749	3.5 7.4	320.3	12.84	2004.735	1n	85
STF 136 AB	01349+1234	7.3 8.3	77.3	15.31	2004.735	1n	86
STF 205 A-BC	02039+4220	2.1 5.0	63.5	9.88	2004.735	1n	87
WFC 15	02045+4750	9.9 10.3	119.8	5.43	2004.735	1n	88
STT 24 AB	02129+5712	7.0 8.7	332.0	88.88	2004.735	1n	89
STF 232	02147+3024	7.8 7.9	65.9	6.91	2004.735	1n	90
STT 25	02169+5703	6.5 7.4	204.9	101.71	2004.735	1n	91
STF 5	02370+2439	6.5 7.0	275.1	37.53	2004.735	1n	92
STF 296 AB	02442+4914	4.1 9.9	308.5	20.74	2004.735	1n	93
WFC 23	03040+4707	9.6 10.4	320.5	7.41	2004.735	1n	94
STF 412 AB-C	03344+2428	6.1 9.9	54.7	22.71	2004.735	1n	95

Not listed in the WDS CATALOG.

Companion star is the brighter component.

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Notes

1. In Cygnus. Common proper motion; p.a. decreasing. Spect. A0
2. In Aquila. Sep. & p.a. increasing. Spect. A0.
3. In Sagittarius. Relatively fixed. Spect. A8, A5.
4. In Cygnus. Sep. & p.a. increasing. Spect. K0.
5. In Cygnus. Relatively fixed. Common proper motion. Spect. F0, F0.
6. In Aquila. Sep. & p.a. decreasing. Spect. A3, A3.
7. In Cygnus. Relatively fixed. Common proper motion. Spect. G0, G0.
8. In Aquila. Position angle decreasing. Spect. K2.
9. In Sagitta. A, B, & C = relfixed; cpm. Spect. AC = G0, A2.
10. In Aquila. Sep. & p.a. increasing. Spect. G1V, A2.
11. In Aquila. Sep. & p.a. increasing. Spect. A0.
12. In Sagittarius. Common proper motion; p.a. increasing. Spect. K0III, G5.
13. In Aquila. Relatively fixed. Spect. G0, G0.
14. In Cygnus. Sep. increasing; p.a. decreasing. Spect. K2, G5.
15. In Sagittarius. Sep. & p.a. increasing. Spect. B9IV, B9IV.
16. In Vulpecula. Sep. decreasing; p.a. increasing. Spect. K0, B8.
17. In Aquila. Sep. & p.a. decreasing. Spect. K0, K2.
18. In Vulpecula. Relatively fixed. Spect. A3.
19. In Aquila. Common proper motion; p.a. decreasing. Spect. F8, G0.
20. In Sagittarius. Position angle decreasing. Spect. B9.5V, A0.
21. In Cygnus. Relatively fixed. Common proper motion. Spect. G5, F2.
22. In Cygnus. Relatively fixed. Spect. F8, A2.
23. In Sagittarius. Separation slightly increasing. Spect. K7, K5.
24. In Cygnus. Separation decreasing.
25. In Vulpecula. Common proper motion. Sep. & p.a. increasing. Spect. K2, K2.
26. In Aquila. Position angle increasing. Spect. G5, A0.
27. In Aquila. Relatively fixed. Spect. A0.
28. In Cygnus. Common proper motion; sep. increasing. Spect. F8.
29. In Cygnus. Common proper motion; p.a. increasing. Spect. K7, K0.
30. In Aquila. Relatively fixed. Spect. F8.
31. In Cygnus. AB = sep. inc, p.a. dec. AC = sep. dec. Spect. AB = F7V, G0.
32. In Cygnus. Position angle decreasing. Spect. A0, A0.
33. In Cygnus. Relatively fixed. Spect. B0I.
34. In Cygnus. Relatively fixed. Spect. N4, K0.
35. In Cygnus. Relatively fixed. Common proper motion.
36. In Cygnus. Separation decreasing. Spect. A0V.
37. In Cygnus. Position angle decreasing. Spect. B8IV.
38. In Cygnus. Relatively fixed. Common proper motion. Spect. F8.
39. In Aquila. Relatively fixed. Common proper motion. Spect. A0.
40. In Cygnus. Separation increasing. Spect. A7III.
41. In Vulpecula. Separation slightly increasing. Spect. K0, K0.
42. In Vulpecula. Relatively fixed. Common proper motion. Spect. A0, A0.
43. In Delphinus. Position angle increasing. Spect. K2, K.
44. In Delphinus. Sep. increasing; p.a. decreasing. Spect. M2, K.
45. In Delphinus. Sep. increasing; p.a. decreasing. Spect. F8, K0.
46. In Vulpecula. Separation decreasing. Spect. K2, K2.
47. In Vulpecula. Position angle slightly decreasing. Spect. F8.
48. In Vulpecula. Common proper motion; p.a. increasing. Spect. F5, F5.
49. In Aquarius. Relatively fixed. Common proper motion. Spect. G0.
50. In Capricornus. AB = p.a. dec. AC = relfix; common proper motion. Spect. F7.
51. In Vulpecula. Sep. & p.a. increasing. Spect. A0, F5.

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52. In Cygnus. Position angle increasing. Spect. A2, A.
53. In Cygnus. Separation decreasing. Spect. A7V, F0.
54. In Delphinus. Sep. & p.a. increasing. Spect. K0, K0.
55. In Cygnus. Relatively fixed. Spect. A2.
56. In Vulpecula. Sep. & p.a. dec. Common proper motion. Spect. G0, G0.
57. In Aquarius. Relatively fixed. Spect. G0, G0.
58. In Cygnus. Position angle slightly increasing. Spect. A5, F.
59. In Cygnus. Sep. & p.a. increasing. Spect. F0.
60. In Capricornus. Relatively fixed. Spect. F6V.
61. In Delphinus. Sep. decreasing; p.a. increasing. Spect. G0, G0.
62. In Aquarius. Separation increasing. Spect. F8.
63. In Aquarius. Separation slightly decreasing. Spect. A5.
64. In Equuleus. Relatively fixed. Spect. A2.
65. In Aquarius. AB-C = Sep. inc. AB-D = Sep. dec. Spect. F8, G0, G0.
66. In Vulpecula. Sep. decreasing; p.a. increasing. Spect. F0, K0.
67. In Cygnus. Sep. & p.a. decreasing.
68. In Cygnus. Separation slightly increasing. Spect. M0, K0.
69. In Equuleus. Sep. & p.a. decreasing. Spect. K5, F0.
70. In Cygnus. AD = sep. increasing. BC = sep. slightly decreasing. Spect. K0.
71. In Cygnus. Sep. & p.a. increasing. Spect. G5, G.
72. 61 Cygni. AB = sep. & p.a. inc. Aa = p.a. dec. Spect. AB = K5V, K7V.
73. In Cygnus. Sep. & p.a. decreasing. Spect. F8, K.
74. In Vulpecula. Position angle slightly decreasing. Spect. A2, A2.
75. In Cygnus. Relatively fixed. Spect. M0.
76. In Cygnus. Position angle decreasing. Spect. F5, F5.
77. In Cygnus. Sep. increasing; p.a. decreasing. Spect. A0.
78. In Pegasus. Relatively fixed. Common proper motion. Spect. F8, F8.
79. In Capricornus. Sep. & p.a. increasing. Spect. K0IV.
80. In Capricornus. Relatively fixed. Common proper motion. Spect. A2.
81. In Pegasus. Sep. & p.a. increasing. Spect. G0, G0.
82. In Pegasus. Sep. & p.a. decreasing. Spect. A0.
83. In Andromeda. Sep. slightly decreasing; p.a. increasing. Spect. F5V, F7V.
84. In Andromeda. Position angle decreasing. Spect. A3.
85. Eta or 24 Cassiopeiae. Sep. & p.a. increasing. Spect. F8, G0V.
86. In Pisces. Common proper motion; p.a. slightly decreasing. Spect. A6V, F5.
87. Gamma Andromedae. Sep. slightly dec; cpm. Spect. K3II, B8V.
88. In Perseus. Common proper motion; p.a. increasing. Spect. F8, F8.
89. In Perseus. Separation increasing. Spect. G2V, G0.
90. In Triangulum. Relatively fixed. Common proper motion. Spect. A0V, A0V.
91. In Perseus. Separation slightly decreasing. Spect. B1I, B1.
92. 30 Arietis. Relatively fixed. Common proper motion. Spect. F5V, F7V.
93. Theta or 13 Persei. Sep. & p.a. increasing. Spect. F8, M1V.
94. In Perseus. Separation slightly increasing.
95. 7 Tauri. Position angle increasing. Spect. A2V.