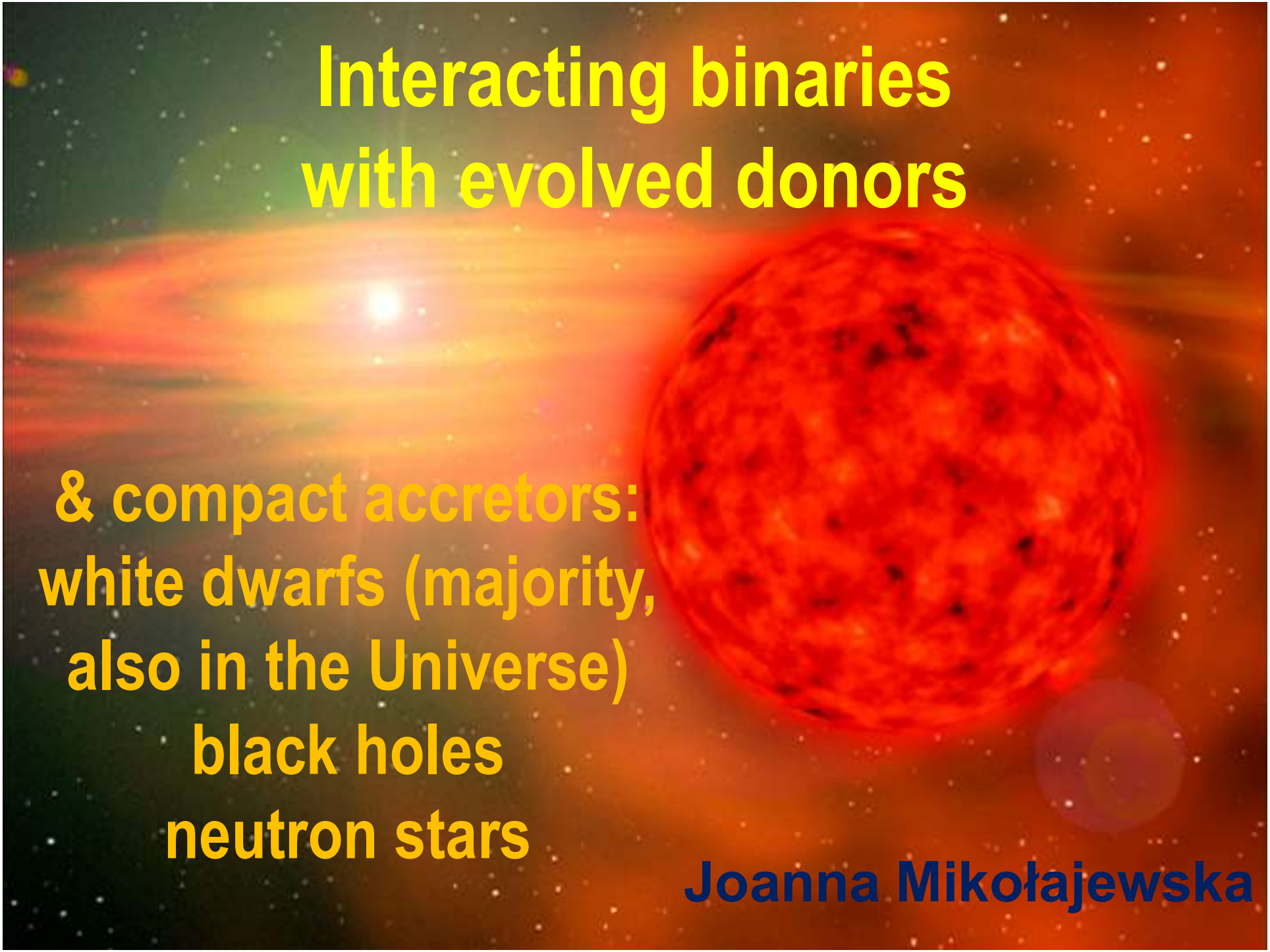
Interacting binaries
with evolved donors
& compact accretors:
white dwarfs (majority,
also in the Universe)
black holes
neutron stars
Joanna Mikołajewska

Refereed papers published/accepted in 2025

1. *The Meaning of Quasi-Simultaneous X-Rays and Gamma-Ray Observations of RS Oph in Outburst,* Orio, M. (…) **Mikołajewska, J.** et al, 2025, AN 345
2. *Binary Parameters for the Recurrent Nova T Coronae Borealis*, Hinkle, K. H. (…) **Mikołajewska, J.** et al 2025, ApJ, 983, 76
3. *Insights from mid-infrared interferometric observations of the symbiotic nova RS Ophiuchi*, Kaczmarek, F. (…) **Mikołajewska, J.** et al, 2025, CoSka, 55, 98
4. *V4141 Sgr: Outflows and repeated outbutbursts*, Merc, J.; **Mikołajewska, J.** et al, 2025, A&A, 698, L4
5. *A 70 pc Diameter Nova Superremnant Superremnant Surrounding the Recurrent Nova RS Ophiuchi*, Shara, M. M. . (…) **Mikołajewska, J.** et al, 2025, AJ, 170, 56

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6. Blending-induced beating and emission in the symbiotic star Terz V 2513, Merc J., **Mikołajewska, J.** et al, 2026, MNRAS 545, staf2094
7. *Identification of new Galactic symbiotic stars with SALT—II. New discoveries and characterization of the sample*, Merc J., **Mikołajewska, J.** et al, 2026, MNRAS 545, staf2146

The most accurate parameters of a nova system based on observations

The Astrophysical Journal, 983:76 (16pp), 2025 April 10 https://doi.org/10.3847/1538-4357/adbc

Binary Parameters for the Recurrent Nova T Coronae Borealis

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Received 2025 February 15; revised 2025 February 26; accepted 2025 February 27; published 2025 April 8

Abstract

T CrB is among the brightest novae. It is recurrent with outbursts happening approximately every 80 yr. The next outburst is imminent, expected in 2025. The T CrB binary consists of an M4 III red giant (RG) secondary and a white dwarf (WD) primary. A time series of spectra of the RG was obtained between 2022 and 2024. Radial velocities (RVs) from these data were combined with literature RVs and an updated orbit computed. The orbit is circular to a high precision and has a period of 227.5494 ± 0.0049 days for the circular solution. An eccentric solution yields an eccentricity of 0.0072 ± 0.0026. Rotational line broadening of the RG was also measured. Binary parameters are derived by maximum likelihood modeling of the available observational data. The WD, in accord with other estimates for recurrent novae, is massive. Assuming the Gaia distance, the WD mass is $1.37 \pm 0.01 M_{\odot}$ with the M giant secondary mass 0
paths to and limitations on further refining the valu

Table 1
Summary of T CrB Radial Velocity Observations

Hel. Julian Dates (−2400000)	Calendar Dates	No. Obs.	Observatory/Telescope/Instrument	Reference[a]
31896–32696	1946 Mar 16–1948 May 24	19	Mt. Wilson 2.5 m/coudé	S49
35584–35994	1956 Apr 20–1957 Jun 4	6	Mt. Wilson 2.5 m/coudé	K58
35939	1957 Apr 10	1	Palomar 5 m/coudé	K58
45037–46141	1982 Mar 8–1985 Mar 16	25	Mt. Hopkins 1.5 m, Oak Ridge 1.5 m	K86
50569–51364	1997 Apr 30–1999 Jul 4	9	Kitt Peak/coudé feed, 2.1 m or 4 m/Phoenix	F00
55576–60105	2011 Jan 14–2023 Jun 9	100	La Palma 1.2 m Mercator/HERMES	P25
59678–60405	2022 Apr 8–2024 Apr 4	46	Fairborn 2 m/fiber-fed echelle	H25

Note.
[a] S49 = R. F. Sanford (1949), K58 = R. P. Kraft (1958), K86 = S. J. Kenyon & M. R. Garcia (1986), F00 = F. C. Fekel et al. (2000), P25 = L. Planquart et al. (2025), H25 = this publication.

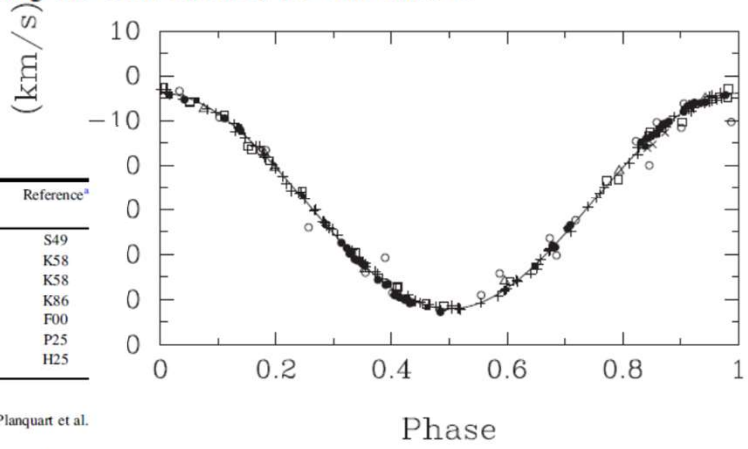

Figure 1. The computed circular orbit radial-velocity curve (solid line) of the T CrB M giant compared with the observed velocities. Open circles = R. F. Sanford (1949), open triangles = R. P. Kraft (1958), open squares = S. J. Kenyon & M. R. Garcia (1986), solid squares = F. C. Fekel et al. (2000), pluses = L. Planquart et al. (2025), solid circles = this paper, crosses = last three AST velocities (see the text). The orbital period is 227.5494 days with zero phase a time of maximum velocity.

The Astronomical Journal, 170:56 (13pp), 2025 July
https://doi.org/10.3847/1538-3881/addb44

A 70 pc Diameter Nova Superremnant Surrounding the Recurrent Nova RS Ophiuchi

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[8] Sternb
[9] N. Copernicus
[10] Observatoi
[11] Institute
Received

Recurrent novae undergo
red giant donors transferri
The most rapidly moving
and collide with the slo
superremnants surroundin
narrowband imaging and
recurring nova RS Ophiuc
km/s, with an age of orde
the hitherto surprising abs
are surrounded by similar

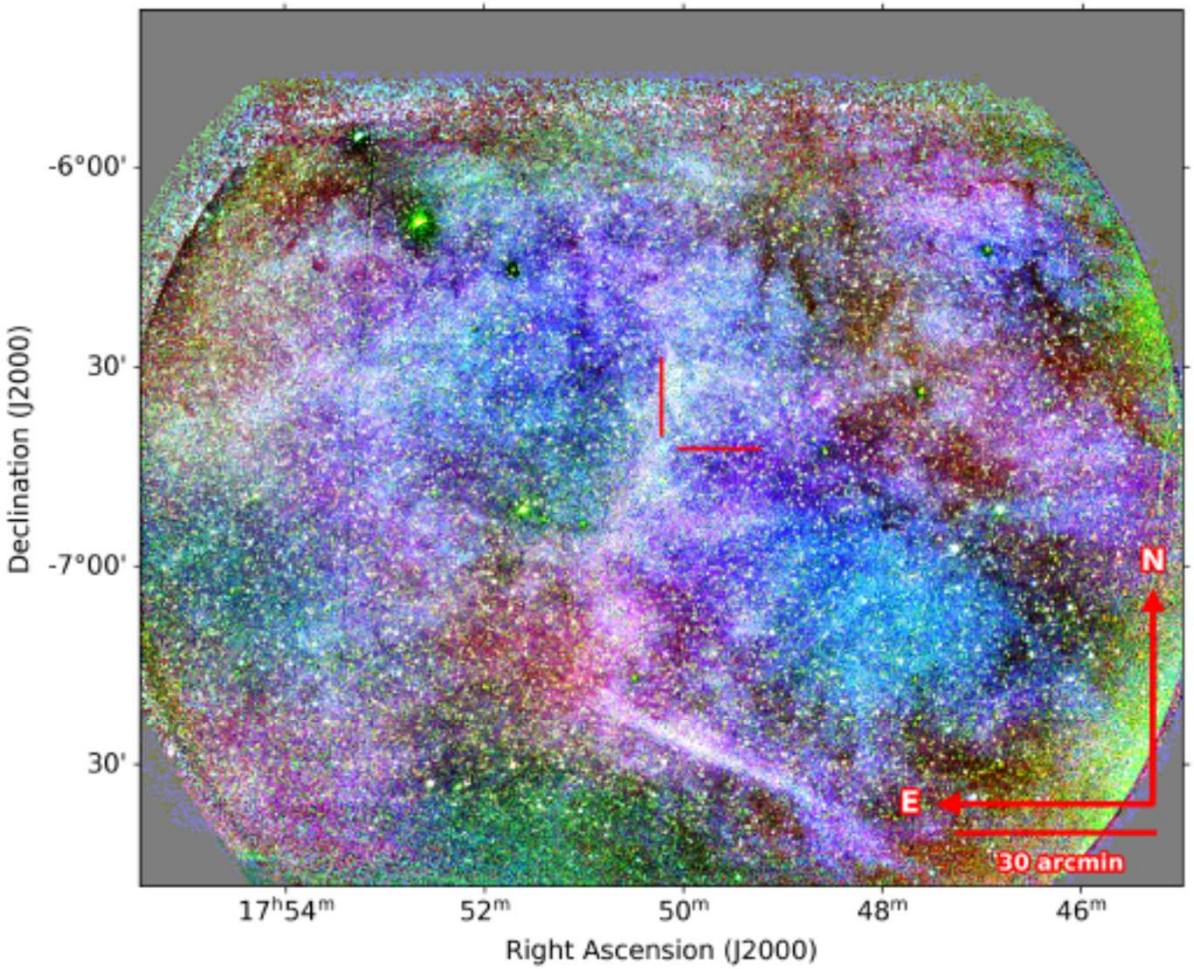

Figure 3: The sum of the three difference images (Luminance minus each of H α, [NII]] and [SII]). The H α difference image is colored blue, while the difference images of [NII] and [SII] are green and red, respectively.

Monthly Notices of the ROYAL ASTRONOMICAL SOCIETY

MNRAS 545, 1–24 (2026) https://doi.org/10.1093/mnras/staf2146
Advance Access publication 2025 December 02

Identification of new Galactic symbiotic stars with SALT–II. New discoveries and characterization of the sample

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Accepted 2025 December 1. Received 2025 December 1; in original form 2025 October 16

ABSTRACT

We present the continuation of a systematic search for new southern Galactic symbiotic stars, selecting candidates from the SuperCOSMOS Hα Survey and 2MASS. Follow-up spectroscopy with the Southern African Large Telescope (SALT) was used to confirm their symbiotic nature and to characterize the cool and hot components of the full sample, including systems from earlier work. We report 14 newly confirmed bona fide symbiotic stars and identify six additional strong candidates. Photometric variability was examined using our data and archival light curves from multiple all-sky surveys. Most systems are variable, with the majority showing periodic modulation consistent with orbital motion or pulsations. Possible photometric orbital periods are reported for 19 confirmed and three candidate systems, pending spectroscopic confirmation. Eight objects exhibit signs of outburst activity. In one of the systems, multiple brightenings occur at similar orbital phases, closely resembling the evolution of FN Sgr, a symbiotic binary with a magnetic white dwarf. The peculiar variability of another symbiotic star is best explained by dust-obscuration events. These results expand the census of Galactic symbiotic stars.

Together with SySt in Paper I (Miszalski & Mikolajewska 2014) 26 bona fide SySt + 9 possible SySt discovered out of 99 observed candidates ~26% (35%) success rate - to date better than any other survey to search for SySt

A twin of FN Sgr – SySt with magneting WD?

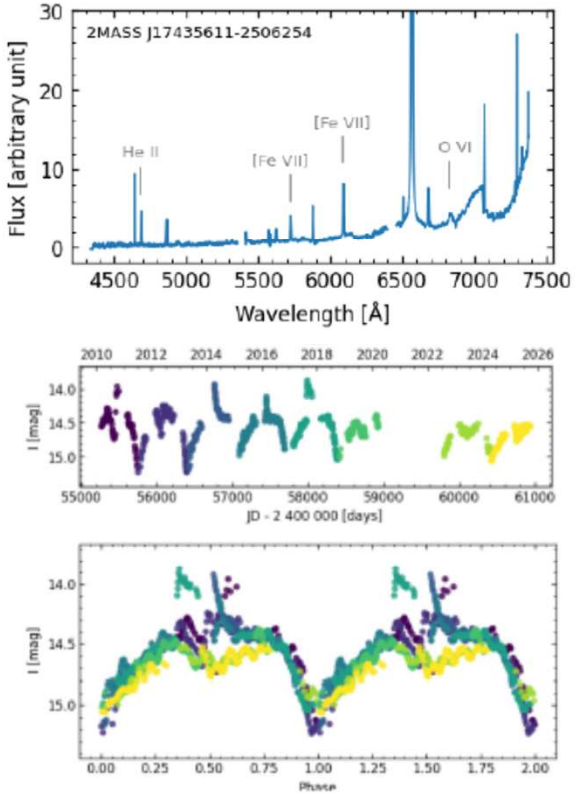

Figure 7. OGLE-IV *I*-band light curve of 2MASS J17435611-2506254. The upper panel shows the full light curve, colour-coded by cycle, the lower panel displays the phased light curve using the same colour scheme.

FN Sgr