

Libraries and Research Data

Toruń University's Open Access Data Project



Karolina Zawada
Bożena Bednarek-Michalska

New resources

- ➔ electronic books
- ➔ electronic journals
- ➔ electronic articles
- ➔ audio / video
- ➔ digital research data



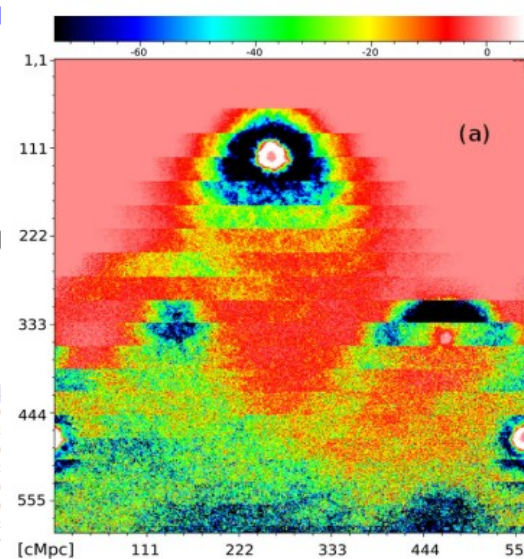
!j@09tN#mCwE^=k^]-CFk#^Xk\$A...<55e0P0^Sú#|p^U-éLÇw,MLU#ě&aEUă20ZMz-^E !d08^B[T^em>nYd#^K^Fç^W@
!HHhHdcRfEGC#^WPU.!,Xâ^U0R^CáZŽ^@00^ë^ÜU|_,-^L^Q0\$Seăa=K--ŽA^"ÉlÇn!Íz\$Ł ÷ŸMyá; Ůw0_]"ŽĆU^Ů-o-ŮŮg,ı
#}řăhp^AĚ-vĚU-Fu^F GŽ#^^#^Ck^Nâ^MdtRřFb!#-m\$ŽŮĆś4x^B 'ŽăUA^TŮ0^Rk#ŸYŁTıŮ_o,-9xr^1_LĈĂś%^^i

tYÜ^Dö-^DeFZtčZ08^C^t}W}FöI^éÁ,B16{Š4IY<H53X71...}"ÖZ^KÖ^K1:išPš,šİ^
|E#<IŃš^M2R^0dkUÜ[5Üq^Kqčİš%ZÄöİpö122átöİt^TšK%^XÜö^NwícİİŔ]mND3,YZÜ
^FHİ^+^P@yZ-^Zr!Z9ZÄqnr0-ÜN!%^YQ<=H]^@öör+ĖZŸ#nxx-^Q^näxę^OY'^@Q■^U
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ür-^Tš'^Höüö^Z+L\ñ^QK1■Ė^Q>RK^*=*^O^L^t^@Q-y6Ń:[MŔL&3YŦM^S)^Ė«÷y^PI^Y
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^L‡;rZy~\^@â:~Dü^XÜ^Wq^Xê^UÁ_L_ %_s.ÎÜqx*x\$E[™~\$~^S..Á^>AŠNĎĀĀ~!^[
z|ćGv~1^T-ř ^A\ĐI^Avný~čvrSžn{~zjμĐ^]±L■\mo0ūİsyB;Im4L}0ĖÁdJ■I~^E{^Á

~>~Jr Q;ũGGuu!G:U*~Š^T×!Đ^R58^M^M
 *~Xũ\$Š^P*a550^B!úwd!p>>^W^ũ×^TeŮřŮ
 ĐP{2RgZũŮH0í!Ů! Ůbēx-6 - ,tŮRe^LŮt0
 mot0qŮL<ũJTKr-^GĚH\$e^Qš...f!kĐđŇtp^P
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 -^šFZ+0že^N^CđdW&t0đ0%r-â9^]×0Jć+■
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jñNn\ ř~í'îpe1R/■4W[^\\$Q'a`š)\1
şę^UĐžo^\-ñ.-č,-swK6âđňıU'^B^R0Ş
ć-<vććĐ''#İ>táŮ<'3"A ^UŎECS=^^^C
t''Ł=UÉL^G{J^NQ>>đı'JéµŘāda ċ^U,'QA



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9 Sim7_dc2_overall_power_values 0.0 0.0 0.0 0.0 76.2
10 Sim7_dc2_host0_ram_time 0.0 0.1683333333333333 344
11 Sim7_dc2_host0_ram_values 0.0 51.2 51.2
12 Sim7_dc2_host0_cpu_time 0.0 0.1683333333333333
13 Sim7_dc2_host0_cpu_values 0.0 0.0 0.0 0.0 20.833333
14 Sim7_dc2_host0_bw_time 0.0 0.1683333333333333
15 Sim7_dc2_host0_bw_values 0.0 0.00583 0.00583
16 Sim7_dc2_host0_power_time 0.0 0.1683333333333333
17 Sim7_dc2_host0_power_values 0.0 0.0 0.0 76.25
18 Sim7_dc1_overall_ram_time 0.0 0.1683333333333333
19 Sim7_dc1_overall_ram_values 0.0 5.76 5.76 5.76 5.76 5.76 5.76 5.76 5.76 5.76
20 Sim7_dc1_overall_cpu_time 0.0 0.1683333333333333 0.2366666666666666 0.5850000000000001 0.7366666666666666
21 Sim7_dc1_overall_cpu_values 0.0 10.41666666666667 20.83333333333333 20.83333333333333 20.83333333333333
22 Sim7_dc1_overall_bw_time 0.0 0.1683333333333333 0.2366666666666666 0.5850000000000001 0.7366666666666666
23 Sim7_dc1_overall_bw_values 0.0 0.003 0.003 0.003 0.003 0.003 0.003 0.003 0.003 0.003
24 Sim7_dc1_overall_power_time 0.0 0.1683333333333333 0.2366666666666666 0.5850000000000001 0.7366666666666666
25 Sim7_dc1_overall_power_values 0.0 73.125 76.25 76.25 76.25 76.25 76.25 76.25 76.25 76.25
26 Sim7_dc1_host0_ram_time 0.0 0.1683333333333333 0.2366666666666666 0.5850000000000001 0.7366666666666666
27 Sim7_dc1_host0_ram_values 0.0 5.76 5.76 5.76 5.76 5.76 5.76 5.76 5.76 5.76
28 Sim7_dc1_host0_cpu_time 0.0 0.1683333333333333 0.2366666666666666 0.5850000000000001 0.7366666666666666
29 Sim7_dc1_host0_cpu_values 0.0 10.41666666666667 20.83333333333333 20.83333333333333 20.83333333333333
30 Sim7_dc1_host0_bw_time 0.0 0.1683333333333333 0.2366666666666666 0.5850000000000001 0.7366666666666666
31 Sim7_dc1_host0_bw_values 0.0 0.003 0.003 0.003 0.003 0.003 0.003 0.003 0.003 0.003
32 Sim7_dc1_host0_power_time 0.0 0.1683333333333333 0.2366666666666666 0.5850000000000001 0.7366666666666666
33 Sim7_dc1_host0_power_values 0.0 73.125 76.25 76.25 76.25 76.25 76.25 76.25 76.25 76.25
34 Sim7_dvs3_overall_ram_time 0.0 0.1683333333333333 0.2366666666666666 0.5850000000000001 0.7366666666666666

```

```

SIMPLE = T / Fits standard
BITPIX = -32 / Bits per pixel
NAXIS = 1 / Number of axes
NAXIS1 = 189633 / Axis length
EXTEND = T / File may contain extensions
ORIGIN = 'ESO-MIDAS' / FITS file originator
OBJECT = 'AG-Peg' / Name of the object observed
IRAF-TLM= '2016-01-11T13:12:15' / Time of last modification

```

```

^
ó CRPIX1 = 1. / Reference pixel
? CRVAL1 = 3527.31 / Coordinate at reference pixel
F CDEL1 = 0.03 / Coord. incr. per pixel (origi
ú CTYPE1 = 'WAVELENGTH' / Units of coordinate
^ BUNIT = 'FLUX' / Units of data values
$ DATAMAX = 9.372704 / Maximum data value
$ DATAMIN = -0.09635848 / Minimum data value

```

```

■ DATE      = '2007-10-07T07:20:02' / [UTC] Date of writing
○ FILENAME= 'o04821.bdf'           / Original file base-name
○ MIDASFTP= 'IMAGE'                 / MIDAS File Type

```

```

6 HISTORY Converted from: Fero0482.mt
7 HISTORY          EXTRACT/IMAG b0482 = fero0482[051,<:@2098,>]
8 HISTORY          COMPUTE/IMAG b0482 = b0482-2.33151E+
9 HISTORY          Renamed from b0482.bdf to r

```

```

HISTORY
30 RA = 327.737765 / MIDAS desc.: 0_POS(1)
54 DEC = 12.6183 / MIDAS desc.: 0_POS(2)
5 EQUINOX = 2000. / MIDAS desc.: 0_POS(3)
5.74 DATE-OBS= '2004-10-02' / MIDAS desc.: 0_TIME(1)
6661 MJD-OBS = 53280.06769736 / MIDAS desc.: 0_TIME(4)
0.00 TM-START= 5849.051903863 / MIDAS desc.: 0_TIME(5)
6661 EXPTIME = 599.9999 / MIDAS desc.: 0_TIME(7)
67 COMMENT NOST 100-2.0: Hanisch, R. et al. 2001, Astron. & Astrop
5.74 TELESCOP= 'MPI-2.2' / MIDAS desc.: TELESCOP(1)
67
333:

```

Normal text file	length: 268355 lines: 93	Ln: 9 Col: 20 Sel: 0	UNIX	ANSI	INS
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Digital research data could be a little problematic...

Is there a place here for a library?

Whether the academic libraries are sufficiently competent institution to take part in such projects?

Toruń University Library has observed new trends

- ★ Do other libraries in Europe deal with raw data?
- ★ How do they do it?
- ★ Who does it?
- ★ Who do they collaborate? etc.

OK, lets try!



UNIwersytet
MIKOŁAJA KOPERNIKA
W TORUNIU

**Nicolaus Copernicus University Library,
Toruń, Poland**

We moved into testing phase and we looked for a test task which can be the first implementation of the idea of raw data in our library.

1 Check who produces and collects research data.

2. Contact with researchers and ask if they need help of librarians.

3. Discuss what researchers expect.

4. Start the collaboration and take the first steps towards the realization of the test task.

- **Group of researchers collect data or store archival data.**
- **Some of them are willing to cooperate with the library.**

What do they need? Common question:

- **Where the digital data can be stored?**
- **Where to get the money to organize, describe, digitize, archive, store the data?**

In 2015 Library started to collaborate with geographers, conservators, archaeologists and astronomers.

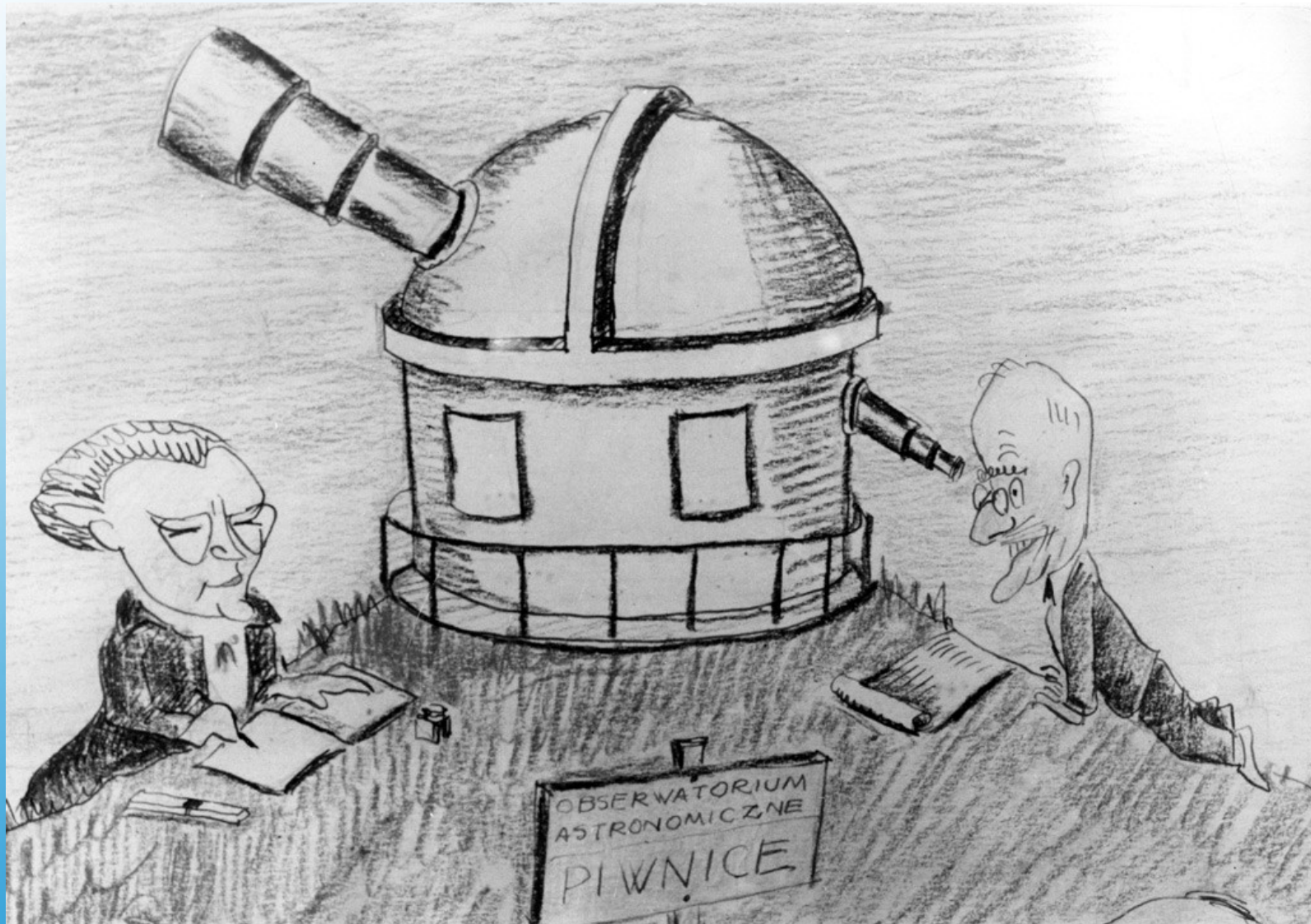
- show/find a repository to storage the data
- what's better: our new repository or ready-made solution?
- new platform for raw data (in Poland OMEGA PSIR)
- does any standard exist?
- EU recommendations
- tests of Horizon 2020
- define availability conditions (regulations, contracts, etc.)
- how to write a grant?
- preservation of analog forms of data (astronomical glass plates, maps, images, research reports, etc.)

Libray got a grant from Ministry of Science and Higher Education:

The online repository of raw astronomical data

- 348 000 zł (~81 000 euro)
- 01.04.2016 – 30.12.2017
- Partner: Toruń Centre for Astronomy

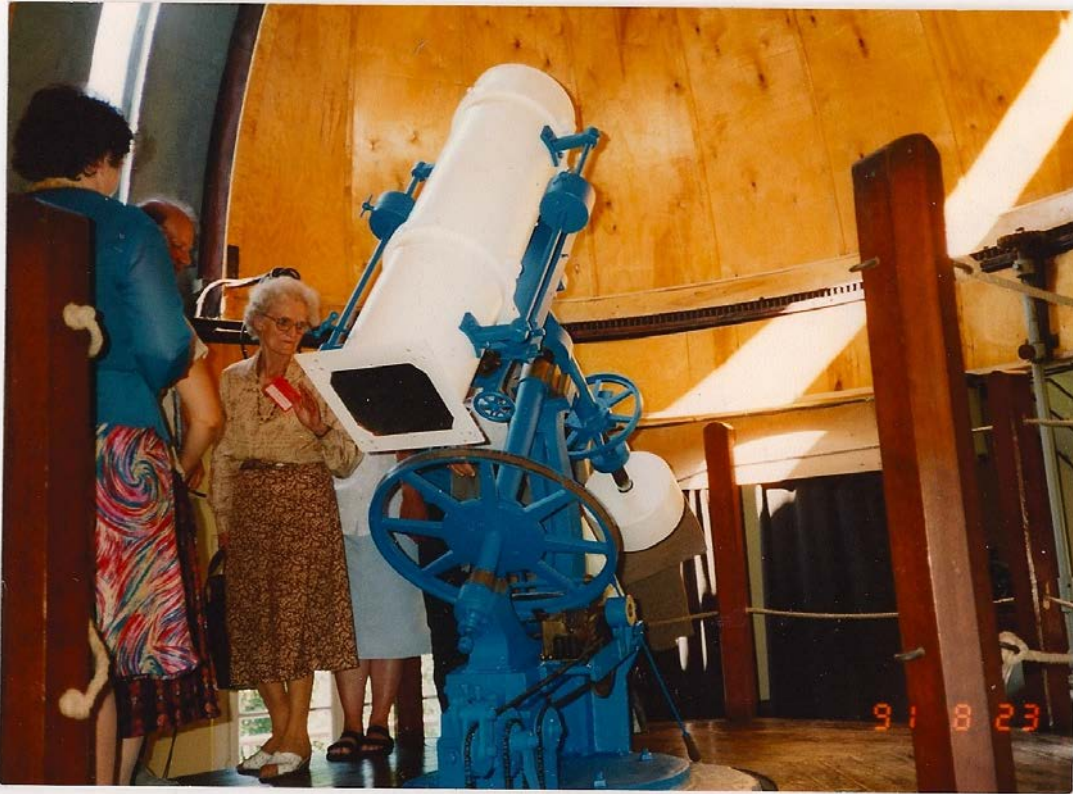
Leon Jeśmanowicz (1950)



Nr	Data	Obiekt	Czas ekspozycji GMAT	Długość ekspozycji	Emul- sja	Wywołanie	Ogni- sko	Pomocnicze przyrządy	Nawiaz.	Pogoda	Obserwa- tor	U w a g i
	1966											
4401	II.18	SY Eri	9 ³¹ - 9 ⁵¹	20 ^m	103a-F	6/9 4 ^h 18°C		filtr iolty, matka		P ₂ H ₂	LZ	
4402	"	TT Tau	10 ³⁵ - 10 ⁵⁰ 10 ⁵⁰ - 10 ⁵⁵	15 ^m 5 ^m	"	" " " "		" " "		P ₂ H ₂	"	chromy
4403	II.17	X Cnc	14 ³⁸ - 14 ⁴³ 14 ⁴³ - 14 ⁴⁸	15 ^m 5 ^m	103a-F	6/9 4 ^h 18°C		filtr iolty, matka		P ₂ H ₂	LZ	zegar!
4404	II.26	SY Eri	6 ⁴² - 7 ⁰⁴	20 ^m	"	1/18 5 ^h 19°C		filtr iolty + matka		P ₂ H ₂	JK	zegar!!!
4405	II.26	H2 Cas	7 ³⁰ - 7 ⁴⁵	15 ^m	"	" " " "		" "		"	"	
4406	II.3	SY Eri	6 ³⁰ - 6 ⁴⁰	10 ^m	"	2/9 5 ^h 20°C		filtr iolty		P ₂ H ₂	JK, LZ	
4407	"	"	6 ³⁹ - 6 ⁴⁹	5 ^m	"	" " " "		"		"	"	
4408	"	TT Tau	7 ⁰⁸ - 7 ¹³	7 ^m	"	" " " "		"		"	"	kontynuacja
4409	"	"	7 ²⁹ - 7 ³⁹	10 ^m	"	" " " "		"		"	"	
4410	"	H2 Cas	7 ³⁵ - 7 ⁵³	8 ^m	"	" " " "		"		"	"	
4411	III.26	X Cnc	10 ⁴⁰ - 10 ⁵⁸	10 ^m	"	" " " "		filtr iolty, matka		P ₂ H ₂	JK	chromy, P
4412	III.03	H2 Cas	7 ²⁵ - 7 ²⁸ 7 ²⁸ - 7 ³³ 7 ³³ - 7 ³⁴	3 ^m 5 ^m 1 ^m	"	1/18 5 ^h 19°C		filtr iolty		P ₂ H ₂	JK	chromy
4413	"	SY Eri	7 ⁵⁰ - 7 ⁵³ 7 ⁵³ - 7 ⁵⁴	3 ^m 1 ^m	"	" " " "		"		"	"	zegar!!!
4414	III.12	SY Eri	6 ³⁰ - 6 ⁴⁵ 6 ⁴⁵ - 6 ⁵²	15 ^m 7 ^m	103a-F	1/18 5 ^h 19°C		filtr iolty + matka		P ₂ H ₂	JK	zegar!!!
4415	"	TT Tau	7 ⁰⁵ - 7 ²⁰	15 ^m	"	" " " "		"		P ₂ H ₂	"	chromy
4416	III.11	X Cnc	10 ⁵⁴ - 10 ⁵⁷ 10 ⁵⁷ - 10 ⁵⁸ 10 ⁵⁸ - 11 ⁰¹	6 ^m 2 ^m 2 ^m	"	1/18 4 ^h 19°C		filtr iolty		P ₂ H ₂	LZ	chromy
4417	III.19	SY Eri	6 ⁴⁴ - 7 ⁰⁴ 7 ⁰⁴ - 7 ¹⁴	20 ^m 10 ^m	103a-F	1/18 4 ^h 19°C		filtr iolty + matka		P ₂ H ₂	JK	
4418	"	H2 Cas	7 ³⁰ - 7 ⁵⁰ 7 ⁵⁰ - 8 ⁰⁰	20 ^m 10 ^m	"	" " " "		"		"	"	
4419	"	H2 Cas	8 ⁰² - 8 ²²	15 ^m	"	" " " "		"		"	"	

Observation log

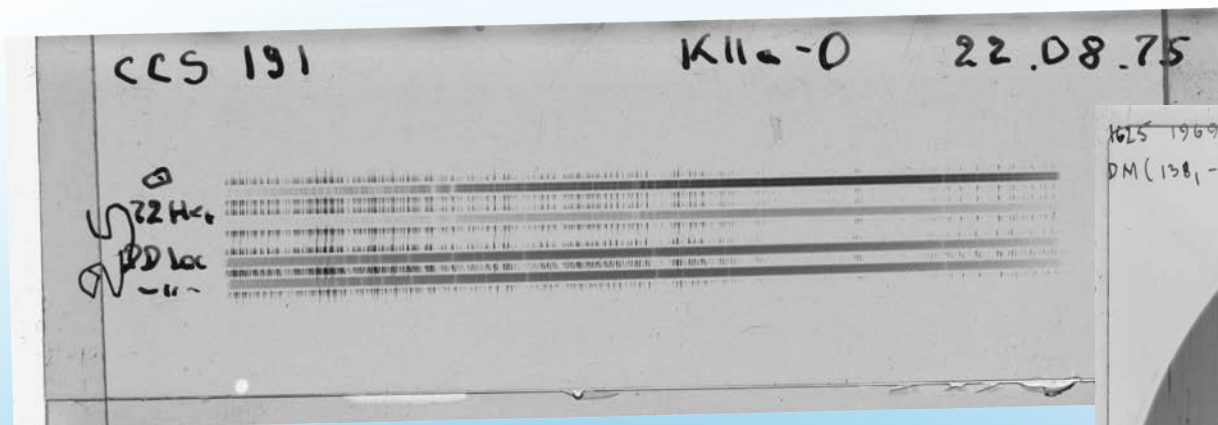
	Obiekt	α	δ	α_t	δ_t	$\Delta\alpha$	$\Delta\delta$		Obiekt	α	δ	α_t	δ_t	$\Delta\alpha$	$\Delta\delta$	
2. IX	Jowisz	22 ^h 38 ^m 32 ^s	-10° 04.5'	10 ^h 39 ^m 10 ^s	-10° 13'	+38 ^s	+8.5	ceas	* Jowisz	18 ^h 54 ^m 54 ^s	+71° 15.2'	6 54 48	71 29	-6	+14	5 ^s 58
	Saturn	20 ^h 33 ^m 21 ^s	-19 32.0	8 34 ^m 02 ^s	-19 39	+42	+7	"	α Lyr	18 35 41	+38 45.2	6 36 44	+38 34	+63 ^s	-11'	
	α Aql	19 ^h 48 ^m 58 ^s	+8° 46.3'	7 49 45	+8 37	+47	-9	o. ceas	* X Dra	18 21 46	+72 42.4	6 21 36	72 58	+10	+16'	
	α Cyg	20 40 11	+45° 09.0'	8 41 16	+45 02	+65	-7		* γ Dra	17 55 45	+51 30'	5 55 52	51 45	+7	+15	7 ^s 41
	α Lyr	18 35 41	+38° 45.2'	6 36 40	+38 37	+59	-8		β Hel	16 28 36	+21 34.5	4 29 28	+21 28	+52	-6	
	α CrB	15 33 05	+26 50.7	3 34 00	+26 47	+55	-4		α CrB	15 33 05	+26 50.7	3 33 58	+26 45	+53	-6	
	* γ UMa	13 22 23	+55 09.6	1 23 24	+55 58	+61	-9.5		α UMi			2 14 57	+88 50		-1	12 ^s 02
	* α UMa	11 09 22	+61 51.3	11 02 12	+61 51	+50	-6					1 40 35	89 11			12 ^s 02
	α Aur	5 13 54	+45 54.5	5 14 36	+45 47	+42	-9.5		β Cas	0° 02' 12"	+58° 56.6'	0 02 17	+59 04	+5	+7	
	α UMi	1 ^h 58 ^m 35 ^s	+89° 05.1'	1 43 20	+90 49 ^s	+89 41 ^b			α Cas	0 38 24	+56° 19.8'	0 38 24	+56 28	0	+8	0 ^s 50
	"			2 18 36	+88 48 ^s	+81 12 ^b			γ Cas	0 54 28	+60 39.7	0 54 24	+60 38	-4	+7	9 ^s 58
									β And	1 07 34	+35° 25.3'	1 07 44	+35 35	+5	+10	8 ^s 58
									δ Cas	1 23 23	+60 02.3	1 23 20	+60 10	-3	+8	8 ^s 46
									ϵ Cas	1 51 42	+63 28.9	1 51 34	+63 38	-8	+9	8 ^s 23
									α Ari	2 05 04	+23 17.1	2 05 12	+23 22	+8	+10	8 ^s 15
									α Per	3 21 38	+49 43.5	3 21 40	+49 51	+2	+7	8 ^s 00
									γ Cam	3 46 22	+71 12.8	3 45 54	71 20	-28	+7	7 ^s 41
									α Tau	4 33 46	+16 26.1	4 33 50	16 37	+4	+11	7 ^s 13
									α Aur	5 13 54	+45 54.5	5 13 52	46 6	-2	+8	6 ^s 22



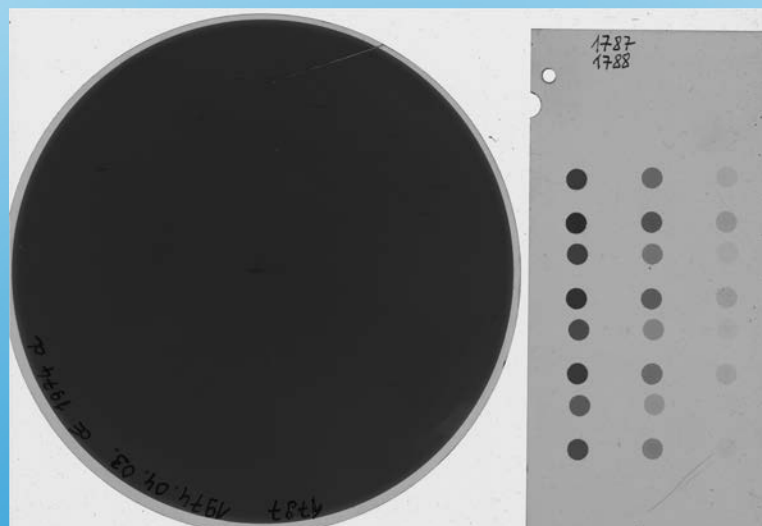
Draper Telescope (glass plate: 1949 - 1990)

**Schmidt-Cassegrain Telescope
(glass plate: 1949 - 1993)**

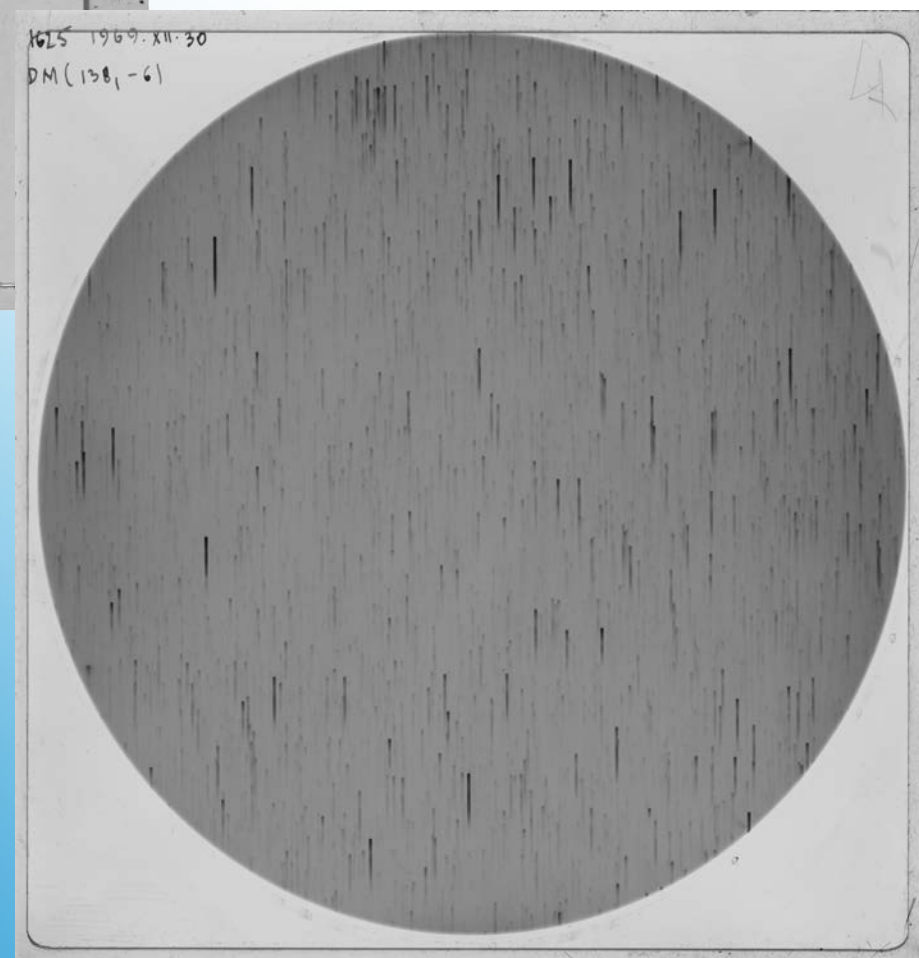




Schmidt-Cassegrain Telescope (+prism)
spectrum, 1975



Schmidt camera, 1974



Schmidt-Cassegrain Telescope (+prism)
spectrum, 1969

Obserwatorium Astronomiczne

Uniwersytetu Mikołaja Kopernika
TORUŃ – PIWNICE

Nr kliszy 1502

Data IV-8-1969r

Obiekt

Czas ekspozycji GMAT

HD 264111 (* He)
η Hya

7^h10^m - 7^h22^m
7^h30^m - 7^h31^m
7^h31^m - 7^h33^m
7^h33^m - 7^h34^m
7^h34^m - 7^h36^m

Luneta TS

Pogoda P₀ W₁

Emulsja K11a-F

Przyrz. pom. F2 + sens.

Uwagi

Obs. WJ

Obserwatorium Astronomiczne

Uniwersytetu Mikołaja Kopernika
TORUŃ – PIWNICE

kliszy 1625

Data 30. XII. 1969

Obiekt

Czas ekspozycji GMAT

(138,-6)

8^h15^m - 8^h55^m = 40^m

Luneta TSC

Pogoda P₂ W₂

Emulsja K11a-F

Przyrz. pom. F2

Uwagi

Obs. WJ

α 2^h 31^m 48^s
 δ +53° 35'



UNIwersYTET
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W TORUNIU

Plates were stored in paper sleeves





<h1 style="text-align: center;">Obserwatorium Astronomiczne</h1> <p style="text-align: center;">Uniwersytetu Mikołaja Kopernika TORUŃ – PIWNICE</p>	
Nr kliszy 1502	IV-8- Data 1963 r
Obiekt	Czas ekspozycji GMA
HD 264111 (* He)	$t_{h10}^{u_1} - t_{h22}^{u_1}$
7 Hya	$t_{h30}^{u_1} - t_{h31}^{u_1}$
	$t_{h31}^{u_1} - t_{h33}^{u_1}$
	$t_{h33}^{u_1} - t_{h34}^{u_1}$
	$t_{h34}^{u_1} - t_{h36}^{u_1}$
Luneta Ts	Pogoda Pch
Emulsja K10a-F	Przycz. pom. 92 + 30 s
Uwagi	Obs. 474

Obserwatorium Astronomiczne		Obs
Uniwersytetu Mikołaja Kopernika TORUŃ - PIWNICE		
Nr kliszy	1620	Data
Obiekt	Czas ekspozycji	Nr kliszy
BD $+75^{\circ}32'5''$ (\times He) α Leo	$15^h 30^m + 40$ $1 \times \text{film I, } 1 \times \text{fe}$	
Luneta	TSC	Pogoda
Emulsja	K 1a-O	Przycz. pom.
Uwagi		

<h1>Observatorium Astronomiczne</h1> <p>Uniwersytetu Mikołaja Kopernika TORUŃ – PIWNICE</p>	
Nr kliszy	Data
1625	30. XII. 1969
Obiekt	Czas ekspozycji GMAT
DM (138,-6)	8 ^h 15 ^m - 8 ^h 55 ^m - 40 ^m

No	Date	Clock	Case observed	End	Remarks	Case	Remarks	Notes	Remarks	Remarks	Remarks
9901	24	57	20	10	10	10	10	10	10	10	10
9902	25	58	20	10	10	10	10	10	10	10	10
9903	26	59	20	10	10	10	10	10	10	10	10
9904	27	60	20	10	10	10	10	10	10	10	10
9905	28	61	20	10	10	10	10	10	10	10	10
9906	29	62	20	10	10	10	10	10	10	10	10
9907	30	63	20	10	10	10	10	10	10	10	10
9908	31	64	20	10	10	10	10	10	10	10	10
9909	1	65	20	10	10	10	10	10	10	10	10
9910	2	66	20	10	10	10	10	10	10	10	10
9911	3	67	20	10	10	10	10	10	10	10	10
9912	4	68	20	10	10	10	10	10	10	10	10
9913	5	69	20	10	10	10	10	10	10	10	10
9914	6	70	20	10	10	10	10	10	10	10	10
9915	7	71	20	10	10	10	10	10	10	10	10
9916	8	72	20	10	10	10	10	10	10	10	10
9917	9	73	20	10	10	10	10	10	10	10	10
9918	10	74	20	10	10	10	10	10	10	10	10
9919	11	75	20	10	10	10	10	10	10	10	10
9920	12	76	20	10	10	10	10	10	10	10	10
9921	13	77	20	10	10	10	10	10	10	10	10
9922	14	78	20	10	10	10	10	10	10	10	10
9923	15	79	20	10	10	10	10	10	10	10	10
9924	16	80	20	10	10	10	10	10	10	10	10
9925	17	81	20	10	10	10	10	10	10	10	10
9926	18	82	20	10	10	10	10	10	10	10	10
9927	19	83	20	10	10	10	10	10	10	10	10
9928	20	84	20	10	10	10	10	10	10	10	10
9929	21	85	20	10	10	10	10	10	10	10	10
9930	22	86	20	10	10	10	10	10	10	10	10
9931	23	87	20	10	10	10	10	10	10	10	10
9932	24	88	20	10	10	10	10	10	10	10	10
9933	25	89	20	10	10	10	10	10	10	10	10
9934	26	90	20	10	10	10	10	10	10	10	10
9935	27	91	20	10	10	10	10	10	10	10	10
9936	28	92	20	10	10	10	10	10	10	10	10
9937	29	93	20	10	10	10	10	10	10	10	10
9938	30	94	20	10	10	10	10	10	10	10	10
9939	31	95	20	10	10	10	10	10	10	10	10
9940	1	96	20	10	10	10	10	10	10	10	10
9941	2	97	20	10	10	10	10	10	10	10	10
9942	3	98	20	10	10	10	10	10	10	10	10
9943	4	99	20	10	10	10	10	10	10	10	10
9944	5	100	20	10	10	10	10	10	10	10	10

[illegible][illegible]

1548-1549 niebieski	1548-1549 200ty
● ● ●	● ● ●
● ● ●	● ● ●
● ● ●	● ● ●
● ● ●	● ● ●

TSC, sensitometer, 1969

What we have...

plates
logs
sleeves

SIMPLE = T / Fits standard
 BITPIX = -32 / Bits per pixel
 NAXIS = 3 / Number of axes
 NAXIS1 = 2048 / Axis length
 NAXIS2 = 2048 / Axis length
 NAXIS3 = 1 / Axis length
 EXTEND = T / File may contain extensions
 ORIGIN = 'NOAO-IRAF FITS Image Kernel July 2003' /
 FITS file originator DATE = '2016-07-10T10:34:11' /
 Date FITS file was generated
 IRAF-TLM= '2016-07-10T11:33:57' / Time of last modification
 COMMENT FITS (Flexible Image Transport System) format
 is defined in 'Astronomy
 COMMENT and Astrophysics', volume 376, page 359;
 bibcode: 2001A&A...376..359H
 HEAD = 'DZ936_BV' / Head model
 ACQMODE = 'Single Scan' / Acquisition mode
 READMODE= 'Image ' / Readout mode
 IMGRECT = '1, 2048, 2048, 1' / Image format
 HBIN = 1 / Horizontal binning
 VBIN = 1 / Vertical binning
 SUBRECT = '1, 2048, 2048, 1' / Subimage format
 XTYPE = 'Pixel number' / Calibration type
 XUNIT = 0 / Calibration units
 RAYWAVE = 422. / Rayleigh Wavelength
 CALBWVNM= 1 / Wave calibration
 TRIGGER = 'Internal' / Trigger mode

CALIB = '0,1,0,0' / Calibration
 DLLVER = '4.23.30003.0' / Software Version
 EXPOSURE= 300. / Total Exposure Time
 TEMP = -85. / Temperature
 READTIME= 1.0E-06 / Pixel readout time
 OPERATN = 0 / Type of system
 EMREALGN= 0 / EM Real Gain
 VCLKAMP = 0 / Vertical Clock Amplitude
 VSHIFT = 3.855E-05 / Vertical Shift Speed
 PREAMP = 4. / Pre Amplifier Gain
 SERNO = 15685 / Serial Number
 UNSTTEMP= -999. / Unstabilized Temperature
 BLCLAMP = F / Baseline Clamp
 PRECAN = 0 / Prescans
 FLIPX = 0 / Horizontally Flipped
 FLIPY = 0 / Vertically Flipped
 CNTCVTMD= 0 / Count Convert Mode
 CNTCVT = 0 / Count Convert
 DTNWLGLTH= 550. / Detection Wavelength
 SNTVTY = 0. / Sensitivity
 SPSNFLTR= 0 / Spurious Noise Filter Mode
 THRSOLD = 0. / Threshold
 PCNTENLD= 0 / Photon Counting Enabled
 NSETHSLD= 0 / Number of Photon Counting Th
 PTNTHLD1= 0. / Photon Counting Threshold 1
 PTNTHLD2= 0. / Photon Counting Threshold 2
 PTNTHLD3= 0. / Photon Counting Threshold 3

What we want to have...

Example of metadata

- FITS format
- metadata
- verification (record of skies, metadata)
- standards in astronomy
- Repositories:
 - International Virtual Observatory Alliance
<http://ivoa.net>
 - The European Virtual Observatory EURO-VO
<http://www.euro-vo.org>,
 - Polish Virtual Observatory <https://astrogrid-pl.org/vo>
- Administrations of the project, preservation of material

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1917 ASTRONOMICAL PLATE HAS FIRST-EVER EVIDENCE OF EXOPLANETARY SYSTEM



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Carnegie Legacy Project

Image Database

Tuesday, April 12, 2016

Pasadena, CA— You can never predict what treasure might be hiding in your own basement. We didn't know it a year ago, but it turns out that a 1917 image on an astronomical glass plate from our Carnegie Observatories' collection shows the first-ever evidence of a planetary system beyond our own Sun. This unexpected find was recognized in the process of researching an article about planetary systems surrounding white dwarf stars in *New Astronomy Reviews*.

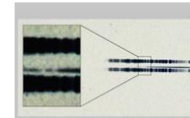
Here's what happened: about a year ago, the review's author, Jay Farihi of University College London, contacted our Observatories' Director, John Mulchaey. He was looking for a plate in the Carnegie archive that contained a spectrum of van Maanen's star, a white dwarf discovered by Dutch-American astronomer Adriaan van Maanen in the very year our own plate was made.

Stellar spectra are recordings of the light emitted by distant stars. Spectra spread out all of the component colors of light, like a rainbow from a prism, and the chemical composition. They can also tell them how the light of the things it passes through before reaching us on Earth.

Stellar spectra images allowed 19th century astronomers to still used today. Modern astronomers use digital tools to image glass photographic plates both to take images of the sky, and

As requested, the Observatories located the 1917 plate, made by Adams at Mount Wilson Observatory, which was then part of the Carnegie Observatories. The plate's sleeve indicating that the star looked a bit warmer than ordinary.

However, when Farihi examined the spectrum, he found some



Object

rM #3^u 14 cm.

S 3

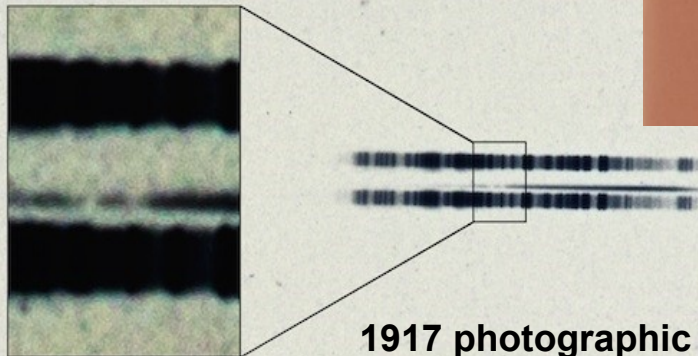
R. A. *0-44-39*

Decl. *+5 00*

1917 Oct 24

F₀

Plate sleeve with handwritten notes
by observer W. S. Adams



1917 photographic plate
spectrum of van Maanen star

Credit: carnegiescience.edu
arxiv.org/abs/1604.03092
jstor.org/stable/40711478

Jay Farihi
London University

The historical records
were supplied by Carnegie
Observatories,
who maintains
the Mt. Wilson archives

Is it worth to do?

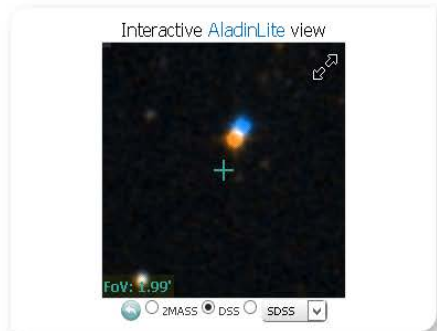
Credit:
simbad.u-strasbg.fr/simbad
arxiv.org/abs/1604.03092

Basic data :

Wolf 28 -- White Dwarf

Other object types: * (AC, ASCC, ...), PM* (C1, G, ...), WD* (EGGR, LAUD, ...), IR (2MASS)
 ICRS coord. (ep=J2000): 00 49 09.90175 +05 23 19.0117 (Optical) [46.32 28.06 90] A 2007AGA...474..653V
 FK5 coord. (ep=J2000 eq=2000): 00 49 09.902 +05 23 19.01 [46.32 28.06 90]
 FK4 coord. (ep=B1950 eq=1950): 00 46 30.72 +05 09 13.9 [264.49 165.61 0]
 Gal coord. (ep=J2000): 121.8796 -57.4785 [46.32 28.06 90]
 Proper motions mas/yr: 1236.90 -2709.19 [5.26 3.18 0] A 2007AGA...474..653V
 Radial velocity / Redshift / cz: V(km/s) 263.00 [4.9] / z(~) 0.000878 [0.000016] / cz 263.12 [4.90]
 C 2006AstL...32..759G
 Parallax (mas): 234.60 [5.90] A 2007AGA...474..653V
 Spectral type: DZ7.5 C 1993PASP...105..761W
 Fluxes (8):
 U 12.984 [~] C 2010MNRAS.403.1949K
 B 12.92 [~] C 2010MNRAS.403.1949K
 V 12.374 [~] C 2010MNRAS.403.1949K
 R 12.106 [~] C 2010MNRAS.403.1949K
 I 11.854 [~] C 2010MNRAS.403.1949K
 J 11.688 [0.022] C 2003yCat.2246....0C
 H 11.572 [0.024] C 2003yCat.2246....0C
 K 11.498 [0.025] C 2003yCat.2246....0C

SIMBAD query around with radius 2 arcmin



arXiv.org > astro-ph > arXiv:1604.03092

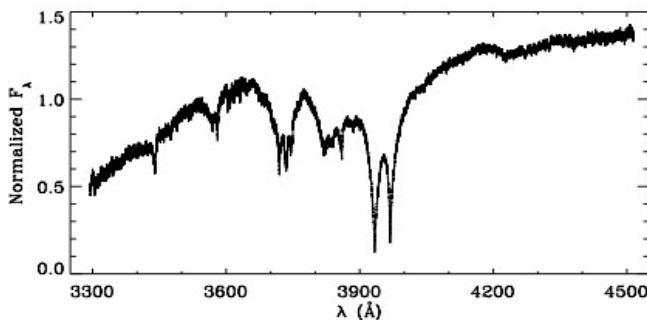
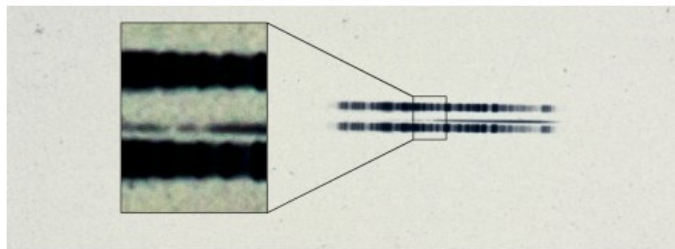
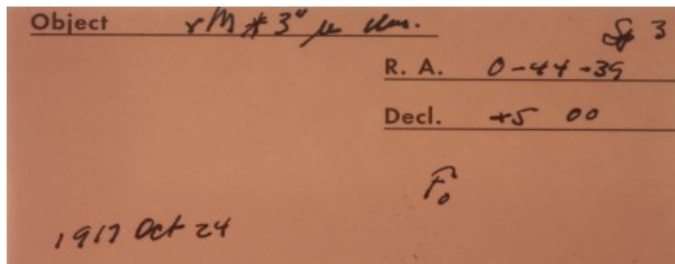
Astrophysics > Earth and Planetary Astrophysics

Circumstellar Debris and Pollution at White Dwarf Stars

J. Farihi

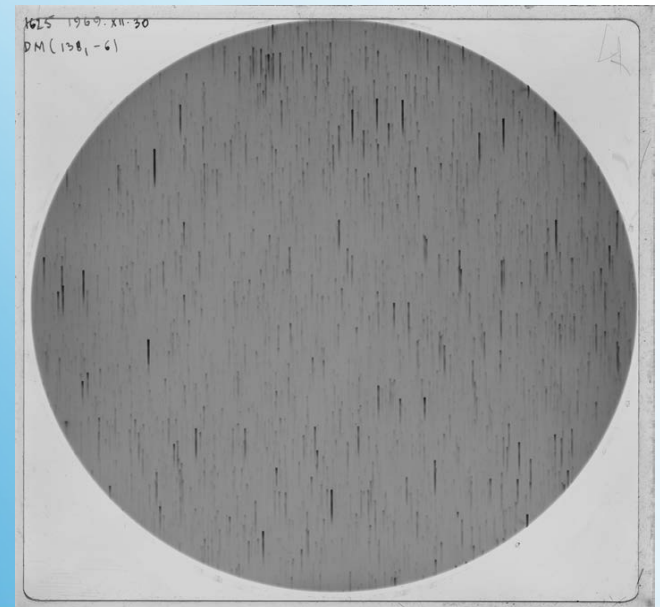
(Submitted on 11 Apr 2016)

Circumstellar disks of planetary debris are now known or suspected to closely orbit hundreds of white dwarf stars. These support disks that are entirely contained within the preceding giant stellar radii, and hence must have been formed from the remnants of planetary systems. This picture is strengthened by the signature of material falling onto the pristine stellar surfaces; disks are enriched in heavy elements. The physical link between this debris and the white dwarf host abundances enables unique insights into extrasolar planetary systems via their remnants. This review summarizes the body of evidence supporting the idea that a large fraction of all white dwarfs, the remnants of first generation, main-sequence planetary systems, and their long-term dynamics and evolution.



New and archive data gives new results

The online repository of raw astronomical data



Is there a place here for a library?

Project team

- **Michał Hanasz, prof. dr hab. – project manager, Toruń Centre for Astronomy (TCfA)**
- **Dominik Wóltański, PhD – astronomer at TCfA, member of AstroGrid.pl team**
- **Bogdan Wikierski, M.Sc. – observer, technician at TCfA**
- **PhD students from TCfA**
- **Bożena Bednarek-Michalska, M.Sc. – project manager, Library**
- **Liliana Lewandowska, PhD – Library, project administration**
- **Barbara Wojdyła, M.Sc. – Library – conservation**
- **Elżbieta Milkiewicz, M.Sc. – Library – preservation**
- **Karolina Zawada, PhD – Library – project promotion**



AstroGrid-PL

Virtual Observatory

About the Polish Virtual Observatory

"The Virtual Observatory (VO) is the vision that astronomical datasets and other resources should work as a seamless whole. Many projects and data centres worldwide are working towards this goal." (from the IVOA page). We are contributing to those efforts with the Polish Virtual Observatory services developed within AstroGrid-PL. Aiming to set up foundations for future development of the VO in Poland, we deliver a few data centers filled with the first datasets. Moreover, we have started an enormous task of scanning archival plates stored (and decaying) in polish institutes. Those scans are being annotated and shared in the VO. Of course the VO for now

INTERNATIONAL VIRTUAL OBSERVATORY ALLIANCE

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Welcome to the repository of NCU

Nicolaus Copernicus University Repository RUM@K collects, stores and provides digital documents that are the result of research and teaching staff and PhD of NCU. Its aim is to promote the achievements of scientific research at the University of Toruń and support education. Repository contains scientific articles (preprints and postprints), reports, conference papers, teaching materials, etc. The resource is organized around collections that are related to departments and other university units.

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The EURO-VO current project: EuroVO-CoSADIE Past projects: VOTECH EuroVO-DCA EuroVO-ADA EuroVO-JCE

The European Virtual Observatory EURO-VO

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The left menu provides links to information relevant to Scientists, Data Centres, Software Developers and Educators.

News

- ASTERICS project signed as a Horizon 2020 project to address the challenges of astronomy 'big data' in Europe. IN
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Libraries and Research Data

Nicolaus Copernicus University, Toruń, Poland

kz@umk.pl



AstroGrid-PL

Navigation: AstroGrid-PL, Astro data, Virtual Observatory, Astro pipelines, InSilicoLab for Astrophysics, Videoconferences, Astro forum

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Thank you!



AstroGrid-PL

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