

Three New Variable Stars Discovered in Cassiopeia during a Northern Sky Survey Session

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Abstract This paper describes the discovery of three new variable stars in Cassiopeia—UCAC4 749-017875, UCAC4 749-017890, and UCAC4 749-018171. They are a pulsating star and two eclipsing binary systems, respectively, discovered in 2015 and included in the AAVSO Variable Star Index, but only now published due to lack of time. I encourage all observers to observe these stars further in order to better characterize them.

1. Introduction

In this paper I present the results of the discovery of three new variable stars—UCAC4 749-017875, UCAC4 749-017890, and UCAC4 749-018171—made in November 2015 during a scheduled northern sky data-gathering session at the Astronomical Observatory “Nastro Verde” of Sorrento.

2. Instruments and methods

All the observations have been made using a Schmidt Cassegrain Telescope 0.25-m f/10 with focal reducer (f/6.3) and a CCD SBIG ST-8. All observations are unfiltered.

The search for new variable stars was carried out with the Muniwin software (Hroch 2014) and the differential photometry was done with Maxim DL (Diffraction Ltd. 2012). The light curve and the calculation of its main parameters were done with PERANSO (Vanmunster 2013). The light curve and the calculation of its main parameters was done with PERANSO. To calculate periods, I used CLEANest, which is a sophisticated algorithm of the PERANSO period analysis software.

3. Results

Table 1 summarizes the main parameters for the three new variables. Each variable can easily be found in the AAVSO VSX database (Watson *et al.* 2014) through its identifier as it appears in the first column. In the table, Epoch means time of maximum brightness for pulsating stars and time of primary minimum for eclipsing binaries.

3.1. UCAC4 749-017875

UCAC4 749-017875 is a δ Scuti star with a period of 0.10229 day (2.455 h) and an amplitude of about 0.07 magnitude between 15.58 and 15.65 V. In Figure 1, the light curve is phased with the main period of the pulsator. Figure 2 shows the field from Aladin with the new variable star marked in the center with a cross.

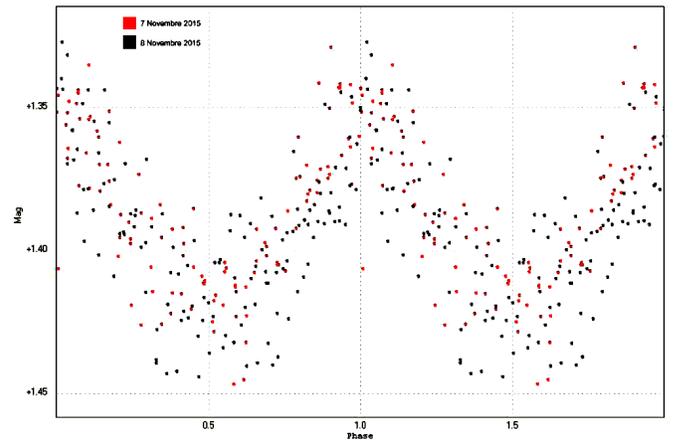


Figure 1. Unfiltered light curve of UCAC4 749-017875.

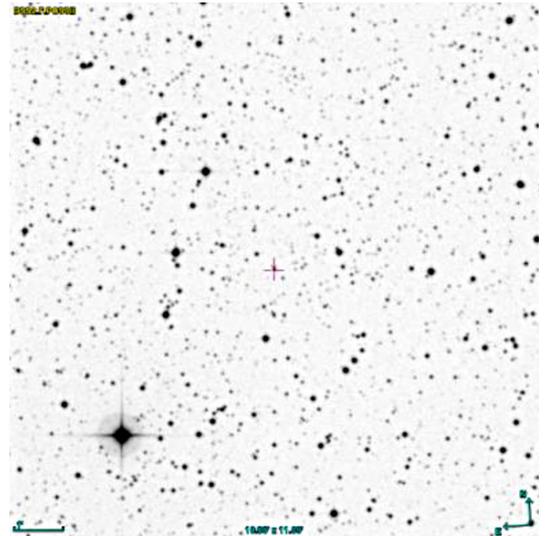


Figure 2. Field from Aladin for UCAC4 749-017875.

Table 1. Main information and results for the new variables discovered.

Star (VSC Identifier)	R.A. (J2000) h m s	Dec. (J2000) ° ' "	Constellation	V	Period (day)	Epoch (HJD)	Type
UCAC4 749-017875	01 47 46.44	+59 42 23.9	Cas	15.58–15.65	0.10229	2457334.4485 ± 0.001	DSCT
UCAC4 749-017890	01 47 50.63	+59 38 32.3	Cas	16.00–16.16	0.38600	2457330.3539 ± 0.001	EW
UCAC4 749-018171	01 49 20.46	+59 41 50.4	Cas	15.94–16.35	0.35507	2457329.503 ± 0.001	EW

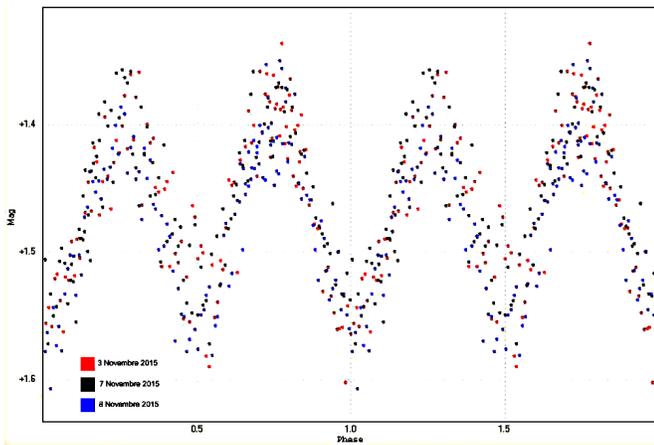


Figure 3. Unfiltered light curve of UCAC4 749-017890.

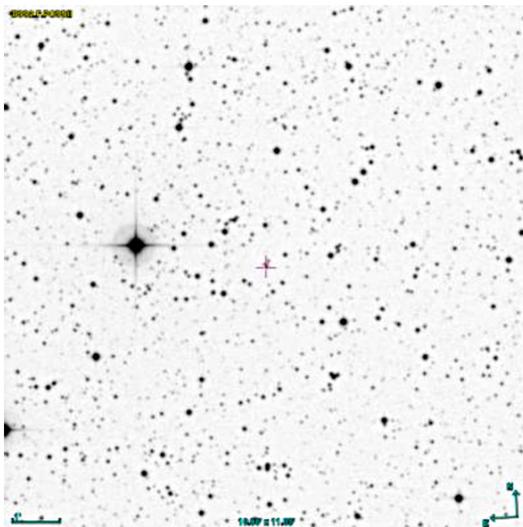


Figure 4. Field from Aladin for UCAC4 749-017890.

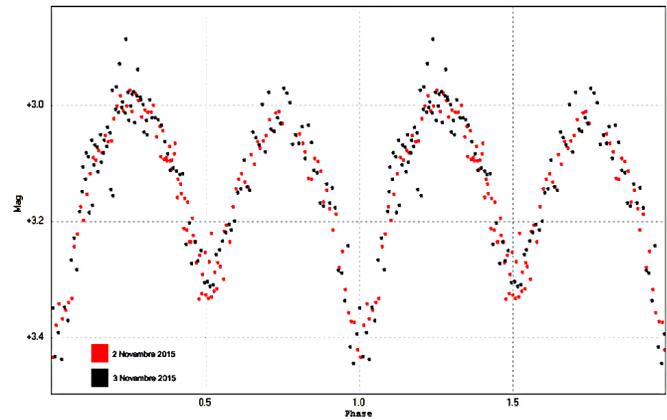


Figure 5. Unfiltered light curve of UCAC4 749-018171.

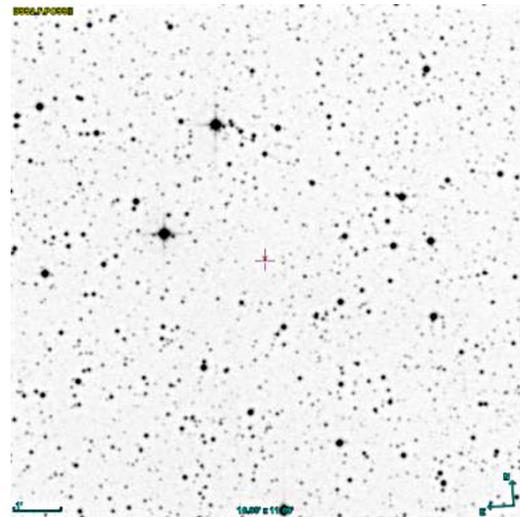


Figure 6. Field from Aladin for UCAC4 749-018171.

3.2. UCAC4 749-017890

UCAC4 749-017890 is an EW eclipsing binary with a period of 0.38600 day (9.264 h) and an amplitude of about 0.16 magnitude between 16.00 and 16.16 V. In Figure 3, the light curve is phased with the main period of the binary. Figure 4 shows the field from Aladin with the new variable star in the center marked with a cross.

3.3. UCAC4 749-018171

UCAC4 749-018171 is an EW eclipsing binary with a period of 0.35507 day (8.522 h) and an amplitude of about 0.41 magnitude between 15.94 and 16.35 V. In Figure 5, the light curve is phased with the main period of the binary. Figure 6 shows the field from Aladin with the new variable star marked in the center with a cross.

4. Conclusion

Three new variable stars were found by myself in November 2015 during a scheduled northern sky data-gathering session at the Astronomical Observatory

“Nastro Verde” of Sorrento. Each new variable star—UCAC4 749-017875, UCAC4 749-017890, and UCAC4 749-018171—can be found in the AAVSO VSX database (Watson *et al* 2014). Since only my observations were involved in the discovery, readers are encouraged to make observations needed to build an O–C graph to check if there have been changes in the parameters.

References

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