

SEARCH FOR VARIABLE STARS IN THE NORTHERN SKY

Rūta Urbonavičiūtė

Institute of Theoretical Physics and Astronomy

Vilnius University



Vilnius
University

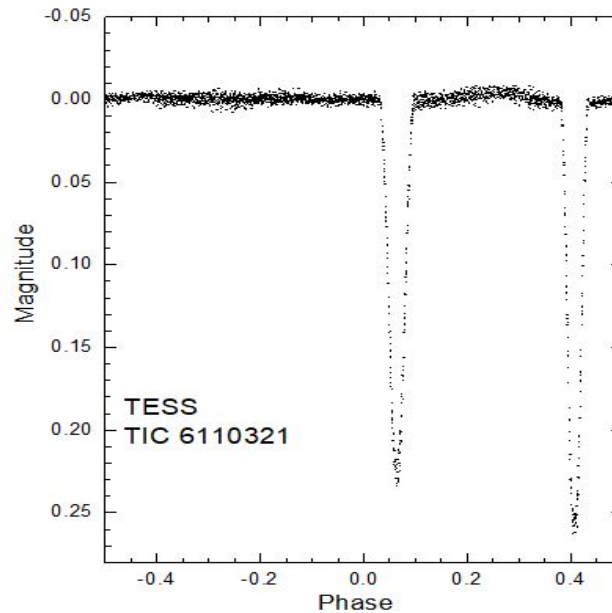
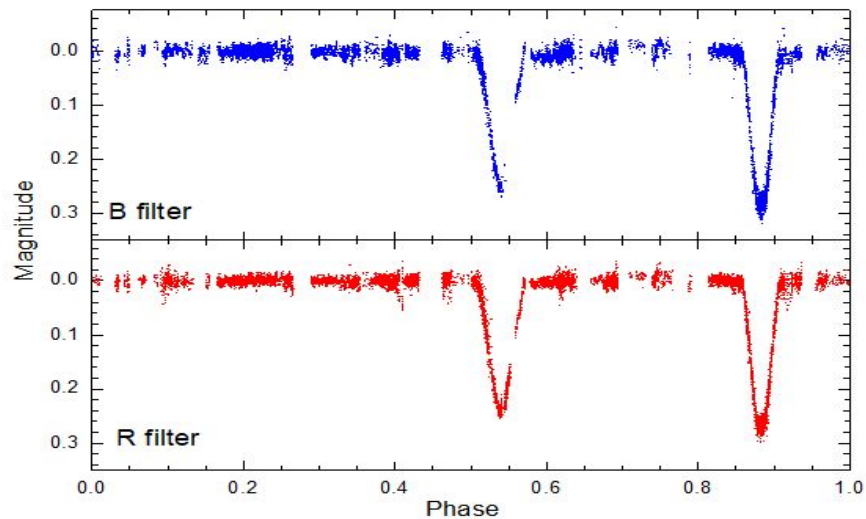
- Observations at Molėtai Astronomy Observatory, Lithuania
- Fields: NSV26138, NSV0255, NSV15053, NSV25919, NSV13673
- All fields are near Polaris
- From 13367 stars - 20 new variable candidates

Binary stars with variable component

- Binary systems
 - allows determination of stellar properties such as mass, luminosity, radius...
 - better explain astrophysical phenomena
 - studying gas dynamics, accretion processes
- Asteroseismology
 - allows to “see” internal structure of the star
- Pulsating stars in binary systems are very important because their parameters and pulsating properties can be obtained and compared to existing theoretical models, and improve them

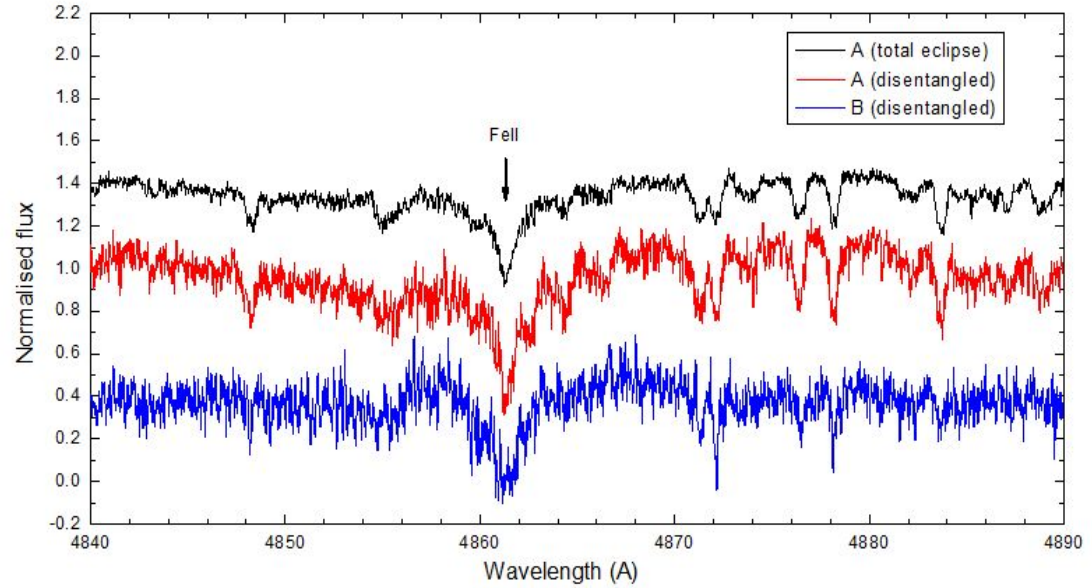
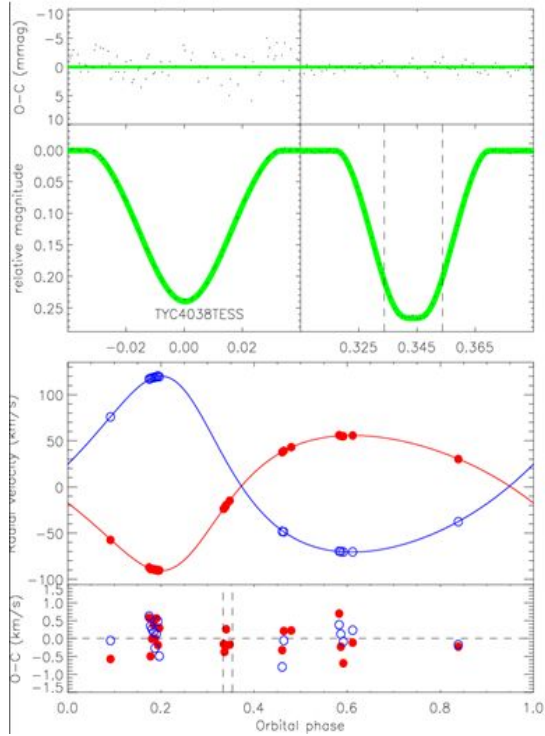
TYC4038-693-1*

Moletai AO



*E. Pakštienė, K. Brogaard, Š. Mikolaitis, G. Tautvaišienė, H. Kjeldsen, F. Grundahl, R. Urbonavičiūtė

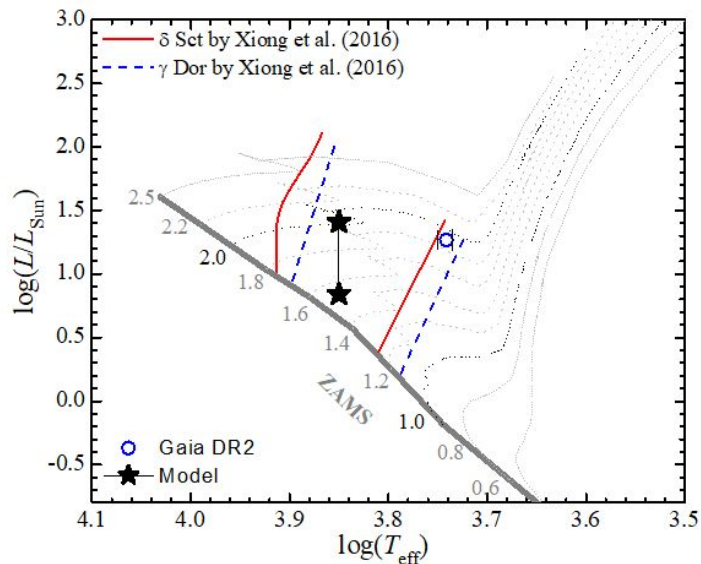
Spectra of components



Preliminary results

Position of TYC4038-693-1 in the HR diagram

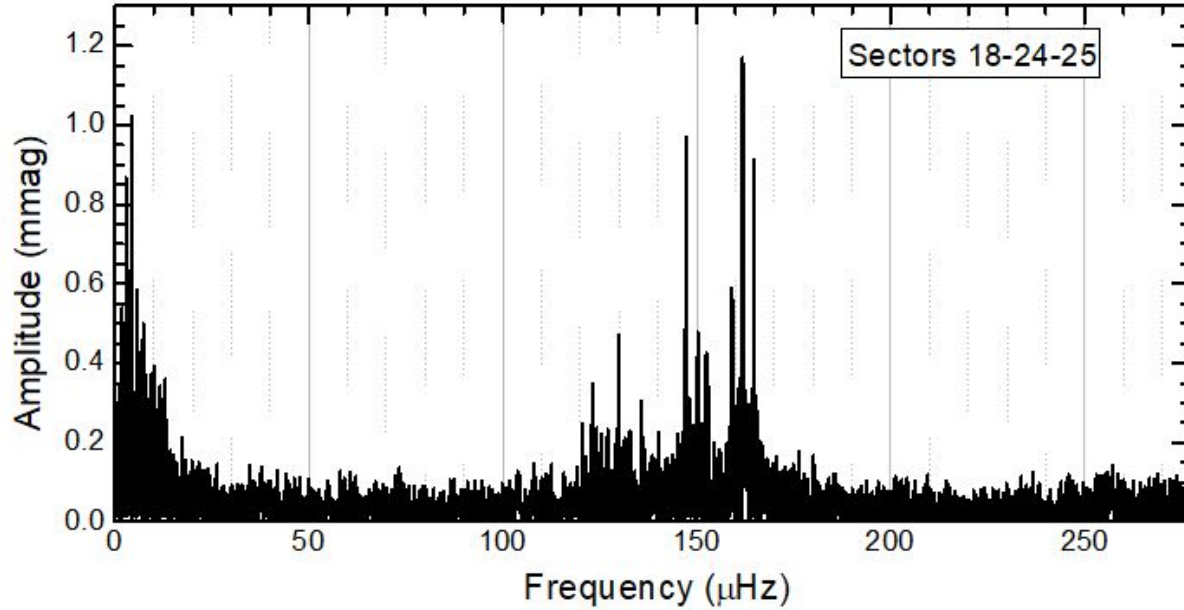
Parameters	TYC4038-693-1(A)	TYC4038-693-1(B)
$\log T_{\text{eff}}$	~ 3.85	~ 3.85
$\log g$	3.68	4.13
M/M_{\odot}	2.00	1.54
R/R_{\odot}	3.4	1.8
Density (Solar units)	0.0515	0.2791
Orbital semi major axis	25.713 R_{\odot} (0.1196 AU)	
Orbital period	8.02474	
Periastron longitude	208.8	
Eccentricity	0.28073	
Age	0.8 MY	



v.10
21.0

	Teff	Err_Teff	logg	Err_logg	v_t	Err_ v_t	metallicity	Err_metallicity	vsini
A	6693.	133.	3.55	0.35	1.29	0.40	-0.24	0.33	20.0
A	6698	135.	3.25	0.40	1.26	0.40	-0.24	0.15	20.0
B	6698	148.	3.35	0.44	1.66	0.40	-0.40	0.16	21.0

Pulsations in TESS LCs



Acknowledgements:

This research is funded by the European Social Fund according to the activity 'Improvement of researchers' qualification by implementing world-class R&D projects' of Measure No. 09.3.3-LMT-K-712 (the Lithuanian Science Council grant No. 09.3.3-LMT-K-712-01-0103).



2014-2020 Operational
Programme for the
European Union Funds
Investments in Lithuania