

Speckle Interferometry of KUI 71, A 351, and A 234

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Abstract KUI 71 (WDS 16053+5810) and A 351 (WDS 17293+2924) were observed via speckle interferometry with the 2.1-meter telescope at Kitt Peak National Observatory on 2014.284. The position angle and separation of these two pairs were found to be 010.7° and $0.61''$, and 052.8° and $0.38''$, respectively. We were unable to resolve A 234.

Introduction

Published observations of three double stars were combined with recent speckle interferometry observations made in April 2014 at Kitt Peak National Observatory (Genet et al. 2014). Plate Solve 3 (Rowe and Genet 2015) was used to reduce the Kitt Peak observations.



Figure 1: Army and Navy Cadets David Hoffman (rear), Blake Howard (left front), and Ayden Haen (right)

KUI 71

The 10 previous observations of KUI 71, as well as our 2014 observation of position angle of 010.7° and separation of $0.61''$ are provided in Table 1.

KUI 71 (WDS 16053+5810)		
EPOCH	Position Angle [°]	Separation ^{''}
1933.67	006.0	0.76
1938.36	007.1	0.78
1947.46	009.4	0.72
1948.18	009.5	0.76
1954.59	008.5	0.71
1959.44	017.1	0.62
1962.87	018.4	0.61
1976.38	015.8	0.48
1991.25	012.0	0.67
1991.27	022.0	0.45
2014.283	010.7	0.61

Table 1: Measurements of KUI 71 (WDS 16053+5810).

The autocorellogram we obtained is given in Figure 2.

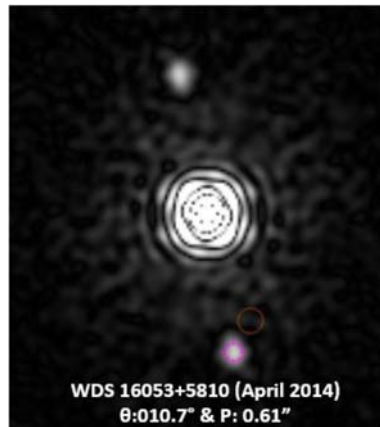


Figure 2: KUI 71 (WDS 16053+5810) PlateSolve 3 autocorellogram.

A 351

WDS 17293+2924 is a multiple star system consisting of the AB pair (A 351) which we observed, and an AB,C pair (discoverer code KUI 82). The Washington Double Star Catalog lists primary and secondary magnitudes of 9.7 and 9.95 for A 351. The primary star has a spectral type of K2. In 2012, Malkov et al published the following orbital data for A 351: Period = 60y, $a = 0.60''$, motion direct, with a highly inclined orbit. Further, Malkov provided dynamical, photometric, and spectroscopic masses of 1.06 ± 0.24 , 1.33, and $0.79 M_{\text{sun}}$, respectively.

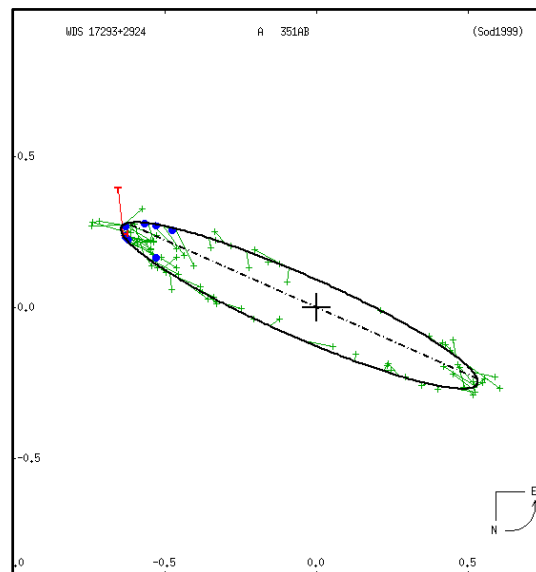


Figure 3: Orbital Plot of WDS 17293+2924 courtesy U.S. Naval Observatory 6th Orbital Catalog.

There are eighty-seven historical measurements of this binary star listed in the WDS and shown in the plot in Figure 3. Our position angle and separation measurements of 52.8° and $0.38''$ obtained on 2014.284 were in line with previous observations.

A 234

This is a multiple star system consisting of an AB pair (A 234) and an AB,C pair (discoverer code LBU 1). The AB,C component was first measured in 1897 and the AB component was first measured in 1901. We considered the AB pair, A 234, which had reported magnitudes of 9.17 and 9.5, thus a low delta magnitude.

When processed, the speckle data from the Kitt Peak observations made in April 2014 did not reveal a discernible companion in the autocorrelogram shown in Figure 4.

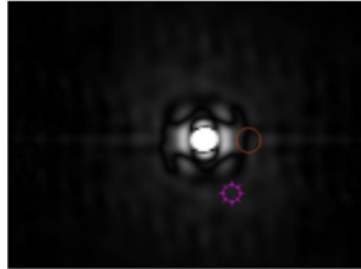


Figure 4. Autocorrelogram of A 234 (WDS 17526+2536) observation.

The 37 reported observations of A 234 are graphed in Table 4.

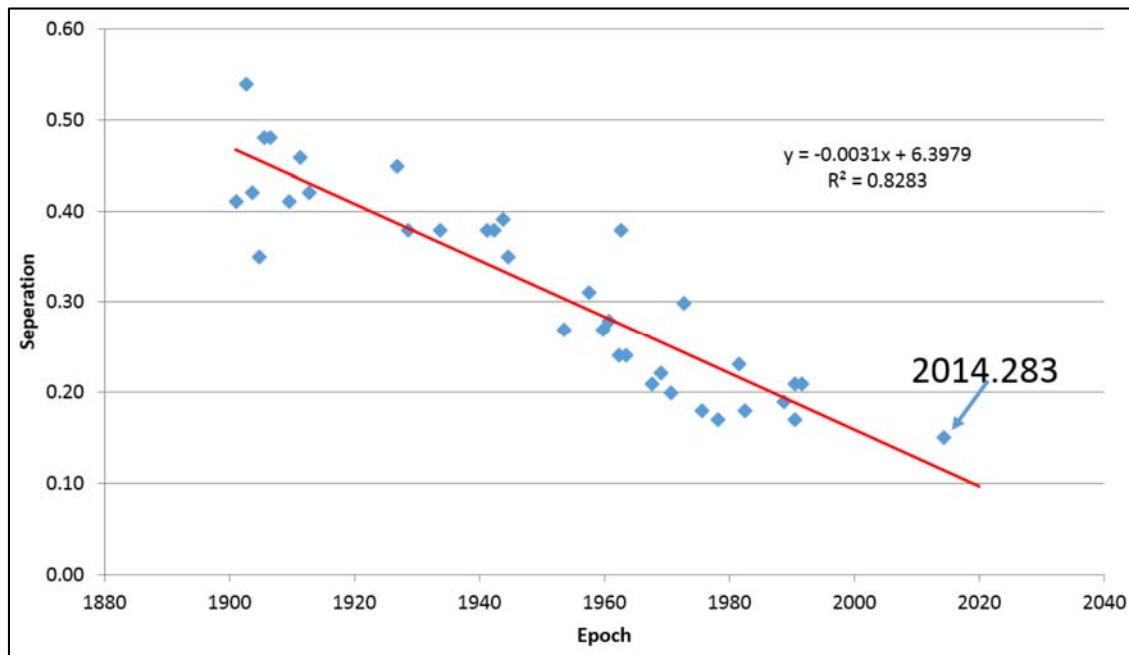


Table 4: A 234 (WDS 17526+2536) graphical plot of historical measurements.

The projected separation of A 234 for 2014.283 is 0.15 arcseconds. This is near the telescopic limits of the Kitt Peak observations and leads to an understanding of why the secondary star was not able to be observed.

Acknowledgements

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References

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