Jeff W. Robertson

Title: The 1991-2012 Light Curve of the Old Nova HR LYRAE
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Publication: The Astronomical Journal, Volume 147, Issue 5, article id. 105, 9 pp. (2014). (AJ Homepage)
Publication Date: 05/2014
Origin: IOP
Astronomy Keywords: novae, cataclysmic variables, stars: individual: HR Lyr
DOI: 10.1088/0004-6256/147/5/105
Bibliographic Code: 2014AJ....147..105H

Abstract

The 22 yr light curve of HR Lyr, acquired with a typical cadence of 2-6 days, is examined for periodic and quasi-periodic variations. No persistent periodicities are revealed. Rather, the light curve variations often take the form of nearly linear rises and falls having typical e-folding times of about 100 days. Occasional ~0.6 mag outbursts are also seen, with properties similar to those of small outbursts found in some nova-like cataclysmic variables. When the photometry is formed into yearly averages, a decline of 0.012 ± 0.005 mag yr^{-1} is apparent, consistent with the fading of irradiation-induced \dot{M} following the nova. The equivalent width of Hα is tabulated at three epochs over the interval 1986-2008 in order to compare with a recent result for DK Lac in which Hα was found to be fading 50 yr after the nova. However, our results for such a fading in HR Lyr are inconclusive.

Title: The Long-term Light Curve of the Cataclysmic Variable V794 Aquilae
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Publication: The Astronomical Journal, Volume 147, Issue 1, article id. 10, 11 pp. (2014). (AJ Homepage)
Publication Date: 01/2014
Origin: IOP
Astronomy Keywords: cataclysmic variables, stars: individual: V794 Aql
DOI: 10.1088/0004-6256/147/1/10
Bibliographic Code: 2014AJ....147...10H

Abstract

The 1990-2012 light curve of the nova-like (NL) cataclysmic variable V794 Aql is studied in order to characterize and better understand the transitions to and from the faint state, and the variations within the bright state. Investigations of earlier portions of this data had concluded that the transitions to the low state were much slower than the rapid recovery, giving a sawtoothed appearance to the light curve. This behavior differs from that of most other VY Scl stars, which led to an interpretation of the large amplitude sawtooths as being due to an accretion disk (AD) instability. However, more recent photometry strongly suggests that the bright state itself has transitions of 1-1.5 mag, and that earlier studies had intermixed these bright state variations with the transitions to the low state. These newly recognized variations within the bright state sometimes appear as small outbursts (OBs) with typical amplitudes of 0.5-1.5 mag and spacings of ~15-50 days. The rise times of the OBs are 2-3 times faster than the decline times. We argue that the V794 Aql bright state variations are due to AD behavior similar to that seen in dwarf novae, but with varying degrees of stability. Similar regular small OBs have also been reported in other NL CVs, which we compare with V794 Aql. The true deep low states in V794 Aql appear to be normal, having transition speeds and shapes very similar to the transitions in other VY Scl stars.

Title: Light Curve of CR Bootis 1990-2012 from the Indiana Long-Term Monitoring Program
Authors: Honeycutt, R. Kent; Adams, Brice R.; Turner, George W.; Robertson, Jeff W.; Ost, Eric M.; Maxwell, J. Edward
Publication: Publications of the Astronomical Society of the Pacific, Volume 125, issue 924, pp.126-142 (PASP Homepage)
Publication Date: 02/2013
Origin: UCP
Astronomy Keywords: Stars

DOI: 10.1086/669542
Bibliographic Code: 2013PASP..125..126H

Abstract

Two telescopes are used at the Morgan--Monroe Observatory of Indiana University for autonomous long-term photometric monitoring of stellar sources, mostly cataclysmic variable stars. The instrumentation is designed and implemented to be appropriate for multiyear automated monitoring. The capabilities and limitations of the equipment are described, along with accounts of the software, the reduction procedures, the motivations for the scientific programs, and the execution of the observing campaigns. Data on the AM CVn-type cataclysmic variable CR Boo are presented and discussed as an example of the kinds of light curves generated at this facility. The He-rich disk in CR Boo has SU UMa-type outburst behavior, with both superoutbursts and what appear to be dwarf nova outbursts. However, the light curve is quite irregular and displays a wide variety of unusual features such as switching among several superoutburst recurrence intervals, and having intervals of dwarf nova-like outbursts that seem to come and go. We discuss the likelihood that deterministic chaos is responsible for these irregularities.

Title: Wind Variability in BZ Camelopardalis
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Publication: The Astronomical Journal, Volume 145, Issue 2, article id. 45, 18 pp. (2013). (AJ Homepage)
Publication Date: 02/2013
Origin: IOP
Astronomy Keywords: novae, cataclysmic variables, stars: individual: BZ Cam, stars: winds, outflows
DOI: 10.1088/0004-6256/145/2/45
Bibliographic Code: 2013AJ....145...45H

Abstract

Sequences of spectra of the nova-like cataclysmic variable (CV) BZ Cam were acquired on nine nights in 2005-2006 in order to study the time development of episodes of wind activity known to occur frequently in this star. We confirm the results of Ringwald & Naylor that the P-Cygni absorption components of the lines mostly evolve from higher expansion velocity to lower

velocity as an episode progresses. We also commonly find blueshifted emission components in the Hα line profile, whose velocities and durations strongly suggest that they are also due to the wind. Curiously, Ringwald & Naylor reported common occurrences of redshifted Hα emission components in their BZ Cam spectra. We have attributed these emission components in Hα to occasions when gas concentrations in the bipolar wind (both front side and back side) become manifested as emission lines as they move beyond the disk's outer edge. We also suggest, based on changes in the P-Cygni profiles during an episode, that the progression from larger to smaller expansion velocities is due to the higher velocity portions of a wind concentration moving beyond the edge of the continuum light of the disk first, leaving a net redward shift of the remaining absorption profile. We derive a new orbital ephemeris for BZ Cam, using the radial velocity of the core of the He I λ5876 line, finding P = 0.15353(4). Using this period, the wind episodes in BZ Cam are found to be concentrated near the inferior conjunction of the emission line source. This result helps confirm that the winds in nova-like CVs are often phase dependent, in spite of the puzzling implication that such winds lack axisymmetry. We argue that the radiation-driven wind in BZ Cam receives an initial boost by acting on gas that has been lifted above the disk by the interaction of the accretion stream with the disk, thereby imposing flickering timescales onto the wind events, as well as leading to an orbital modulation of the wind due to the non-axisymmetric nature of the stream/disk interaction. Simultaneous photometry and spectroscopy were acquired on three nights in order to test the possible connection between flickering continuum light and the strength of the front-side wind. We found strong agreement on one night, some agreement on another, and no agreement on the third. We suggest that some flickering events lead to only back-side winds which will not have associated P-Cygni profiles.

Title: Minor Planet Observations [H49 ATU Astronomical Observatory, Russellville]
Authors: Robertson, J. W.
Publication: Minor Planet Circular 77397, 4 (2011)
Publication Date: 12/2011
Origin: MPC
Bibliographic Code: 2011MPC..77397...4R

Abstract

Not Available

Title: Minor Planet Observations [H49 ATU Astronomical Observatory, Russellville]

Authors: Robertson, J. W.; Counts, J.
Publication: Minor Planet Circular 77007, 5 (2011)
Publication Date: 11/2011
Origin: MPC
Bibliographic Code: 2011MPC..77007...5R

Abstract

Not Available

Title: Minor Planet Observations [H49 ATU Astronomical Observatory, Russellville]
Authors: Robertson, J. W.
Publication: Minor Planet Circular 74631, 6 (2011)
Publication Date: 04/2011
Origin: MPC
Bibliographic Code: 2011MPC..74631...6R

Abstract

Not Available

Title: The Chromospheric Activity of [HH97] FS Aur-79: A Close Binary with Late-type Active (dK7e+dM3e) Components
Authors: Austin, S. J.; Robertson, J. W.; de Souza, T. R.; Tycner, C.; Honeycutt, R. K.
Affiliation: AA(Department of Physics and Astronomy, University of Central Arkansas, Conway, AR 72035, USA **saustin@uca.edu**), AB(Department of Physical Sciences, Arkansas Tech University, Russellville, AR 72801-2222, USA jrobertson@atu.edu), AC(Departamento de Física, GAS, Universidade Federal de Santa Catarina, Grupo de Astrofisica da UFSC, Campus Trinidade, 88040-900 Florianópolis, SC, Brazil tiago@astro.ufsc.br), AD(Department of Physics, Central Michigan University, Mount Pleasant, MI 48859, USA c.tycner@cmich.edu), AE(Department of Astronomy, Indiana University, Bloomington, IN 47405, USA honey@astro.indiana.edu)

Publication: The Astronomical Journal, Volume 141, Issue 4, article id. 124, 14 pp. (2011). (AJ Homepage)
Publication Date: 04/2011
Origin: IOP

Astronomy Keywords: binaries: close, binaries: eclipsing, binaries: spectroscopic, stars: late-type
DOI: 10.1088/0004-6256/141/4/124
Bibliographic Code: 2011AJ....141..124A

Abstract

Using Doppler tomography we show that FS Aur-79, a near-contact close binary system with late-type active dK7e+dM3e components, has chromospheric prominences in two distinct emission regions associated with the primary star and a larger amount of chromospheric activity associated with the cooler secondary star. The line profiles, equivalent widths, and equivalent width ratios of the Hα and Hβ emission lines as a function of orbital phase further support that the majority of the chromospheric emission originates above the secondary star and near the neck region. Analysis of high-resolution spectra using the technique of broadening functions has enabled us to determine the radial velocity of the secondary star near quadratures to be approximately 224 km s^{-1}. A Wilson-Devinney model of the system fitting the UBV light curves and radial velocities shows that there are star spots near the chromospherically active regions. Finally, the absence of Li I λ6708 in the spectra lets us put a lower limit on the age of this system to at least 500 Myr.

Title: The 2001-2003 Low State of Nova Lacertae 1950 (DK Lac)

Authors: Honeycutt, R. K.; Kafka, S.; Jacobson, H.; Henden, A. A.; Hoffman, D.; Maxwell, T.; Robertson, J. W.; Croxall, K.

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Publication: The Astronomical Journal, Volume 141, Issue 4, article id. 122, 9 pp. (2011). (AJ Homepage)

Publication Date: 04/2011
Origin: IOP
Astronomy Keywords: novae, cataclysmic variables, stars: individual: DK Lac
DOI: 10.1088/0004-6256/141/4/122
Bibliographic Code: 2011AJ....141..122H

Abstract

We report on extensive photometry of DK Lac obtained during the interval 1990-2009, which includes a 2 mag low state during 2001-2003. Much of the photometry consists of exposures obtained with a typical spacing of several days, but also includes 26 sequences of continuous photometry each lasting 2-7 hr. We find no evidence for periodicities in our data. We do find that the random variations in the low state are approximately twice those in the high state, when expressed in magnitudes. The lack of orbital-timescale variations is attributed to the nearly face-on presentation of the disk. There is a 0.2 mag decline in the high-state brightness of the system over 19 years, which is consistent with the behavior of other old novae in the decades following outburst. High-state spectra are also presented and discussed. We find that the equivalent width of Hα falls by about double from 1991 to 2008. The photometric properties are discussed in the context of the hibernation scenario for the behavior of novae between outbursts, in which we conclude that low states in old novae are probably unrelated to their possible entrance into hibernation.

Title: The Dwarf Nova Outbursts of Nova Her 1960 (=V446 Her)
Authors: Honeycutt, R. K.; Robertson, J. W.; Kafka, S.
Affiliation: AA(Astronomy Department, Indiana University, Swain Hall West, Bloomington, IN 47405, USA **honey@astro.indiana.edu**), AB(Department of Physical Sciences, Arkansas Tech University, 1701 N. Boulder Ave., Russellville, AR 72801-2222, USA jrobertson@atu.edu), AC(Department of Terrestrial Magnetism, Carnegie Institute of Washington, 5241 Broad Branch Road NW, Washington, DC 2001, USA skafka@dtm.ciw.edu)

Publication: The Astronomical Journal, Volume 141, Issue 4, article id. 121, 6 pp. (2011). (AJ Homepage)
Publication Date: 04/2011
Origin: IOP
Astronomy Keywords: novae, cataclysmic variables, stars: individual: V446Her
DOI: 10.1088/0004-6256/141/4/121
Bibliographic Code: 2011AJ....141..121H

Abstract

V446 Her is the best example of an old nova which has developed dwarf nova (DN) eruptions in the post-nova state. We report on observed properties of the long-term light curve of V446 Her, using photometry over 19 years. Yearly averages of the outburst (OB) magnitudes show a decline of ~0.013 mag yr^{-1}, consistent with the decline of other post-novae that do not have DN OBs. Previous suggestions of bimodal distributions of the amplitudes and widths of the OBs are confirmed. The OBs occur at a mean spacing of 18 days but the range of spacings is large (13-30 days). From simulations of DN OBs, it has been predicted that the OB spacing in V446 Her will increase as \dot{M} from the red dwarf companion slowly falls following the nova; however, the large intrinsic scatter in the spacings serves to hide any evidence of this effect. We do find a systematic change in the OB pattern in which the brighter, wider type of OBs disappeared after late 2003, and this phenomenon is suggested to be due to falling \dot{M} following the nova.

Title: New Eclipsing Close Binary Star in the Constellation of Sextants
Authors: Robertson, Jeff W.
Affiliation: AA(Arkansas Tech University **jrobertson@atu.edu**)

Publication: Journal of the Arkansas Academy of Science, Vol. 63, p. 198-200
Publication Date: 00/2009
Origin: AUTHOR
Keywords: Binary, Eclipsing, VZ Sex, VV Sex
Bibliographic Code: 2009JAsAS..63..198R

Abstract

A new eclipsing close binary star is discovered near the cataclysmic variable star VZ Sex with an orbital period of 0.273378(9) days.

Title: New Complexities in the Low-State Line Profiles of AM Herculis
Authors: Kafka, S.; Ribeiro, T.; Baptista, R.; Honeycutt, R. K.; Robertson, J. W.
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47405), AE(Department of Physical Sciences, Arkansas Tech University, Russellville, AR 72801-2222)

Publication: The Astrophysical Journal, Volume 688, Issue 2, pp. 1302-1314. (ApJ Homepage)
Publication Date: 12/2008
Origin: UCP
Astronomy Keywords: Stars: Novae, Cataclysmic Variables, Stars: Activity, Stars: Individual: Constellation Name: AM Herculis, Stars: Magnetic Fields
DOI: 10.1086/592186
Bibliographic Code: 2008ApJ...688.1302K

Abstract

When accretion temporarily ceases in the polar AM Her, the emission-line profiles are known to develop several distinct components, whose origin remains poorly understood. The new low-state spectra reported here have a more favorable combination of spectral resolution (R~4500), time resolution (~3 minute exposures), and S/N than earlier work, revealing additional details of the orbital dependence of the line profiles. The central strong feature of Hα is found to be composed of two components of similar strength, one having K~100 km s^{-1} and phased with the motion of the secondary star, the other having little or no detectable radial velocity variations. We attribute the central line component to gas near the coupling region, perhaps with a contribution from irradiation of the secondary star. The two satellite components have radial velocity offsets of ~+/-250 km s^{-1} on either side of the central strong Hα peak. These satellites most likely arise in large loops of magnetically confined gas near the secondary star due to magnetic activity on the donor star and/or interactions of the magnetic fields of the two stars. Doppler maps show that these two satellite features have concentrations at velocities that match the velocity locations of L4 and L5 in the system.

Observations reported here were obtained at the MMT Observatory, a joint facility of the Smithsonian Institution and the University of Arizona.

Title: Orbit-Resolved Photometry and Echelle Spectroscopy of the Cataclysmic Variable ST LMi during a 2007 High State

Authors: Robertson, Jeff W.; Howell, Steve B.; Honeycutt, R. K.; Kafka, S.; Campbell, T.
Affiliation: AA(Department of Physical Sciences, Arkansas Tech University, Russellville, AR 72801-2222, USA **jrobertson@atu.edu**), AB(NOAO/Kitt Peak National Observatory, Tucson, AZ 85719, USA howell@noao.edu), AC(Department of Astronomy, Indiana University, Bloomington, IN 47405, USA honey@astro.indiana.edu), AD(Spitzer Science Center, California Institute of Technology, Pasadena, CA 91125, USA stella@caltech.edu), AE(Whispering Pines Observatory, Harrison, AR 72601, USA jmontecamp@yahoo.com)

Publication: The Astronomical Journal, Volume 136, Issue 5, pp. 1857-1865 (2008). (AJ Homepage)
Publication Date: 11/2008
Origin: IOP
Astronomy Keywords: binaries: close, novae, cataclysmic variables, stars: individual: ST LMi
DOI: 10.1088/0004-6256/136/5/1857
Bibliographic Code: 2008AJ....136.1857R

Abstract

We present high-resolution echelle spectra and contemporaneous photometry of the polar ST LMi during a high state in 2007 March. Emission lines at Hα, He I λ5876, and He I λ7065 show similar line profiles over orbital phase and have narrow and broad components. These profile changes with phase are very similar to those reported in earlier high-state studies of ST LMi. The radial velocity curves from double Gaussian fits to the line profiles are interpreted as two crossing curves, neither of which is coincident with the orbital motion of the secondary star. We attribute one component to infall motions near the white dwarf and the other to a gas streaming along magnetic field lines connecting the two stars.

Title: Minor Planet Observations [H49 ATU Astronomical Observatory, Russellville]
Authors: Robertson, J. W.; Ahrns, M. J.
Publication: Minor Planet Circular 61176, 5 (2007)
Publication Date: 11/2007
Origin: MPC
Bibliographic Code: 2007MPC..61176...5R

Abstract

Not Available

Title: Late-Type Near-Contact Eclipsing Binary [HH97] FS Aur-79
Authors: Austin, S. J.; Robertson, J. W.; Tycner, C.; Campbell, T.; Honeycutt, R. K.
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Publication: The Astronomical Journal, Volume 133, Issue 5, pp. 1934-1946. (AJ Homepage)
Publication Date: 05/2007
Origin: UCP
Astronomy Keywords: binaries: close, binaries: eclipsing, binaries: spectroscopic, stars: late-type
DOI: 10.1086/512614
Bibliographic Code: 2007AJ....133.1934A

Abstract

The secondary photometric standard star number 79 for the FS Aur field (Henden & Honeycutt 1997), designated as [HH97] FS Aur-79 (GSC 1874-399), is a short-period (0.2508 days) eclipsing binary whose light curve is a combination of the β Lyr and BY Dra type variables. High signal-to-noise ratio multicolor photometry was obtained using the US Naval Observatory 1 m telescope. These light curves show asymmetry at quadrature phases (the O'Connell effect), which can be modeled with the presence of starspots. A low-resolution spectrum obtained with the 3.5 m Wisconsin-Indiana-Yale-NOAO telescope at orbital phase 0.76 is consistent with a spectral type of dK7e and dM3e. A radial velocity curve for the primary star was constructed using 24 high-resolution spectra from the 9.2 m Hobby-Eberly Telescope. Spectra show Hα and Hβ in emission confirming chromospheric activity and possibly the presence of circumstellar material. Binary star models that simultaneously fit the U, B, V, R, and radial velocity curves are those with a primary star of mass 0.59+/-0.02 M_{solar}, temperature 4100+/-25 K, and mean radius 0.67 R_{solar}, just filling its Roche lobe, and a secondary star of mass 0.31+/-0.09 M_{solar}, temperature 3425+/-25 K, and mean radius 0.48 R_{solar}, just within its Roche lobe. An inclination angle of 83^{deg}+/-2^{deg} with a center-of-mass separation of 1.62 R_{solar} is also derived. Starspots, expected for a rotation period of less than 1 day, had to be included in the modeling to fit the O'Connell effect.

Title: A Photometric and Spectroscopic Study of the Cataclysmic Variable ST LMi during 2005-2006
Authors: Kafka, S.; Howell, S. B.; Honeycutt, R. K.; Robertson, J. W.
Affiliation: AA(Cerro Tololo Inter-American Observatory, NOAO, La Serena, Chile; Visiting Astronomer, Kitt Peak National Observatory, National Optical Astronomy Observatory), AB(Visiting Astronomer, Kitt Peak National Observatory, National Optical Astronomy Observatory; WIYN Observatory and NOAO, Tucson, AZ 85719, USA), AC(Visiting Astronomer, Kitt Peak National Observatory, National Optical Astronomy

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Publication: The Astronomical Journal, Volume 133, Issue 4, pp. 1645-1657 (2007). (AJ Homepage)
Publication Date: 04/2007
Origin: IOP
Astronomy Keywords: binaries: close, stars: activity, stars: general, stars: individual: ST Leonis Minoris, stars: magnetic fields
DOI: 10.1086/511785
Bibliographic Code: 2007AJ....133.1645K

Abstract

We present orbit-resolved spectroscopic and photometric observations of the polar ST LMi during its recent low and high states. In the low-state spectra, we report the presence of blue and red satellites in the Hα emission line; the velocities and visibility of the satellites vary with phase. This behavior is similar to emission-line profile variations recently reported in the low state of AM Her, which were interpreted as being due to magnetically confined gas motions in large loops near the secondary. Our low-state spectroscopy of ST LMi is discussed in terms of extreme chromospheric activity on the secondary star. Concurrent photometry indicates that occasional low-level accretion may be present, as well as cool regions on the secondary near the inner Lagrangian point, L1. Furthermore, we report a new "extreme low state" of the system at V ~ 18.5 mag. Our orbital high-state spectroscopy reveals changes in the emission-line profiles with orbital phases that are similar to those reported by earlier high-state studies. The complicated emission-line profiles generally consist of two main components. The first has radial velocity variations identical to that of the major emission Hα component seen in the low state. The second is an additional redshifted component appearing at the phases of maximum visibility of the accreting column of the white dwarf; it is interpreted as being due to infall velocities on the accreting magnetic pole of the white dwarf. At the opposite phases, an extended blue emission wing appears on the emission-line profiles. We confirm the presence of a broad absorption feature near 6275 Å, which has been previously identified as a Zeeman σ^- absorption component of Hα. This feature appears at just those phases when the accretion pole region is most directly visible and most nearly face-on to the observer.

Based on observations obtained with the Mayall 4 m telescope at Kitt Peak National Observatory, a division of the National Optical Astronomy Observatory, which is operated by the Association of Universities for Research in Astronomy, Inc., under cooperative agreement with the National Science Foundation.

Title: Minor Planet Observations [H49 ATU Astronomical Observatory, Russellville]
Authors: Robertson, J. W.; Ahrns, M. J.
Publication: Minor Planet Circular 57128, 13 (2006)
Publication Date: 07/2006
Origin: MPC
Bibliographic Code: 2006MPC..57128..13R

Abstract

Not Available

Title: The RXTE, ROSAT, IUE, EUVE, Optical Campaign Covering the 45-Day Supercycle of V1159 Orionis
Authors: Szkody, P.; Honeycutt, K.; Robertson, J.; Silber, A.; Hoard, D. W.; Pastwick, L.; Hubeny, I.; Cannizzo, J.; Liller, W.; Zissell, R.; Walker, G.; La Dous, C.; Drew, J.
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Publication: The Journal of the American Association of Variable Star Observers, Vol. 35, No. 1, p. 135
Publication Date: 06/2006
Origin: AAVSO
Bibliographic Code: 2006JAVSO..35..135S

Abstract

A comprehensive data set covering the superoutburst and 8 outbursts of the 45-day supercycle of the dwarf nova V1159 Ori was obtained in Feb-Mar 1996. The use of RXTE, ROSAT, IUE, and EUVE satellites, combined with ground-based optical photometry and spectroscopy, provided a broad picture of the accretion disk at different states. Results include an inverse correlation of the X-ray with the UV/optical fluxes, an outflowing wind during all outbursts, and large changes in the disk spectrum on time scales of less than a day. These results are compared to other dwarf novae and general theories of dwarf nova outbursts.

Title: New Pulsating Variable Discovered In The Constellation Andromeda
Authors: Robertson, J. W.
Affiliation: AA(Arkansas Tech University)
Publication: Journal of the Arkansas Academy of Science Volume 59, p.210-213
Publication Date: 04/2006
Origin: AUTHOR
Keywords: RRc pulsating variable
Bibliographic Code: 2006JAsAS..59L.210R

Abstract

A new pulsating variable star, [HH95] HV And-7, is found near the cataclysmic variable HV And, which is a part of the Indiana University RoboScope observing program (Honeycutt and Turner, 1992). A finding chart generated with Aladin software (Bonnarel et.al., 2000) is shown in Figure 1. Its coordinates are (J2000) 00°40'46.23" +43°23'57.9". This star was initially calibrated as a secondary photometric standard star with V=15.277 and B-V=0.281 for the field of HV And (Henden & Honeycutt, 1995), but it suspiciously had the largest standard deviation of the group of standards (stdev = 0.14). Its variability detailed here means that it can not be used as a photometric standard.

Title: Low-State Flaring Events in AM Herculis
Authors: Kafka, S.; Robertson, J.; Honeycutt, R. K.; Howell, S. B.
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Publication: The Astronomical Journal, Volume 129, Issue 5, pp. 2411-2419. (AJ Homepage)
Publication Date: 05/2005
Origin: UCP
Astronomy Keywords: Stars: Novae, Cataclysmic Variables, Stars: Individual: Constellation Name: AM Herculis
DOI: 10.1086/429133
Bibliographic Code: 2005AJ....129.2411K

Abstract

A photometric monitoring campaign has been conducted in order to investigate the character and origin of flaring events occasionally seen in the long-term low-state light curve of the polar prototype AM Her. Four telescopes employed during 2004 May-July revealed that the events have typical duty cycles of 2%-35%, amplitudes of 0.2-0.6 mag, and typical durations of 15-90 minutes. A striking concentration of the 2004 events appears near inferior and superior conjunction of the secondary star. Interestingly, in the long-term RoboScope-monitored light curve (1990-2003), similar events are uniformly distributed in phase. AM Her's accretion geometry and the nature of its low states allow for two likely origins for the observed events, namely, residual accretion during low states and activity (flares) on the secondary star. Considering that AM Her is likely a one-pole accretor in the low states, the former requires irregular mass transfer from the secondary, resulting in random accretion bursts, with cyclotron beaming concentrating the flares into two phase intervals. On the other hand, considering the stability of the magnetic poles, this cannot address the random distribution of the events during the long-term light curve. Drifting active regions on the secondary star could explain the random distribution of the events; however, coincidence must be invoked to explain their occurrence at the observed phases of orbital conjunction. A combination of the two ideas is also discussed, in which stellar activity on the secondary star induces random accretion bursts, with cyclotron beaming then concentrating the flares into two phase intervals.

Title: Reports on New Discoveries
Authors: Robertson, Jeff
Publication: Information Bulletin on Variable Stars (IBVS Homepage)
Publication Date: 04/2005
Origin: IBVS
Objects: [HH95] HV And-7
Comment: 5700-t10
Bibliographic Code: 2005IBVS.5700....9R

Abstract

Not Available

Title: Rapid Oscillations in Cataclysmic Variables. XVI. DW Cancri
Authors: Patterson, Joseph; Thorstensen, John R.; Vanmunster, Tonny; Fried, Robert E.; Martin, Brian; Campbell, Tut; Robertson, Jeff; Kemp, Jonathan; Messier, David; Armstrong, Eve

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Publication: The Publications of the Astronomical Society of the Pacific, Volume 116, Issue 820, pp. 516-526. (PASP Homepage)
Publication Date: 06/2004
Origin: UCP
Astronomy Keywords: Accretion, Accretion Disks, Stars: Binaries: Close, Stars: Novae, Cataclysmic Variables, stars: individual (DW Cancri)
DOI: 10.1086/421034
Bibliographic Code: 2004PASP..116..516P

Abstract

We report photometry and spectroscopy of the nova-like variable DW Cancri. The spectra show the usual broad H and He emission lines, with an excitation and continuum slope characteristic of a moderately high accretion rate. A radial-velocity search yields strong detections at two periods, 86.1015(3) minutes and 38.58377(6) minutes. We interpret these as respectively the orbital period P_{orb} of the binary, and the spin period P_{spin} of a magnetic white dwarf. The light curve also shows the spin period, plus an additional strong signal at 69.9133(10) minutes, which coincides with the difference frequency $1/P_{spin}$-$1/P_{orb}$. These periods are stable over the 1 year baseline of measurement. This triply-periodic structure mimics the behavior of several well-credentialed members of the ``DQ Herculis'' (intermediate polar) class of cataclysmic variables. DQ Her membership is also suggested by the mysteriously strong sideband signal (at ν_{spin}-ν_{orb}), attesting to a strong pulsed flux at X-ray/EUV/UV wavelengths. DW Cnc is a new member of this class, and would be an excellent target for extended observation at these wavelengths.

Title: An Eclipsing Near Contact Short Period Binary in the Field of FS Aur
Authors: Robertson, J. W.; Austin, S. J.; Campbell, T.; Hoskins, J.
Publication: Information Bulletin on Variable Stars, 5536, 1. (IBVS Homepage)
Publication Date: 06/2004
Origin: IBVS
Objects: FS Aur
Keywords: photometry

Comment: 5536-t1
Bibliographic Code: 2004IBVS.5536....1R

Abstract

This report discusses a new eclipsing binary near FS Aur.

Title: The 2001 Superoutburst of WZ Sagittae
Authors: Patterson, Joseph; Masi, Gianluca; Richmond, Michael W.; Martin, Brian; Beshore, Edward; Skillman, David R.; Kemp, Jonathan; Vanmunster, Tonny; Rea, Robert; Allen, William; Davis, Stacey; Davis, Tracy; Henden, Arne A.; Starkey, Donn; Foote, Jerry; Oksanen, Arto; Cook, Lewis M.; Fried, Robert E.; Husar, Dieter; Novák, Rudolf; Campbell, Tut; Robertson, Jeff; Krajci, Thomas; Pavlenko, Elena; Mirabal, Nestor; Niarchos, Panos G.; Brettman, Orville; Walker, Stan
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 Association of Universities for Research in Astronomy, Inc. (AURA), under cooperative agreement with the National Science Foundation.

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Publication: The Publications of the Astronomical Society of the Pacific, Volume 114, Issue 797, pp. 721-747. (PASP Homepage)
Publication Date: 07/2002
Origin: UCP
Astronomy Keywords: accretion, accretion disks, Stars: Binaries: Close, Stars: Novae, Cataclysmic Variables, Stars: Individual: Constellation Name: WZ Sagittae
DOI: 10.1086/341696
Bibliographic Code: 2002PASP..114..721P

Abstract

We report the results of a worldwide campaign to observe WZ Sagittae during its 2001 superoutburst. After a 23 yr slumber at V=15.5, the star rose within 2 days to a peak brightness of 8.2, and showed a main eruption lasting 25 days. The return to quiescence was punctuated by

12 small eruptions, of ~1 mag amplitude and 2 day recurrence time; these ``echo outbursts'' are of uncertain origin, but somewhat resemble the normal outbursts of dwarf novae. After 52 days, the star began a slow decline to quiescence. Periodic waves in the light curve closely followed the pattern seen in the 1978 superoutburst: a strong orbital signal dominated the first 12 days, followed by a powerful common superhump at 0.05721(5) day, 0.92(8)% longer than P_{orb}. The latter endured for at least 90 days, although probably mutating into a ``late'' superhump with a slightly longer mean period [0.05736(5) day]. The superhump appeared to follow familiar rules for such phenomena in dwarf novae, with components given by linear combinations of two basic frequencies: the orbital frequency ω_o and an unseen low frequency Ω, believed to represent the accretion disk's apsidal precession. Long time series reveal an intricate fine structure, with ~20 incommensurate frequencies. Essentially all components occurred at a frequency $n\omega_o$-$m\Omega$, with m=1, ..., n. But during its first week, the common superhump showed primary components at $n\omega_o$-Ω, for n=1, 2, 3, 4, 5, 6, 7, 8, 9 (i.e., m=1 consistently); a month later, the dominant power shifted to components with m=n-1. This may arise from a shift in the disk's spiral-arm pattern, likely to be the underlying cause of superhumps. The great majority of frequency components are redshifted from the harmonics of ω_o, consistent with the hypothesis of apsidal advance (prograde precession). But a component at 35.42 cycles day^{-1} suggests the possibility of a retrograde precession at a different rate, probably N=0.13+/-0.02 cycles day^{-1}. The eclipses permit measuring the location and brightness of the mass-transfer hot spot. The disk must be very eccentric and nearly as large as the white dwarf's Roche lobe. The hot-spot luminosity exceeds its quiescent value by a factor of up to 60. This indicates that enhanced mass transfer from the secondary plays a major role in the eruption.

Title: Post-Common-Envelope Binary Stars and the Precataclysmic Binary PG 1114+187
Authors: Hillwig, Todd C.; Honeycutt, R. Kent; Robertson, Jeff W.
Affiliation: AA(Department of Astronomy, Swain Hall West 319, Indiana University, Bloomington, IN 47405 **honey@astro.indiana.edu** thillwig@astro.indiana.edu), AB(Department of Astronomy, Swain Hall West 319, Indiana University, Bloomington, IN 47405 honey@astro.indiana.edu thillwig@astro.indiana.edu), AC(Department of Physical Sciences, Arkansas Tech University, Russellville, AR 72801-2222 Jeff.Robertson@mail.atu.edu)

Publication: The Astronomical Journal, Volume 120, Issue 2, pp. 1113-1119. (AJ Homepage)
Publication Date: 08/2000
Origin: UCP
Astronomy Keywords: Stars: Binaries: Close, stars: individual (PG 1114+187)
DOI: 10.1086/301479
Bibliographic Code: 2000AJ....120.1113H

Abstract

We present orbit-resolved spectroscopy and orbit-sampled photometry of the binary system PG 1114+187. Both photometry and radial velocity studies reveal a period P=1.75992 days, which is taken to be the orbital period of the binary. Strong modulation of emission-line strength with the same period is also present. A preliminary mass ratio, M_2/M_1~0.7, is found from primary- and secondary-star radial velocity amplitudes. No evidence is seen for either an accretion disk or mass transfer, leading to the conclusion that PG 1114+187 is not a cataclysmic variable (CV) but is in a pre-CV state, before the initiation of mass transfer. The short orbital period also leads to the conclusion that the system passed through a common-envelope phase at some time in the past. The current list of known post-common-envelope and precataclysmic binary stars is also reviewed and the general properties of this class of star are discussed.

Title: Reconnaissance of Suspected Old Novae
Authors: Robertson, Jeff W.; Honeycutt, R. K.; Hillwig, T.; Jurcevic, J. S.; Henden, A. A.
Affiliation: AA(Department of Physical Sciences, Arkansas Tech University, Russellville, AR 72801-2222 **Jeff.Robertson@mail.atu.edu**), AB(Department of Astronomy, Swain West 319, Indiana University, Bloomington, IN 47405 honey@astro.indiana.edu), AC(Department of Astronomy, Swain West 319, Indiana University, Bloomington, IN 47405 thillwig@astro.indiana.edu), AD(Department of Astronomy, RLM 15.308, University of Texas, Austin, TX 78712 jsj@astro.as.utexas.edu), AE(US Naval Observatory, Flagstaff Station, P.O. Box 1149, Flagstaff, AZ 86002)

Publication: The Astronomical Journal, Volume 119, Issue 3, pp. 1365-1374. (AJ Homepage)
Publication Date: 03/2000
Origin: UCP
Astronomy Keywords: STARS: NOVAE, CATACLYSMIC VARIABLES
DOI: 10.1086/301250
Bibliographic Code: 2000AJ....119.1365R

Abstract

Several of the ``blank fields'' in the novae atlas by Duerbeck were imaged at the WIYN 3.5 m telescope during technical engineering and commissioning activities in 1994-1995. Several old novae have been recovered utilizing CCD photometry. Multiobject spectroscopy with the Hydra/MOS instrumentation at WIYN was also used on random stars in the fields to search for a cataclysmic variable. The old novae candidates identified include SV Ari, V465 Cyg, SS LMi, V2104 Oph, GR Ori, V529 Ori, UW Per, and UW Tri.

Title: RXTE, ROSAT, EUVE, IUE, and Optical Observations through the 45 Day Supercycle of V1159 Orionis
Authors: Szkody, Paula; Linnell, A.; Honeycutt, Kent; Robertson, Jeff; Silber, Andrew; Hoard, D. W.; Pastwick, L.; Desai, V.; Hubeny, Ivan; Cannizzo, John; Liller, William; Zissell, Ronald; Walker, Gary
Publication: The Astrophysical Journal, Volume 521, Issue 1, pp. 362-375. (ApJ Homepage)
Publication Date: 08/1999
Origin: APJ
Astronomy Keywords: STARS: NOVAE, CATACLYSMIC VARIABLES, STARS: INDIVIDUAL: CONSTELLATION NAME: V1159 ORIONIS, ULTRAVIOLET: STARS, X-RAYS: STARS
DOI: 10.1086/307550
Bibliographic Code: 1999ApJ...521..362S

Abstract

A complete 45 day supercycle of the cataclysmic variable V1159 Ori comprising a superoutburst and eight normal outbursts was observed. Coverage included ground-based optical observations as well as observations with RXTE for 38 days, ROSAT for 34 days, IUE for 27 days, and Extreme Ultraviolet Explorer (EUVE) for 10 days. The resulting light curves reveal that the optical and UV light variations are inversely correlated with the RXTE and ROSAT fluxes, with the largest change in intensity occurring in the ROSAT bandpass. There is no evidence for a strong EUV/soft X-ray component during outburst. An outflowing wind is evident from the C IV line profile during each brief outburst as well as the superoutburst. The transitions from outburst states of the disk to quiescent states take place on timescales of hours. Accretion disk models can fit the UV line and continuum energy distributions near outburst only if the disk radial temperature profile is modified from the standard case to produce a hotter distribution in the outer annuli. The high mass transfer rate, the hot disk distribution, and the similarity of outbursts and superoutbursts argue for outside-in outbursts in this system.

Title: Multiyear Photometry and a Spectroscopic Orbital Period Search for the VY SCULPTORIS Type Cataclysmic Variable V794 Aquilae
Authors: Honeycutt, R. K.; Robertson, J. W.
Affiliation: AA(Department of Astronomy, Indiana University, Swain Hall West, Bloomington, IN 47405 **honey@astro.indiana.edu** psjr@atuvm.atu.edu), AB(Department of Astronomy, Indiana University, Swain Hall West, Bloomington, IN 47405 honey@astro.indiana.edu psjr@atuvm.atu.edu)

Publication: The Astronomical Journal, Volume 116, Issue 4, pp. 1961-1965. (AJ Homepage)
Publication Date: 10/1998

Origin: AJ
Astronomy Keywords: STARS: NOVAE, CATACLYSMIC VARIABLES, STARS: INDIVIDUAL: CONSTELLATION NAME: V794 AQUILAE
DOI: 10.1086/300539
Bibliographic Code: 1998AJ....116.1961H

Abstract

Continued photometry of the nova-like cataclysmic variable (CV) V794 Aql shows that the unusual repetitive, slow, deep declines that were reported earlier for 1990-1992 have persisted now for over 6 years. The slow declines and rapid rises are shown to have relatively consistent shapes. This continued behavior presents some potential problems for the model of Honeycutt, Cannizzo, & Robertson, in which the ``sawtooth''-shaped light curve was considered to be an accretion disk instability initiated as M dropped from the nova-like regime. Alternative mechanisms are briefly explored and are argued to also encounter difficulties in accounting for the light curve. A radial velocity study of V794 Aql yields a best period of 0.1533 days (3.68 hr). Periods of 0.1336 and 0.1787 days are considerably less likely but cannot be ruled out from the data at hand. These periods are in the expected range for VY Sculptoris type nova-like CVs.

Title: Medium-resolution echelle spectrograph design
Authors: Honeycutt, R. K.; Robertson, Jeff W.; Pier, Jeff R.
Affiliation: AA(Indiana University), AB(U.S. Naval Observatory)
Publication: Proc. SPIE Vol. 3355, p. 696-702, Optical Astronomical Instrumentation, Sandro D'Odorico; Ed. (SPIE Homepage)
Publication Date: 07/1998
Origin: SPIE
Bibliographic Code: 1998SPIE.3355..696H

Abstract

Time-resolved spectroscopic studies of relatively faint stars that vary on many time scales, such as interacting binary stars, benefit from a particular combination of wide wavelength coverage, medium spectral resolution, and high efficiency. We describe two similar fiber-fed echelle spectrograph designs that address this need, with an emphasis on eventual use for automated, unattended spectroscopy. The coverage is approximately 385 - 850 nm in about 25 echelle orders or approximately 350 - 500 nm in about 16 orders, each with a resolution of about 5000. Cross dispersion is supplied by two prisms in series and the collimator is an off-axis paraboloid. One of the designs incorporates white pupil optics to minimize camera vignetting in the red echelle orders.

Title: Are Z Camelopardalis-Type Dwarf Novae Brighter at Standstill?

Authors: Honeycutt, R. K.; Robertson, J. W.; Turner, G. W.; Mattei, J. A.

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Publication: The Publications of the Astronomical Society of the Pacific, Volume 110, Issue 748, pp. 676-688. (PASP Homepage)

Publication Date: 06/1998

Origin: PASP

Astronomy Keywords: STARS: NOVAE, CATACLYSMIC VARIABLES, STARS: INDIVIDUAL: CONSTELLATION NAME: Z CAMELOPARDALIS, STARS: INDIVIDUAL (AH HERCULIS), STARS: INDIVIDUAL (HX PEGASI), STARS: INDIVIDUAL (SY CANCERI), STARS: INDIVIDUAL: CONSTELLATION NAME: RX ANDROMEDAE

DOI: 10.1086/316180

Bibliographic Code: 1998PASP..110..676H

Abstract

Average V-band brightnesses over multiple outbursting and standstill intervals are computed for the light curves of five Z Cam-type dwarf novae: RX And, Z Cam, SY Cnc, AH Her, and HX Peg. Both CCD photometry from RoboScope and AAVSO visual estimates are used in the analysis, with consistent results from the two databases for the stars in common. In four of the five stars, the standstills are as bright as or brighter than the mean V-band brightness during outbursting intervals. This is consistent with Z Cam stars being near the upper stability boundary in M for operation of the thermal limit cycle that is thought to be responsible for dwarf nova outbursts. However, the unusual standstills or hesitations observed in SY Cnc are sometimes fainter than the mean brightness during outbursting intervals. From several well-observed examples we describe the light curves of Z Cam stars as they enter standstill. During this characteristic damped oscillation the amplitude decreases with a timescale approximately equal to the mean outburst recurrence interval, and the period of the oscillation decreases with P&d2 ~=-0.4 as standstill is approached. The exits from standstill usually change abruptly into outbursting mode by emerging from standstill into a decline from outburst.

Title: Unusual ``Stunted'' Outbursts in Old Novae and

	Nova-Like Cataclysmic Variables
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Publication:	The Astronomical Journal, Volume 115, Issue 6, pp. 2527-2538. (AJ Homepage)
Publication Date:	06/1998
Origin:	AJ
Astronomy Keywords:	STARS: NOVAE, CATACLYSMIC VARIABLES, STARS: INDIVIDUAL: CONSTELLATION NAME: UU AQUARII, STARS: INDIVIDUAL (Q CYGNI, CP LACERTAE), STARS: INDIVIDUAL: CONSTELLATION NAME: X SERPENTIS, STARS: INDIVIDUAL: CONSTELLATION NAME: RW SEXTANTIS
DOI:	10.1086/300381
Bibliographic Code:	1998AJ....115.2527H

Abstract

Outbursts averaging 0.6 mag in amplitude and 10 days in width are described in five old novae and nova-like cataclysmic variables: UU Aqr, Q Cyg, CP Lac, X Ser, and RW Sex. These stars are thought to be high mass transfer rate systems for which the accretion disk is expected to be stable against the thermal instability responsible for dwarf nova outbursts. The widths and spacings of these events are similar to those of dwarf nova eruptions, but the amplitudes are significantly smaller, or ``stunted.'' The outbursts are sometimes accompanied by dips. These dips have amplitudes that are similar to the outbursts' but have shapes that scatter significantly more than the shapes of the outbursts. The outbursts and dips sometimes occur as pairs and are sometimes isolated. We are not able at this time to determine a single common mechanism for this behavior, or even to conclude that some mechanisms are preferred. Rather, we characterize these phenomena with regard to outburst shapes and frequency of occurrence and explore a range of possible causes, including truncated disks, mass transfer modulations, and Z Camelopardalis type behavior. Arguments are assembled for and against such possible mechanisms, and key observations are suggested. It appears unlikely that accretion disk instabilities are the single common cause of these phenomena, and we are left with either a combination of accretion disk and mass transfer events or a situation in which mass transfer events are somehow responsible for all these varied behaviors.

Title:	Spectroscopic and Photometric Analysis of the Nova-like Cataclysmic Variable PG 1000+667: A New VY

	SCULPTORIS Star
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Publication:	The Astronomical Journal, Volume 115, Issue 5, pp. 2044-2046. (AJ Homepage)
Publication Date:	05/1998
Origin:	AJ
Astronomy Keywords:	STARS: BINARIES: CLOSE, STARS: NOVAE, CATACLYSMIC VARIABLES, STARS: INDIVIDUAL: ALPHANUMERIC: PG 1000+667
DOI:	10.1086/300347
Bibliographic Code:	1998AJ....115.2044H

Abstract

Multiyear photometry and orbit-resolved spectroscopy of the nova-like cataclysmic variable PG 1000+667 show behavior associated with the VY Sculptoris subclass of nova-like cataclysmic variables. Photometric observations over a 35 month interval from Indiana University's robotic telescope RoboScope show two drops of 3 mag to a low state. Spectroscopy shows a periodic velocity variation in the Hβ emission line with P = 3.47 hr. This places the star just above the 2-3 hour period gap, which supports the VY Sculptoris classification.

Title:	V446 Herculis (Nova HER 1960) Is an Optical Triple: Implications for the Resumption of Dwarf Nova Outbursts following the Nova
Authors:	Honeycutt, R. K.; Robertson, J. W.; Turner, G. W.; Henden, A. A.
Publication:	Astrophysical Journal v.495, p.933 (ApJ Homepage)
Publication Date:	03/1998
Origin:	APJ
Astronomy Keywords:	STARS: BINARIES: CLOSE, STARS: NOVAE, CATACLYSMIC VARIABLES, STARS: INDIVIDUAL CONSTELLATION NAME: V446 HERCULIS
DOI:	10.1086/305299
Bibliographic Code:	1998ApJ...495..933H

Abstract

V446 Her has been reported to have outbursts or flares at a mean interval of ~23 days with an amplitude of ~1.5 mag. This amplitude is quite low for dwarf nova outbursts, which suggests that these events may be due to mass transfer modulations. However, earlier reported photometry included an unrecognized contribution from two additional stars ~3" away. When corrected for this effect, the amplitude of the outbursts is increased to ~2.5 mag, consistent with the amplitudes of known dwarf novae. Furthermore, it is found that other parameters of the outbursts are consistent with the expected characteristics of dwarf nova events. These parameters include the outburst spacing, the rise and fall times of the outbursts, and variations in outburst amplitude and width. V446 Her is therefore firmly established as a cataclysmic variable that has dwarf nova eruptions in the immediate postnova stage, and is the most unambiguous example of such behavior among the recorded novae.

Title: A photometric and spectroscopic study of the cataclysmic variable SX Leonis Minoris in quiescence and superoutburst

Authors: Wagner, R. Mark; Thorstensen, John R.; Honeycutt, R. K.; Howell, S. B.; Kaitchuck, R. H.; Kreidl, T. J.; Robertson, J. W.; Sion, E. M.; Starrfield, S. G.

Affiliation: AA(Lowell Observatory), AB(Dartmouth College), AC(Indiana Univ., Bloomington), AD(Wyoming, Univ., Laramie), AE(Ball State University), AF(Northern Arizona University), AG(Indiana Univ., Bloomington), AH(Villanova University), AI(Arizona State University, Tempe, AZ)

Publication: Astronomical Journal, vol. 115, p. 787 (AJ Homepage)

Publication Date: 02/1998

Category: Astrophysics

Origin: STI

NASA/STI Keywords: Cataclysmic Variables, Stellar Spectrophotometry, Variable Stars, Binary Stars, Astrometry, Charge Coupled Devices, Light Curve, Radial Velocity, Least Squares Method

DOI: 10.1086/300201

Bibliographic Code: 1998AJ....115..787W

Abstract

We present CCD imaging, CCD photometry on long and short timescales, and time-resolved spectroscopy of SX LMi, a new SU Ursae Majoris type dwarf nova. The quiescent optical spectrum shows broad double-peaked Balmer, He I, and He II emission lines, similar to other quiescent dwarf novae. Absorption lines from a late-type secondary are not detected. Time-resolved spectra obtained in quiescence reveal radial velocity variations of the Balmer emission lines on a period of 0.06717 +/- 0.00011 days, or 96.72 +/- 0.16 minutes, with only a slight possibility of a daily cycle-count error. Optical photometry obtained between 1987 and 1991 shows flickering with a peak-to-peak amplitude of 0.18 mag. The binary orbital period can

sometimes be seen in the photometric record. Long-term photometric monitoring for a three-year period between 1992 October and 1995 June shows seven well-defined outbursts and marginally detects a few others. The outburst interval varies between 34 and 64 days. During the 1994 December outburst, optical photometric observations show that SX LMi exhibited superhumps with a period of 0.06893 +/- 0.00012 days, which is 2.6 percent +/- 0.2 percent longer than the orbital period, as expected for a normal SU UMa star at this period. Spectra obtained during superoutburst show dramatic variations in the emission-line profiles on timescales of 10 minutes.

Title: Three Tests of the M Dependence of the AD Limit Cycle, using long term CV photometry
Authors: Honeycutt, R. K.; Robertson, J. W.; Turner, G. W.; Mattei, J. A.
Publication: Wild Stars In The Old West: Proceedings of the 13th North American Workshop on Cataclysmic Variables and Related Objects. ASP Conference Series, Vol. 137, 1998, ed. S. Howell, E. Kuulkers, and C. Woodward (1998), p.517
Publication Date: 00/1998
Origin: ADS
Bibliographic Code: 1998ASPC..137..517H

Abstract

Not Available

Title: Multiyear Photometry and Orbital Spectroscopy of the New VY Scl Star PG 1000+667
Authors: Hillwig, T. C.; Robertson, J. W.; Honeycutt, R. K.
Publication: Wild Stars In The Old West: Proceedings of the 13th North American Workshop on Cataclysmic Variables and Related Objects. ASP Conference Series, Vol. 137, 1998, ed. S. Howell, E. Kuulkers, and C. Woodward (1998), p.428
Publication Date: 00/1998
Origin: ADS
Bibliographic Code: 1998ASPC..137..428H

Abstract

Not Available

Title: High-State/Low-State Behavior in the Long-Term Light Curve of V Sagittae

Authors: Robertson, Jeff W.; Honeycutt, R. Kent; Pier, Jeffrey R.

Publication: Astronomical Journal v.113, p.787 (AJ Homepage)
Publication Date: 02/1997
Origin: AJ
Astronomy Keywords: STARS: INDIVIDUAL: V SAGITTAE, STARS: OSCILLATIONS
DOI: 10.1086/118299
Bibliographic Code: 1997AJ....113..787R

Abstract

The 1990-1995 light curve of V Sagittae is shown to have brightness transitions lasting several days which separate extended intervals lasting months in a bright or faint state. These transitions recur with semi-regularity at a characteristic period of ˜240 days. Primary and secondary eclipses are conspicuous in the faint state, but are weaker when the system is bright. Our high-state spectra through primary eclipse show no obvious evidence for the rotational disturbance expected from an accretion disk.

Title: Monitoring of 3C 66A during an extended outburst. I. The light curves.

Authors: Takalo, L. O.; Sillanpaeae, A.; Pursimo, T.; Lehto, H. J.; Nilsson, K.; Teerikorpi, P.; Heinaemaeki, P.; Lainela, M.; Kidger, M.; de Diego, J. A.; Gonzalez-Perez, J. N.; Rodriguez-Espinosa, J.-M.; Mahoney, T.; Boltwood, P.; Dultzin-Hacyan, D.; Benitez, E.; Turner, G. W.; Robertson, J. W.; Honeycut, R. K.; Efimov, Yu. S.; Shakhovskoy, N.; Charles, P. A.; Schramm, K. J.; Borgeest, U.; Linde, J. V.; Weneit, W.; Kuehl, D.; Schramm, T.; Sadun, A.; Grashuis, R.; Heidt, J.; Wagner, S.; Bock, H.; Kuemmel, M.; Pfeiffer, M.; Heines, A.; Fiorucci, M.; Tosti, G.; Ghisellini, G.; Raiteri, C. M.; Villata, M.; de Francesco, G.; Bosio, S.; Latini, G.; Poyner, G.; Aller, M. F.; Aller, H. D.; Hughes, P.; Valtaoja, E.; Teraesranta, H.; Tornikoski, M.

Publication: Astronomy and Astrophysics Supplement, v.120, p.313-321 (A&AS Homepage)

Publication Date: 12/1996
Origin: CDS
Astronomy Keywords: BL LACERTAE OBJECTS: GENERAL, BL LACERTAE OBJECTS: INDIVIDUAL: 3C 66A, RADIO CONTINUUM: GALAXIES
Bibliographic Code: 1996A&AS..120..313T

Abstract

We present results from a two year intensive monitoring of BL Lac object 3C 66A (PKS 0219+428). This object was observed in outburst during these two years. It reached the brightest ever observed magnitude on V=13.59 (1.2.1995) and on K=10.59 (15.2.1994). The optical and infrared light curves are characterised by randomly distributed fast flares, lasting a few days and well defined outbursts lasting a week or two. On top of these flares we can occasionally see small amplitude microvariability. No clear correlation can be found between the spectral behaviour and the occurrence of these flares. In the radio bands 3C 66A was quite faint and very stable compared to the optical variations. The light curves will be presented with preliminary analysis and discussions on the possible causes for the observed variations.

Title: High-State/Low-State Photometric Behavior in the Quiescent Level of the Cataclysmic Variable HT Cassiopeiae
Authors: Robertson, Jeff W.; Honeycutt, R. Kent
Publication: Astronomical Journal v.112, p.2248 (AJ Homepage)
Publication Date: 11/1996
Origin: AJ
Astronomy Keywords: STARS: INDIVIDUAL: HT CASSIOPEIAE, CATACLYSMIC VARIABLES
DOI: 10.1086/118177
Bibliographic Code: 1996AJ....112.2248R

Abstract

We discuss the long-term quiescent light curve of the dwarf nova HT Cassiopeiae, with particular emphasis on the 1991-1995 behavior. HT Cas had no outbursts for at least eight years prior to a 1995 November 17 outburst. Its 1991-1995 light curve while in quiescence exhibits ˜1.8 mag long-time-scale variations from about 15.9 to 17.7 mag. This is remarkable because dwarf novae while in quiescence have not previously been described as exhibiting the kind of systematic high-state/low-state variations previously associated only with magnetic and VY Scl cataclysmic variables.

Title: Double-peak structure in the cyclic optical outbursts of blazar OJ 287.

Authors: Sillanpaa, A.; Takalo, L. O.; Pursimo, T.; Nilsson, K.; Heinamaki, P.; Katajainen, S.; Pietila, H.; Hanski, M.; Rekola, R.; Kidger, M.; Boltwood, P.; Turner, G. W.; Robertson, J. W.; Honeycut, R. K.; Efimov, Yu. S.; Shakhovskoy, N.; Fiorucci, M.; Tosti, G.; Ghisellini, G.; Raiteri, C. M.; Villata, M.; de Francesco, G.; Lanteri, L.; Chiaberge, M.; Peila, A.; Heidt, J.

Publication: Astronomy and Astrophysics, v.315, p.L13-L16 (A&A Homepage)

Publication Date: 11/1996

Origin: CDS

Astronomy Keywords: SOURCES: BLAZARS, VARIABILITY, INDIVIDUAL: OJ 287

Bibliographic Code: 1996A&A...315L..13S

Abstract

An international monitoring project, called OJ-94, was set up with the aim of monitoring blazar OJ 287 during the predicted optical outburst (in fall 1994, Sillanpaa et al. 1988ApJ...325..628S) and the predicted secondary outburst (in winter 1995-1996, Sillanpaa et al. 1996A&A...305L..17S). The most prominent features in the OJ 287 light curve during the period covered by the project are the large outburst in September-December 1994, reaching the maximum at the beginning of November, and the secondary outburst peaking just at Christmas 1995. Both these outbursts occurred almost exactly at the predicted times.

Title: The orbital period of BK Lyncis (PG 0917+342)

Authors: Ringwald, F. A.; Thorstensen, J. R.; Honeycutt, R. K.; Robertson, J. W.

Affiliation: AA(Department of Physics, Keele University, Keele, Staffordshire ST5 5BG, UK), AB(Department of Physics and Astronomy, Dartmouth College, Hanover, NH 03755-3528, USA), AC(Astronomy Department, Indiana University, Swain Hall West, Bloomington, IN 47405, USA), AD(Astronomy Department, Indiana University, Swain Hall West, Bloomington, IN 47405, USA)

Publication: Monthly Notices of the Royal Astronomical Society, Volume 278, Issue 1, pp. 125-131. (MNRAS Homepage)

Publication Date: 01/1996

Origin: MNRAS

Astronomy Keywords: BINARIES: SPECTROSCOPIC, STARS: INDIVIDUAL: BKLYN, STARS: INDIVIDUAL: PG0917+342, NOVAE, CATACLYSMIC VARIABLES

Bibliographic Code: 1996MNRAS.278..125R

Abstract

Long-term light curves of the cataclysmic variable BKLyn=PG0917+342 from the Indiana Automated CCD photometric telescope (`RoboScope') and the Harvard College Observatory plate achive reveal no dwarf nova outbursts. Two radial velocity studies show its orbital period to be 107.97+/-0.07 min, confirming that it does have an orbital period shorter than the period gap for cataclysmic variables. Whether this is the first nova-like variable below the period gap or a dwarf nova with rare outbursts resembling WZSge is still unclear, however.

Title: Confirmation of the 12-year optical outburst cycle in blazar OJ 287.
Authors: Sillanpaa, A.; Takalo, L. O.; Pursimo, T.; Lehto, H. J.; Nilsson, K.; Teerikorpi, P.; Heinaemaeki, P.; Kidger, M.; de Diego, J. A.; Gonzalez-Perez, J. N.; Rodriguez-Espinosa, J.-M.; Mahoney, T.; Boltwood, P.; Dultzin-Hacyan, D.; Benitez, E.; Turner, G. W.; Robertson, J. W.; Honeycut, R. K.; Efimov, Yu. S.; Shakhovskoy, N.; Charles, P. A.; Schramm, K. J.; Borgeest, U.; Linde, J. V.; Weneit, W.; Kuehl, D.; Schramm, T.; Sadun, A.; Grashuis, R.; Heidt, J.; Wagner, S.; Bock, H.; Kuemmel, M.; Heines, A.; Fiorucci, M.; Tosti, G.; Ghisellini, G.; Raiteri, C. M.; Villata, M.; de Francesco, G.; Bosio, S.; Latini, G.
Publication: Astronomy and Astrophysics, v.305, p.L17 (A&A Homepage)
Publication Date: 01/1996
Origin: CDS
Astronomy Keywords: SOURCES: BLAZARS, VARIABILITY, INDIVIDUAL: OJ 287
Bibliographic Code: 1996A&A...305L..17S

Abstract

A large monitoring project, OJ-94, was set up with the aim of monitoring the blazar OJ 287 during the predicted optical outburst (in fall 1994, Sillanpaa et al. 1988) and simultaneously to collect a large data base for a small sample of blazars. Through this campaign we have obtained the best ever obtained optical light curve for any extragalactic object. The most prominent feature in the occurring at the beginning of November. This outburst occurred almost exactly at the predicted time.

Title: Periodic Outbursts in the Old Nova V446 Herculis
Authors: Honeycutt, R. K.; Robertson, J. W.; Turner, G. W.
Publication: Astrophysical Journal v.446, p.838 (ApJ Homepage)
Publication Date: 06/1995
Origin: APJ; KNUDSEN
Astronomy Keywords: STARS: NOVAE, CATACLYSMIC VARIABLES, STARS: INDIVIDUAL CONSTELLATION NAME: V446 HERCULIS
DOI: 10.1086/175841
Bibliographic Code: 1995ApJ...446..838H

Abstract

We present data showing that over the last 4 yr V446 Her (= Nova Her 1960) has had outbursts or flares at a mean interval of 23 days with an amplitude of ˜1.5 mag. These events vary in width from 5 to 11 days. During at least some periods of time, the recurrence interval is stable to within the observational error (typically ±3 days). The spectrum of V446 Her in quiescence is shown to have an excitation level intermediate to that of dwarf novae- and nova-like cataclysmic variables. This fact, along with other evidence, leads us to suggest that these outbursts may be due to mass transfer events rather than dwarf nova-like accretion disk instabilities.

Title: RZ Leonis Minoris, PG 0943+521, and V1159 Orionis: Three Cataclysmic Variables with Similar and Unusual Outburst Behavior
Authors: Robertson, J. W.; Honeycutt, R. K.; Turner, G. W.
Publication: Publications of the Astronomical Society of the Pacific, v.107, p.443 (PASP Homepage)
Publication Date: 05/1995
Origin: PASP; KNUDSEN
Astronomy Keywords: CATACLYSMIC VARIABLES, STARS: MASS-LOSS
DOI: 10.1086/133572
Bibliographic Code: 1995PASP..107..443R

Abstract

We call attention to a small group of cataclysmic variable stars (whose prototype might be considered RZ LMi) that have complex light curves fo similar shape which repeat with typical periods of a few weeks. The predictability of the time of each superoutburst and the stability of the shape of the light curve is unexpectedly high for cataclysmic variables, which are well-known for erratic variations in both the timing and the shape of their outbursts. The phenomenon appears to be closely related to SU Ursae Majoris-type superoutbursts, especially since superhumps appear in these stars. The similiarities and differences between these RZ LMi stars and SU UMa systems are summerized and discussed in the context of extant models for the superoutbursts of SU UMa-type dwarf novae. (SECTION: Stars)

Title: KR Aurigae
Authors: Honeycutt, K.; Robertson, J.
Publication: IAU Circ., 6132, 2 (1995). Edited by Green, D. W. E. (IAUC Homepage)
Publication Date: 02/1995
Origin: CBAT
Objects: KR Aur
Bibliographic Code: 1995IAUC.6132....2H

Abstract

IAUC 6132 available at Central Bureau for Astronomical Telegrams. *IAUC* 6132 available at Central Bureau for Astronomical Telegrams.

Title: Two Examples of Mass Transfer Effects on the Long - Light Curves of Cataclysmic Variables.
Authors: Robertson, Jeff Wayne
Affiliation: AA(INDIANA UNIVERSITY.)
Publication: Thesis (PH.D.)--INDIANA UNIVERSITY, 1995.Source: Dissertation Abstracts International, Volume: 57-01, Section: B, page: 0395.
Publication Date: 01/1995
Category: Physics: Astronomy and Astrophysics
Origin: UMI
Bibliographic Code: 1995PhDT.....19R

Abstract

Two types of behavior are analyzed from the long -term light curves of cataclysmic variables. The differences are likely associated with the mass transfer rate in these close interacting binary stars. A stable mass transfer rate is inferred for one group of newly identified objects and a possibly variable rate of mass transfer produces an entirely different kind of behavior for one other cataclysmic variable. I call attention to a small group of cataclysmic variable stars (whose prototype might be considered RZ Leonis Minoris) that have complex light curves of similar shape which repeat with typical periods of a few weeks. The phenomenon appears to be closely related to SU Ursae Majoris -type "superoutbursts," especially since "superhumps" appear in these stars. The predictability of the time of each superoutburst and the stability of the shape of the light curve is unexpectedly high for cataclysmic variables, which are well-known for erratic variations in both the timing and the shape of their eruptions. The similarities and differences between these RZ LMi stars and SU UMa systems are summarized and discussed in the context

of extant models for the superoutbursts of SU UMa-type dwarf novae. A new fiber-fed echelle spectrograph is exercised on the enigmatic object V Sagittae. The V Sge long-term light curve exhibits high-state/low-state transitions in brightness similar to that of some nova-like cataclysmic variables. On orbital time-scales, both primary and secondary eclipses are visible for the system when in its low-state, but are much less dramatic when the system is bright. High - state time-resolved orbital spectra through primary eclipse show little orbital effects and are dominated by nightly variations. The spectra have very broad emission lines of mostly hydrogen and helium, Hα showing wings out to +/-2200 km thin space s^{-1} and an equivalent width of ~200 A indicating outflow and circumstellar material.

Title: Periodic and Near-Periodic Decaday Lightcurves in Old Nova and Nova-Like CVs
Authors: Honeycutt, R. K.; Robertson, J. W.; Turner, G. W.
Publication: Cataclysmic Variables, Proceedings of the conference held in Abano Terme, Italy, 20-24 June 1994 Publisher: Dordrecht Kluwer Academic Publisher:s, 1995. Edited by A. Bianchini, M. della Valle, and M. Orio. Astrophysics and Space Science Library, Vol. 205, ISBN 0792336763., p.75
Publication Date: 00/1995
Origin: ADS
Comment: ISBN: 0792336763
Bibliographic Code: 1995ASSL..205...75H

Abstract

Not Available

Title: The high-state/low-state transition in V794 Aquilae
Authors: Honeycutt, R. Kent; Cannizzo, John K.; Robertson, Jeff W.
Affiliation: AA(Indiana Univ., Bloomington, IN, US), AB(Indiana Univ., Bloomington, IN, US), AC(Indiana Univ., Bloomington, IN, US)
Publication: Astrophysical Journal, Part 1 (ISSN 0004-637X), vol. 425, no. 2, p. 835-842 (ApJ Homepage)
Publication Date: 04/1994
Category: Astrophysics
Origin: STI
NASA/STI Keywords: Accretion Disks, Cataclysmic Variables, Dwarf Novae, Stellar Models, Angular Momentum, Brightness, Light

Curve, Mass Transfer, Stellar Mass Ejection, Time Dependence
DOI: 10.1086/174028
Bibliographic Code: 1994ApJ...425..835H

Abstract

We present a V-magnitude light curve of the cataclysmic binary V794 Quilae covering an 800 day time span. The system shows variations of ups to 3 mag. In particular, there are two dips of approximately 1 mag which last for about 50 days, and are followed by a rapid recovery to the original brightness, and a third dip of approximately 3 mag lasting about 100 days. These fluctuations are thought to be caused by the response of the accretion disk in the system to the cessation of mass transfer from the mass-losing secondary star. We present computations using a time-dependent accretion disk code to delineate a range of allowed behavior for th accretion disk. To model the observed light curve, we require that the model parameters $alpha_{cold}$ and $alpha_{hot}$, which characterize the degree of coupling of the viscous dissipation to the orbital shear in the low and high states of the accretion disk, be smaller than they have been inferred to be in the dwarf novae, and that the ratio $alpha_{hot}/alpha_{cold}$ also be smaller. The fact that alpha seems to vary with the rate of mass transfer may provide support for the model of Vishniac and Diamond, in which the impact of the mass transfer stream onto the outer edge of the accretion disk excites internal waves which transport angular momentum outward and provide the viscous dissipation.

Title: Three years of OJ 287 photometry.
Authors: Turner, G. W.; Honeycutt, R. K.; Robertson, J. W.
Publication: Workshop on Intensive Monitoring of OJ 287, p. 69 - 73
Publication Date: 00/1994
Origin: ARI
ARI Keywords: Blazars: CCD Photometry
Bibliographic Code: 1994imoj.conf...69T

Abstract

V-band CCD photometry of OJ 287 for the years 1991 - 94 is presented. The data have a typical spacing of 1 - 5 days and were obtained by an automated telescope. Lightcurve features such as long declines and occasional flares are described. Significant excess power is found near periods of 8 and 22 days.

Title: The long-term light curve of the cataclysmic

	variable DW Ursae Majoris
Authors:	Honeycutt, R. K.; Livio, M.; Robertson, J. W.
Affiliation:	AA(Indiana Univ., Bloomington), AB(Space Telescope Science Inst., Baltimore, MD; Technion - Israel Inst. of Technology, Haifa), AC(Indiana Univ., Bloomington)
Publication:	Astronomical Society of the Pacific, Publications (ISSN 0004-6280), vol. 105, no. 691, p. 922-925. (PASP Homepage)
Publication Date:	09/1993
Category:	Astrophysics
Origin:	STI
NASA/STI Keywords:	Astronomical Photometry, Cataclysmic Variables, Light Curve, Magnetic Anomalies, Novae, Charge Coupled Devices, Stellar Evolution, Stellar Luminosity
DOI:	10.1086/133256
Bibliographic Code:	1993PASP..105..922H

Abstract

A 2.5-yr sequence of CCD photometry on DW Ursae Majoris has shown an unusual 4 mag fall and rise in the light curve. The rise appears relatively smooth and regular, unlike the transitions of other high-state/low-state systems. The effect could be due to solar-type magnetic variations on the secondary of the cataclysmic variable. Some observational as well as theoretical work suggests that a nova prior to outburst may show photometric behavior similar to that displayed by DW UMa.

Title:	The unusual 1992 outburst of V630 Cassiopeiae
Authors:	Honeycutt, R. K.; Robertson, J. W.; Turner, G. W.; Vesper, D. N.
Affiliation:	AA(Indiana Univ., Bloomington), AB(Indiana Univ., Bloomington), AC(Indiana Univ., Bloomington), AD(Indiana Univ., Bloomington)
Publication:	Astronomical Society of the Pacific, Publications (ISSN 0004-6280), vol. 105, no. 691, p. 919-921. (PASP Homepage)
Publication Date:	09/1993
Category:	Astronomy
Origin:	STI
NASA/STI Keywords:	Astronomical Photometry, Cassiopeia Constellation, Cataclysmic Variables, Dwarf Novae, Light Curve, Charge Coupled Devices, Night Sky, White Dwarf Stars
DOI:	10.1086/133255
Bibliographic Code:	1993PASP..105..919H

Abstract

A two-magnitude outburst of the cataclysmic variable (CV) V630 Cassiopeiae was observed in late 1992. The low-amplitude, slow-rise, long-duration event is unlike the outbursts seen in the various recognized outburst classes of CVs and related objects.

Title: Unattended H-alpha spectroscopy of P Cygni and Beta Lyrae
Authors: Honeycutt, R. K.; Turner, G. W.; Vesper, D. N.; Robertson, J. W.; White, J. C., II
Affiliation: AA(Indiana Univ., Bloomington), AB(Indiana Univ., Bloomington), AC(Indiana Univ., Bloomington), AD(Indiana Univ., Bloomington), AE(Indiana Univ., Bloomington)
Publication: Astronomical Society of the Pacific, Publications (ISSN 0004-6280), vol. 105, no. 686, p. 426-431. (PASP Homepage)
Publication Date: 04/1993
Category: Astronomy
Origin: STI
NASA/STI Keywords: B Stars, Binary Stars, Blue Stars, H Alpha Line, Stellar Spectrophotometry, Variable Stars, Charge Coupled Devices, Fiber Optics, Stellar Envelopes, Stellar Spectra, Stellar Systems, Stellar Winds
DOI: 10.1086/133168
Bibliographic Code: 1993PASP..105..426H

Abstract

An experiment in automated, unattended fiber-optic stellar spectroscopy is described. Particular attention is paid to the critical technique used for placing the program star in the optical fiber. As a feasibility demonstration study, the equipment and technique have been used to acquire H-alpha spectra of P Cygni and Beta Lyrae over a six-week period. The P Cyg spectra show little systematic variability with time. The Beta Lyr spectra are assembled into a gray-scale phase-resolved spectral image. When displayed in this manner, the H-alpha and He I lines bear a resemblance to the spectra of cataclysmic variable stars that display a third-emission component, or S-wave.

Title: A Probable RV Tauri Star Near HR Del
Authors: Honeycutt, R. K.; Robertson, J. W.; Vesper, D. N.; Kern, B. D.; Turner, G. W.; Pier, J. R.
Publication: Information Bulletin on Variable Stars, 3795, 1.

(IBVS Homepage)
Publication Date: 10/1992
Origin: IBVS
Objects: LV Del
Bibliographic Code: 1992IBVS.3795....1H

Abstract

Not Available
