Discovery of 3 New Optical Double Stars in Constellation Cygnus

Joerg S. Schlimmer
Seeheim-Jugenheim, Germany
js@epsilon-lyrae.de

Abstract: During observations of ES 361 (HD 333501) in constellation Cygnus also HD 333510 and two further stars could be found as optical double stars

During my observation program of Espin's double stars, I did some investigation on ES 361 because it wasn't marked as double star in my planetary software [Redshift] which was used for telescope control. For identification I first made some photos with a Canon 1100D DSLR Camera of the field of ES 361 with different exposure times. In this way, 3 new interesting double stars could be found, which were not listed in WDS catalog or marked as double stars in my planetary software. On the next observation night, these stars were targeted. Some videos with a QHY 5LII-C CMOS were recorded for later data analysis with REDUC software [Losse]. All observations were done with a 12-inch Newtonian telescope. Focal length was 1500 mm.

1. HD 333510

Similar to ES 361, HD 333510 could also be found as a high contrast double star. The distance between ES 361 and HD 333510 is about 20.5'. The coordinates of HD 333510 are 20h 06' 40.36" in RA and +30° 30' 28.57" in declination. Visual brightness of HD 333510 is 9.08 magnitudes. Estimated contrast between primary and secondary is about 3.4 magnitudes, so a brightness of about 12.5 magnitudes can be assumed for the secondary. Separation is 6.64", position angle is 43.9°. Because proper motion of HD 333510 is very small (1.191 -1.924 mas/y), it may be take a while until the true relationship between the two is known.

2. USNO B1.0 1206-0471491

USNO B1.0 1206-0471491 can be found next to TYC 2671-02093-1, see Figure 2. Coordinates are 20h 07' 37.147" in RA and +30°42'08.49" in declination. Brightness is only 11.5 magnitudes, estimated contrast is 0.6 magnitudes. It could be found a separation of 3.16" and a position angle of 87.8°. Proper motion isn't known.

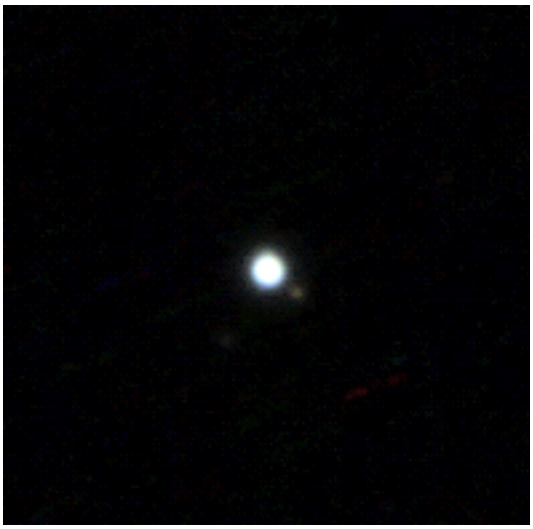

Figure 1: HD 333510, 74 frames taken with QHY 5LII-C CMOS were stacked

3. USNO B1.0 1206-0471593

Only 154'' from USNO B1.0 1206-0471593 a further faint double star USNO B1.0 1206-0471593 can be found, see also figure 2. Coordinates are 20h 07m 41.454s in RA and +30°44'31.81'' in declination. Distance to ES 361 is about 14'. The brightness is only 11.5 magnitudes estimated contrast is about 0.8 magnitudes. It could be found a separation of 3.93" and a position angle of 42.6°. Proper motion isn't also known.

Table 1 shows the summary of the new optical double stars.

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Name	RA +Dec	Mags	PA	Sep	Date	N
HD 333510	20 06 40.36 +30 30 28.57	9.08 12.5	43.9	6.64	2019.714	1
USNO B1.0 1206-0471491	20 07 37.15 +30 42 08.49	11.5 12.1	87.8	3.16	2019.714	1
USNO B1.0 1206-0471593	20 07 41.45 +30 44 31.81	11.5 12.3	42.6	3.93	2019.714	1

Table 1. Summary of New Optical Double Stars

Acknowledgments

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

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

References

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Redshift 7, www.redshift-live.com.

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Figure 2. USNO B1.0 1206-0471593 and USNO B1.0 1206-0471491, 200 frames taken with QHY 5LII-C CMOS were stacked