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J/A+A/603/A106 Rotational periods in Cygnus OB2 (Roquette+, 2017)

Near-infrared time-series photometry in the field of Cygnus OB2 association.

I. Rotational scenario for candidate members.

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=[2017A&A...603A.106R](#) (SIMBAD/NED BibCode)

ADC_Keywords: Associations, stellar ; Stars, pre-main sequence ; YSOs ; Stars, variable ; Photometry, infrared ; Surveys

Keywords: infrared: stars - stars: variables: T Tauri, Herbig Ae/Be - stars: formation - stars: low-mass - stars: pre main sequence - stars: rotation

Abstract:

We present the results of a near-infrared time-series photometry study in the field of Cygnus OB2 association (RA~20.55h, DE~41.2°). Observations were carried out in the JHK bands at the WFCAM/UKIRT telescope over 112 observed nights. We investigated the occurrence of periodicity in the time-series and we found reliable periods for 894 candidate members.

Description:

Our observational dataset was obtained with the 3.8m United Kingdom Infra-Red Telescope (UKIRT), at Manua Kea, Hawaii, equipped with the Wide Field Camera (WFCAM); the programs were U/07A/H16 and U/07B/H60. Our complete dataset is composed of up to 115 nights observed using the J, H, and K filters (Hewett et al., [2006MNRAS.367..454H](#)). The observations were carried during 2007 in two seasons: The first season comprises 43 observed nights between April 1 and May 21; the second season comprises 73 observed nights between August 4 and November 3. The two observational seasons span a total of 217 days. The exposures were short, 2 seconds in each filter.

Rotational periods for 894 Cygnus OB2 candidate members. For each star, an internal ID, IDs in Guarcello et al. (2013, Cat. [J/ApJ/773/135](#)) and Guarcello et al. (2015, arXiv:1501.03761), coordinates, Stetson variability index, period, estimated mass and reddening, median JHK magnitudes, median JHK photometric errors, peak-to-peak JHK amplitudes, and Disk class according to Guarcello et al. (2013, Cat. [J/ApJ/773/135](#)) are presented.

File Summary:

FileName	Rec1	Records	Explanations
ReadMe	80	.	This file
table1.dat	122	894	Rotational periods for CygOB2 periodic candidate members

See also:

[J/ApJ/773/135](#) : Disk-bearing stars in Cygnus OB2 (Guarcello+, 2013)

Byte-by-byte Description of file: [table1.dat](#)

Bytes	Format	Units	Label	Explanations
1- 6	I06	---	ID	Identification number
8- 11	I4	---	GWD15	?=- Guarcello et al. (2015, arXiv:1501.03761) identification number
13- 18	I6	---	GDW13	?=- Guarcello et al. (2013, Cat. J/ApJ/773/135) identification number
20- 21	I2	h	RAh	Right ascension (J2000)
23- 24	I2	min	RAm	Right ascension (J2000)
26- 27	I2	s	RAs	Right ascension (J2000)
29	A1	---	DE-	Declination sign (J2000)
30- 31	I2	deg	DEd	Declination (J2000)
33- 34	I2	arcmin	DEm	Declination (J2000)
36- 37	I2	arcsec	DEs	Declination (J2000)
39- 42	F4.2	---	Stet	Stetson variability index
44- 48	F5.2	d	Per	Period
50- 53	F4.2	mag	AV	?=- Interstellar reddening (1).
55- 58	F4.2	Msun	Mass	?=- Mass (2).
60- 64	F5.2	mag	Jmag	?=- UKIRT/WFCAM J magnitude
66- 69	F4.2	mag	e_Jmag	?=- rms uncertainty on Jmag
71- 74	F4.2	mag	ptpJ	?=- Peak to peak amplitude in J band
76- 80	F5.2	mag	Hmag	?=- UKIRT/WFCAM H magnitude
82- 85	F4.2	mag	e_Hmag	?=- rms uncertainty on Hmag
87- 90	F4.2	mag	ptpH	?=- Peak to peak amplitude in H band
92- 96	F5.2	mag	Kmag	?=- UKIRT/WFCAM K magnitude
98-101	F4.2	mag	e_Kmag	?=- rms uncertainty on Kmag
103-106	F4.2	mag	ptpK	?=- Peak to peak amplitude in K band

108-120	A13	---	Class	IR classification according to GDW13 (2)
122	A1	---	Disk	[0/1] Flag indicating the presence of disk (3)

Note (1): Estimated using riz data from Guarcello et al. ([2012ApJS...202...19G](#)).

Note (2): Disk classification from (Guarcello et al., 2013, Cat. [J/ApJ/773/135](#)): a string describing the classification of the star. If more classifications are present, they are divided by underscores.

The different codes are:

HE = highly embedded
CL1 = class I YSO
FS = flat-spectrum
CL2 = class II YSO
BWE = blue stars with excesses (candidate stars with disks, but with optical color bluer than the cluster locus, being more compatible with the foreground population than with the association)
TD = transition disk
PTD = pre-transition disk
lowmass = low-mass disk with excesses only in [8.0] and [24]
high-incl = highly inclined disk with excesses only in [8.0] and [24]
Ha = classified as H α emitter in this paper or by Vink et al. ([2008MNRAS.387..308V](#))

Note (3): Flag as follows:

1 = disk-bearing stars in Guarcello et al. (2013, Cat. [J/ApJ/773/135](#))
0 = non disk-bearing stars

Acknowledgements:

Julia Roquette, [juliaroquette\(at\)gmail.com](mailto:juliaroquette(at)gmail.com)

(End) Julia Roquette [UFMG, Brazil], Patricia Vannier [CDS] 10-May-2017

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