

# Double Star Measurements Using a Webcam, Annual Report of 2011

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**Abstract:** I report on the measurements of 113 double stars of 2011 using a standard webcam. For 3 double stars I recommend companions not yet listed in the WDS catalog.

For my observations I use a small 8 inch Newtonian telescope with a webcam described in my previous reports (Schlimmer 2007a, Schlimmer 2008b). No system change has been made. The reproduction scale of the optical system (focal length 1500 mm) is about 0.79 as/pxl or 0.34 as/pxl if a focal length of 3000 mm is used. For analyses of the webcam records I use the REDUC software package, written by Florent Losse.

In some observations I found components which are not yet listed in WDS catalog. These observations are discussed below.

## **STF 721AB, GUI 7AD**

STF 721AB was discovered in 1783 by William Herschel. In 1878 Burnham found a third component C close to B. Guillaume found in 1904 a fourth component D in a distance of 132 as with an angle of 165 degree. Since its discovery in 1904 no further observation of AD was made.

In my observations of AD I measured a distance of 145 as and an angle of 146 degree. The relative proper motion between AD given in WDS catalog is very small and doesn't match with results which can be calculated of both observations. In a distance of 10 as from D a further component can be observed. The angle is about 267 degree the brightness is about 11 mag (Figure 1).

## **WDS05545+1146, KUI 21**

WDS05545+1146, KUI 21 was discovered in 1901. Brightness of the primary component is 6.6

mag, the secondary component has a brightness of 10.9 mag. In a distance of 78 as a third component can be found. The angle is 276 degree. A fourth component can be found in a distance of 82 as. The angle is 355 degree. The brightness of these components is about 11 mag (Figure 2). Both components are not yet listed in WDS catalog.

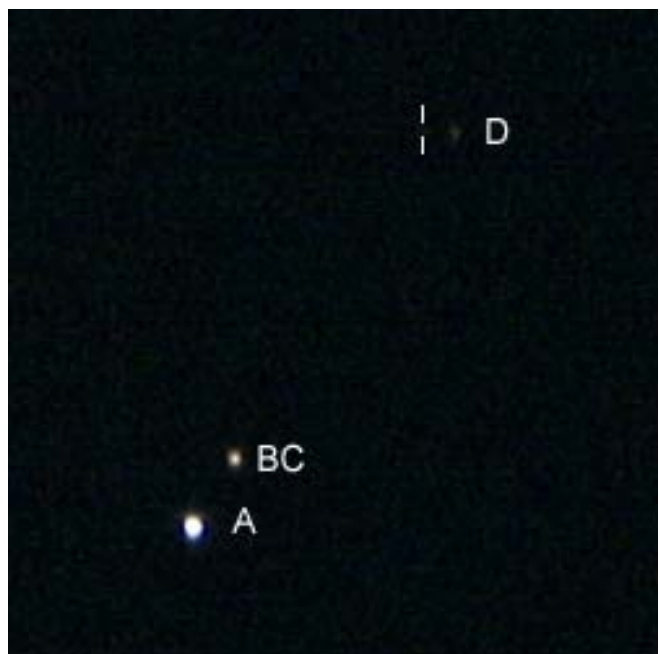


Figure 1: STF 721AB and GUI 7AD with a new component near D. This component is not yet listed in WDS catalog.

## Double Star Measurements Using a Webcam, Annual Report of 2011

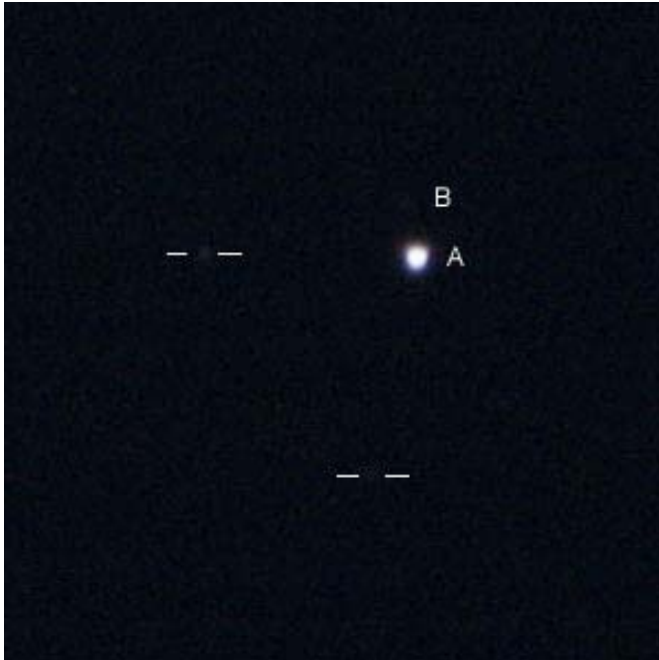


Figure 2: Near KUI 21 there are two further components which are not listed in WDS catalog. Both components are marked with lines.

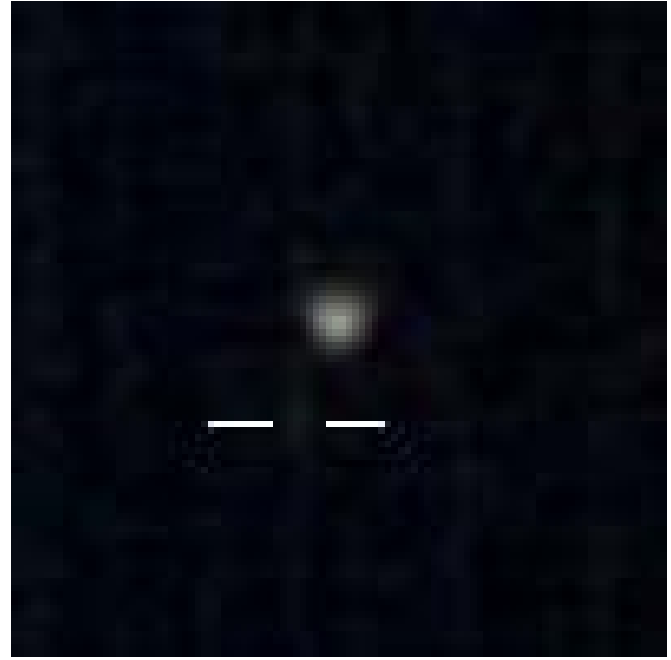


Figure 3: The section of the webcam image was magnified of two times. Near BD+282195 is a small star which is not yet listed in WDS catalog. This component is marked with lines.

### ***BD+282195***

BD+282195 is an optical double star in constellation Comae. The FK5 coordinates in Simbad database are 131232.903 +274154.56. On poss2 photos BD+282195 looks like a double star, but it is not listed as double star in SINBAD astronomical database. To get more information about distance between BD+282195 and its neighbor star it was observed by the author. BD+282195 can be found at a distance of 856 arc seconds from beta Comae. Its visual magnitude is 10.6. The magnitude of the neighbor star on poss2 photos can be estimated at about 11.6. There is no significant variation in the red, blue or ir picture. The distance is about 12 as, the position angle is 345 degrees.

### **Acknowledgements**

This research has made use of the Washington Double Star Catalog maintained at the U.S. Naval Observatory.

This research has made use of the SIMBAD database, operated at CDS, Strasbourg, France

### **References**

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Schlimmer 2007b: Christian Mayer's Double Star Catalog of 1779, *Journal of Double Star Observations*, Vol. 3 No. 4, Pages 151-158

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SIMBAD Astronomical Database, <http://simbad.u-strasbg.fr/simbad/>

WDS Catalog, The Washington Double Star Catalog, Mason, Wycoff, Hartkopf, Astrometry Department, U.S. Naval Observatory

### Double Star Measurements Using a Webcam, Annual Report of 2011

Name	RA+DEC	MAGS	PA	SEP	DATE	N	NOTES
H 5 32AB	00084+2905	2.22 11.11	285.3	90.81	2011.914	1	$\alpha$ And
STFA 3AB	01144-0755	5.19 7.85	331.3	48.98	2011.895	1	37 Cet
STF 151	01460+6113	10.59 10.98	42.1	7.28	2011.695	1	NGC 663
STI 288	01461+6112	10.56 12.43	138.7	13.66	2011.695	1	NGC 663
STF 152	01461+6114	9.04 11.20	110.6	9.07	2011.695	1	NGC 663
ES 1950AB	01464+6116	8.60 12.39	253.9	28.08	2011.695	1	NGC 663
STF 153	01466+6116	9.36 10.38	72.1	7.75	2011.695	1	NGC 663
ENG 8	01496-1041	4.69 6.81	250.9	183.91	2011.895	1	$\xi$ Cet
STF 281	02359+0536	4.97 9.08	80.3	8.41	2011.914	1	$\varpi$ Cet
PLQ 32AC	02361+0653	5.93 11.66	110.1	164.36	2011.914	1	FK1073
STF 589	04448+0517	8.78 8.92	276.2	4.72	2011.060	1	
STTA 55	04491+0513	8.22 9.24	16.8	37.41	2011.060	1	
STFA 1	00464+3057	7.25 7.43	46.7	47.25	2011.914	1	note 1
STF 60AB	00491+5749	3.52 7.36	321.4	13.17	2011.695	1	eta Cas
STF 60AE	00491+5749	3.52 10.15	125.1	79.34	2011.695	1	
SMR 2AI	00491+5749	3.5 11.6	74.1	90.96	2011.695	1	
STT 560AB	04498+0658	3.22 11.31	170.5	73.08	2011.060	1	Pi 3 Ori
H 6 83	04503+0657	7.24 10.14	6.2	94.68	2011.060	1	
STF 627AB	05006+0337	6.59 6.95	260.6	21.13	2011.060	1	
STF 697AB	05235+1602	7.27 8.10	286.1	25.93	2011.076	1	Ori
WAL 38AC	05235+1602	7.27 10.83	284.8	97.59	2011.076	1	Ori
SMR 3AD	05235+1602	7.3 10.1	285.0	249.02	2011.076	1	Ori
STF 721A BC	05296+0309	7.09 9.14	148.3	25.20	2011.079	1	
GUI 7AD	05296+0309	7.09	146.3	144.59	2011.079	1	
DE	05296+0309		267.2	10.26	2011.079	1	note 2
STFA 14AC	05320-0018	2.41 6.83	0.5	52.55	2011.060	1	$\delta$ Ori
KUI 21	05545+1146	6.58 10.91	200.9	20.86	2011.101	1	
	05545+1146	6.58	275.6	78.60	2011.101	1	note 3
	05545+1146	6.58	354.5	82.21	2011.101	1	note 4
STF 815AB	05546+0521	8.35 9.82	136.3	12.94	2011.079	1	
STF 815AC	05546+0521	8.35 9.75	309.1	85.07	2011.079	1	
STF 816	05549+0552	6.90 9.27	285.6	4.43	2011.079	1	
ARG 63AB	05571+1014	8.69 9.09	67.3	32.35	2011.101	1	
STF1254AB	08404+1940	6.44 10.37	54.2	20.35	2011.271	1	
STF1254AC	08404+1940	6.52 7.61	343.1	63.19	2011.271	1	
STF1254AD	08404+1940	6.52 9.20	44.1	82.07	2011.271	1	
S 571AC	08399+1933	7.31 7.47	156.9	44.80	2011.271	1	
S 571AD	08399+1933	7.31 6.67	62.1	92.22	2011.271	1	
BKO 34DE	08399+1933	6.67 11.0	3.2	35.75	2011.271	1	
STF1424AB	10200+1950	2.37 3.64	128.3	4.62	2011.350	1	Algieba

Table continues on next page.

### Double Star Measurements Using a Webcam, Annual Report of 2011

Name	RA+DEC	MAGS	PA	SEP	DATE	N	NOTES
STF1424AC	10200+1950	2.37 9.64	288.8	335.33	2011.350	1	AD Leo
STF1424AD	10200+1950	2.60 10.0	302.5	367.29	2011.350	1	
STF1424CD	10200+1950	9.64 10.62	4.8	89.51	2011.350	1	
STF1659AB	12357-1201	7.94 8.34	351.3	27.49	2011.336	1	
STF1659AC	12357-1201	7.94 10.95	69.7	42.46	2011.336	1	
STF1659AE	12357-1201	7.94 6.78	275.4	152.30	2011.336	1	
STF1659AF	12357-1201	7.94 6.64	140.1	208.30	2011.336	1	
STF1659EF	12357-1201	6.86 6.70	121.4	331.26	2011.336	1	
STF1670AB	12417-0127	3.48 3.53	19.2	1.53	2011.336	1	g Vir
STF1670AE	12417-0127	3.48 8.94	168.2	258.62	2011.336	1	
STF1670AF	12417-0127	3.48 9.53	267.9	420.95	2011.336	1	
STF1659AB	12357-1201	7.94 8.34	351.3	27.49	2011.336	1	
STF1659AC	12357-1201	7.94 10.8	69.7	42.56	2011.336	1	
STF1659AE	12357-1201	7.94 6.78	275.4	152.30	2011.336	1	
STF1659AF	12357-1201	7.94 6.64	140.1	208.30	2011.336	1	
STF1659EF	12357-1201	6.78 6.64	121.4	331.26	2011.336	1	
STFB 6AB	10084+1158	1.40 8.24	307.6	174.06	2011.350	1	Regulus
STT 578	13119+2753	4.26 10.1	181.6	124.57	2011.350	1	b Comae
BD+282195	13123+2742	10.6	345.0	11.91	2011.350	1	note 5
STF1873	14448+0742	7.96 8.35	91.7	6.95	2011.583	1	
HLD 120AB	14527+0746	8.05 10.84	224.3	16.28	2011.583	1	note 6
STTA171AB	18329+3850	7.02 8.12	328.7	149.98	2011.583	1	note 7
STTA171AG	18329+3850	7.02 11.1	134.4	81.08	2011.583	1	
H 5 39AB	18369+3846	0.09 9.5	183.3	81.11	2011.583	1	Vega
STFB 9AE	18369+3846	0.09 9.5	39.2	88.54	2011.583	1	Vega
BLL 35	18433+3918	6.64 10.35	192.8	60.64	2011.583	1	
STF2382AB	18443+3940	5.15 6.10	347.3	2.34	2011.484	1	eps lyr
STFA 37AC	18443+3940	4.67 4.56	172.2	208.83	2011.583	1	eps lyr
STFA 37AI	18443+3940	5.15 10.43	137.3	150.38	2011.583	1	eps lyr
STF2383CD	18443+3940	5.25 5.38	75.3	2.31	2011.484	1	eps lyr
STF2383CE	18443+3940	5.25 11.71	333.1	63.44	2011.583	1	eps lyr
STFA 37CI	18443+3940	5.25 10.43	36.9	120.05	2011.583	1	eps lyr
EI	18443+3940	11.71 10.43	68.4	108.94	2011.583	1	eps lyr
SHJ 277EF	18443+3940	11.71 11.2	38.5	45.06	2011.583	1	eps lyr
ES 2028AB	18545+3654	4.30 11.2	350.2	87.29	2011.670	1	d Lyr2
SMR 13AD	18545+3654	4.30 8.8	210.6	192.40	2011.670	1	
SMR 13AE	18545+3654	4.30 10.3	238.9	399.69	2011.670	1	
SMR 13AF	18545+3654	4.30	246.0	368.71	2011.670	1	
SMR 13AG	18545+3654	4.30	261.9	335.45	2011.670	1	
SMR 13AH	18545+3654	4.30	285.2	229.04	2011.670	1	

Table continues on next page.

### Double Star Measurements Using a Webcam, Annual Report of 2011

Name	RA+DEC	MAGS	PA	SEP	DATE	N	NOTES
SMR 13AJ	18545+3654	4.30	250.3	279.73	2011.670	1	
SMR 13AK	18545+3654	4.30	237.3	304.32	2011.670	1	
SMR 13HI	18545+3654	4.30	250.7	25.97	2011.670	1	
STFB 10AB	19508+0852	0.95 9.82	285.3	194.67	2011.583	1	Altair
STFB 10AC	19508+0852	0.95 10.3	107.7	188.63	2011.583	1	Altair
SMR 5AE	19508+0852	0.95 11.0	354.0	153.21	2011.583	1	Altair
SMR 5AF	19508+0852	0.95 10.3	46.7	295.79	2011.583	1	Altair
SMR 7	20000+1736	10.1 11.4	261.9	4.06	2011.583	1	
S 730AB	20001+1737	7.16 8.45	14.1	113.38	2011.583	1	
S 730AC	20001+1737	7.16 10.21	337.6	78.92	2011.583	1	
S 730AD	20001+1737	7.16 9.9	198.1	40.81	2011.583	1	
STF2758AB	21069+3845	5.35 6.10	151.8	31.38	2011.703	1	61 Cygni
STF2758AE	21069+3845	5.20 9.63	269.1	320.36	2011.670	1	61 Cygni
STF2758AF	21069+3845	5.20 11.32	240.7	346.39	2011.670	1	61 Cygni
STF2758AG	21069+3845	5.20 10.84	236.3	235.50	2011.670	1	61 Cygni
STF2758AH	21069+3845	5.20 10.89	279.9	92.51	2011.669	3	61 Cygni
BU 1502AB	21186+6235	2.46 11.46	17.4	196.59	2011.791	1	
ES 137AB	21191+6152	6.70 10.30	73.8	45.58	2011.791	1	
STF2806AB	21287+7034	3.17 8.63	248.8	13.65	2011.791	1	
STF2816AC	21390+5729	5.73 7.48	119.1	11.75	2011.703	1	
STF2816AD	21390+5729	5.73 7.53	337.6	19.77	2011.703	1	
STF2819	21404+5735	7.44 8.64	57.9	12.80	2011.703	1	
STT 461AB	22039+5949	6.66 11.4	297.1	10.99	2011.791	1	
STT 461AC	22039+5949	6.66 10.03	39.6	89.91	2011.791	1	
STT 461AD	22039+5949	6.66 7.84	71.8	184.29	2011.791	1	
STT 461AE	22039+5949	6.66 6.96	36.9	237.37	2011.791	1	
STT 461EF	22039+5949	6.96 8.14	33.3	192.64	2011.791	1	
ENG 83AB	22118+5650	5.30 10.70	19.2	51.24	2011.791	1	
ENG 84AB	22150+5703	4.21 9.18	355.9	118.11	2011.791	1	e Cephei
H 4 31AB	22284+5825	8.54 10.52	3.5	25.01	2011.791	1	
ARN 79AC	22284+5825	8.54 9.46	320.7	78.63	2011.791	1	
STFA 58AC	22292+5825	4.21 6.11	191.8	40.90	2011.791	1	d Cephei
STF3050AB	23595+3343	6.46 6.72	331.7	2.12	2011.914	1	note 8

## Notes:

1. STFA 1 = Mayer 1 (Schlimmer 2007b)
2. Not yet listed in WDS catalog, see figure 1
3. Not yet listed in WDS catalog, see figure 2
4. Not yet listed in WDS catalog, see also figure 2
5. In a distance of 856 arcsec from beta Comae, not yet listed in WDS catalog, see figure 3
6. HLD120AB, proper motion star, see (Schlimmer 2008a)
7. Near Vega
8. STF3050AB = Mayer 80 (Schlimmer 2007b)