





Discovery of double star

UCAC 2 4291 3552?

**Observation of an
Occultation by Merapi**



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Observation of an

Occultation by Merapi

by Henk de Groot (DOA)

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The discovery of a binary star: UCAC 2 4291 3532?

Harrie Rутten
(DOA-IOTA-ES)

536 Merapi

Discovery

Discovered by George Henry Peters
Discovery site Washington, D.C.
Discovery date May 11, 1904

Designations

Named after Mount Marapi, West
Sumatera^[1]

Alternative names 1904 OF

Orbital characteristics^[2]

Epoch April 3, 1999 (JDCT 2451271.5)

Aphelion 3.789 AU

Perihelion 3.211 AU

Semi-major axis 3.500 AU

Eccentricity 0.083

Orbital period 6.549 a

Mean anomaly 64.009°

Inclination 19.387°

Longitude of ascending node 59.488°

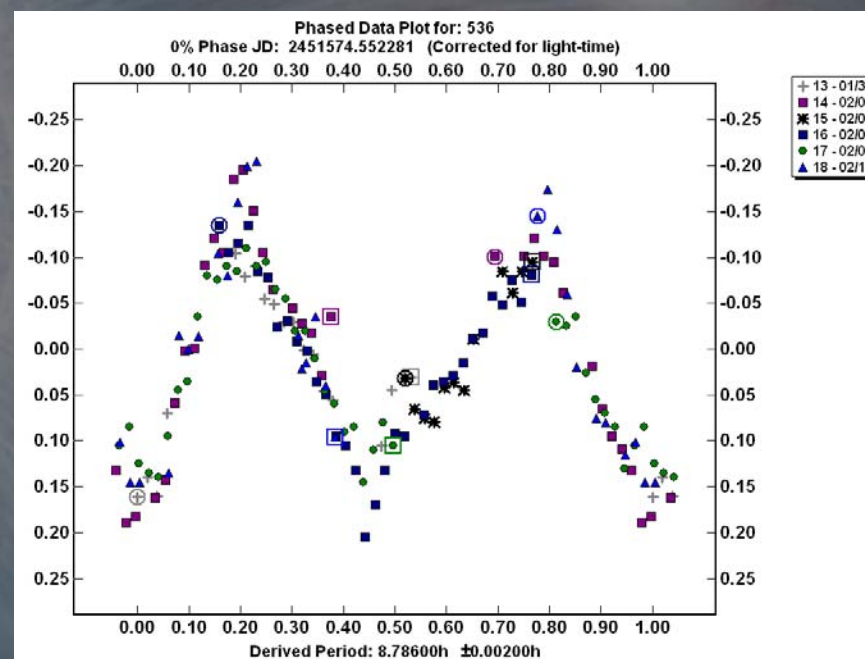
Argument of perihelion 302.569°

Physical characteristics

Dimensions 155.17 ± 3.53 ^[3] km

Mass $(2.61 \pm 0.47) \times 10^{19}$ ^[3] kg

Mean density 13.36 ± 2.59 ^[3] g/cm³

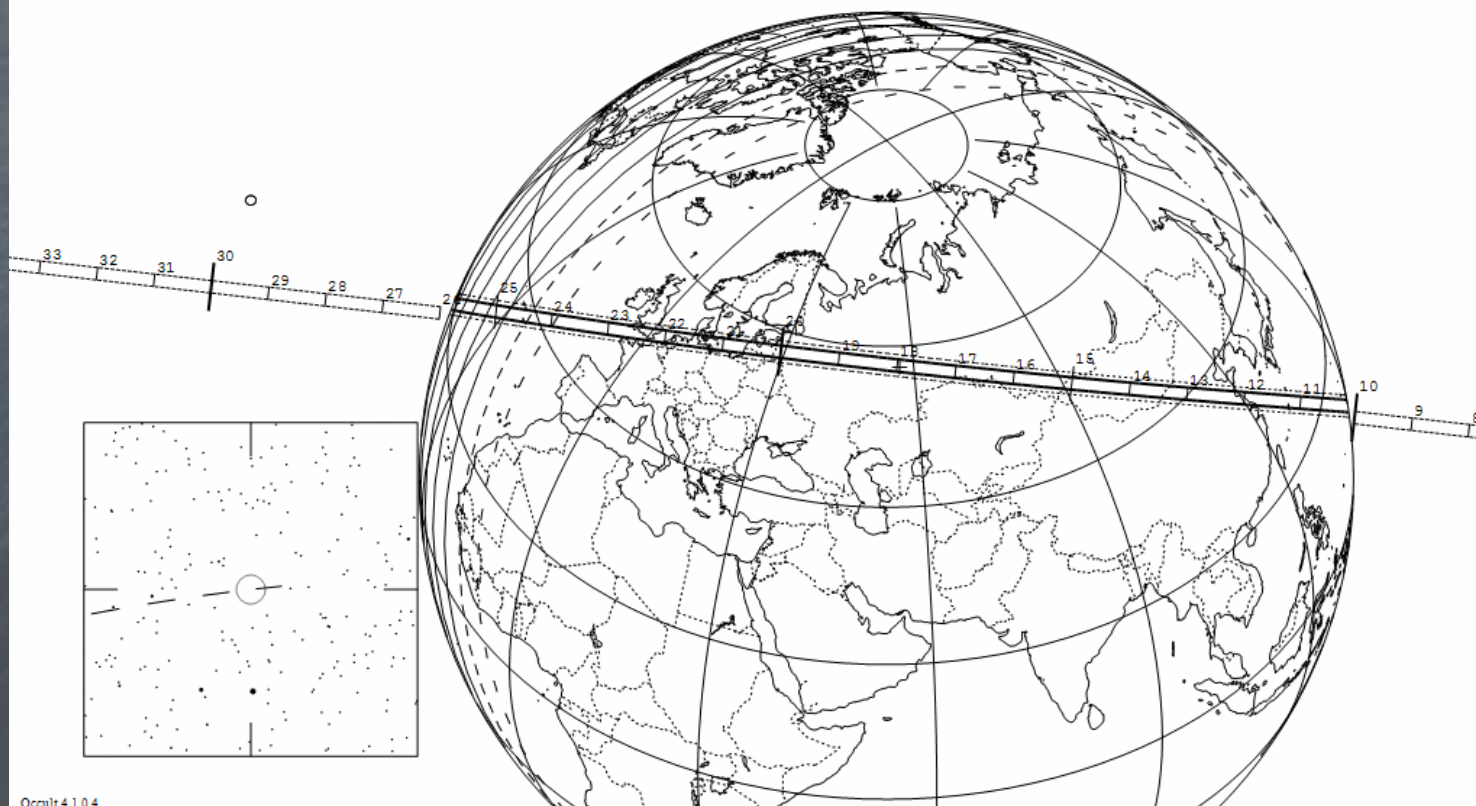


The discovery of a binary star: UCAC 2 4291 3532?

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536 Merapi occults 2UCAC 46691743 on 2013 Jan 27 from 19h 10m to 19h 26m UT

Star:	Max Duration = 12.9 secs	Asteroid:
Mv = 12.1	Mag Drop = 1.7	Mag = 13.6
RA = 7 21 7.1947 (J2000)	Sun : Dist = 150 deg	Dia = 169km, 0.085"
Dec = 43 15 59.893	Moon: Dist = 39 deg	Parallax = 3.22"
[of Date: 7 22 6, 43 14 21]	: illum = 99 %	Hourly dRA = -2.166s
Prediction of 2013 Jan 6.0	E 0.036"x 0.033" in PA 87	dDec = 2.70"



Occult4.1.04



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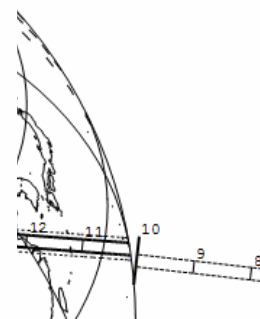
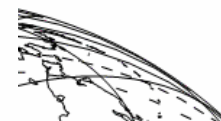
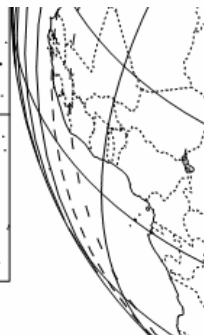
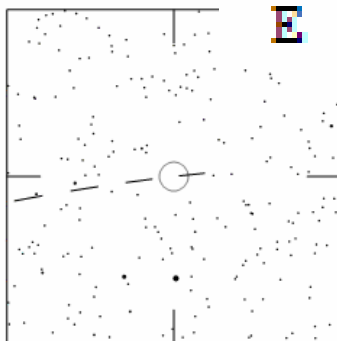
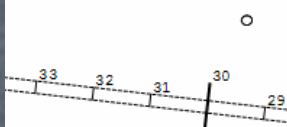
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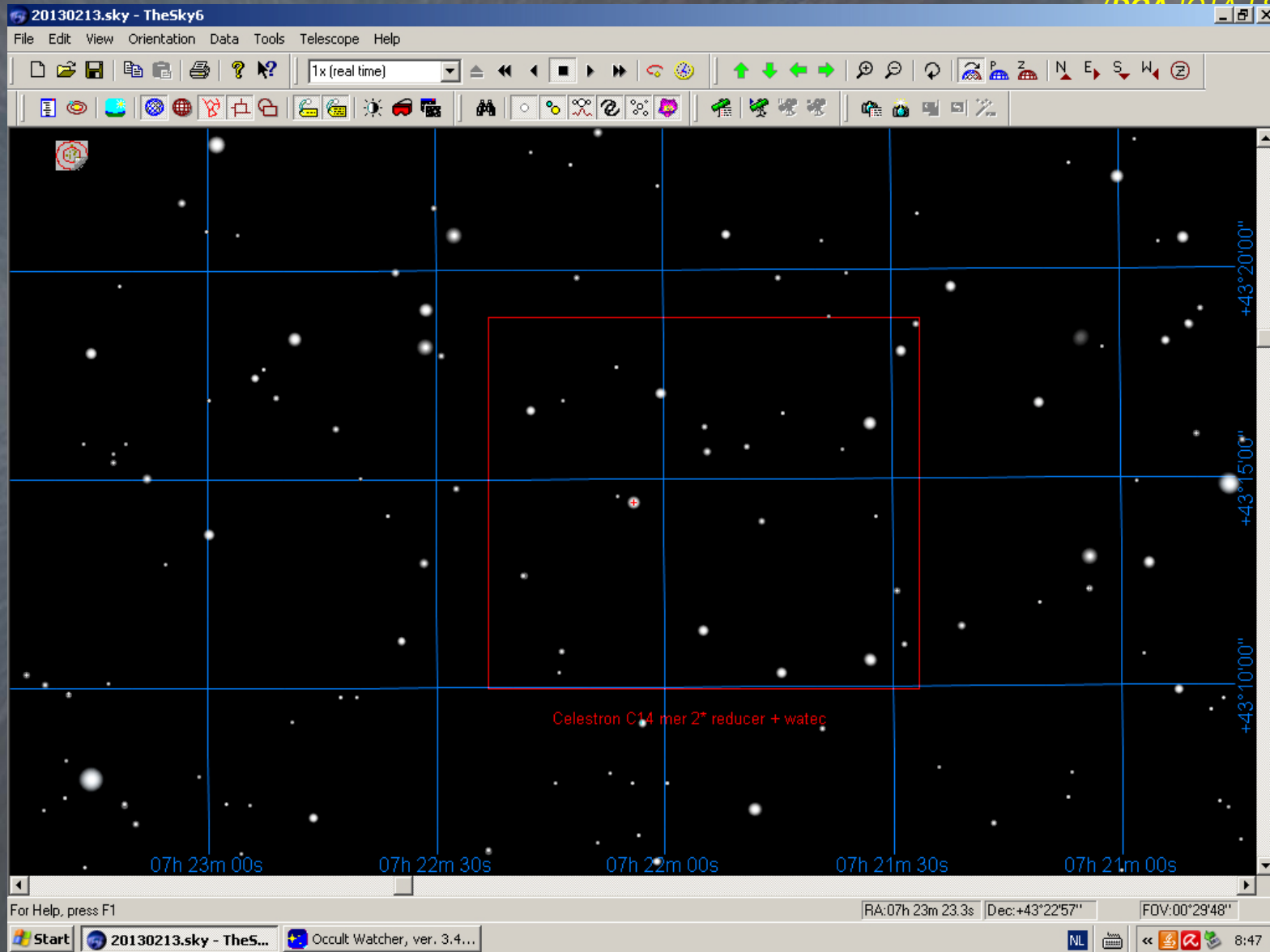


Occult4.1.04



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The discovery of a binary star: UCAC 2 4291 3532?

*Harrie Rutten
(DOA-IOTA-ES)*

Unfortunately during observation: Cirrus clouds!!



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**During the occultation star would disappear in
cirrus clouds.....**



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**Reset integration time of the Watec during the
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During the occultation star would disappear in cirrus clouds.....

Reset integration time of the Watec during the observation

Bad idea?

Unfortunately during observation: Cirrus clouds!!

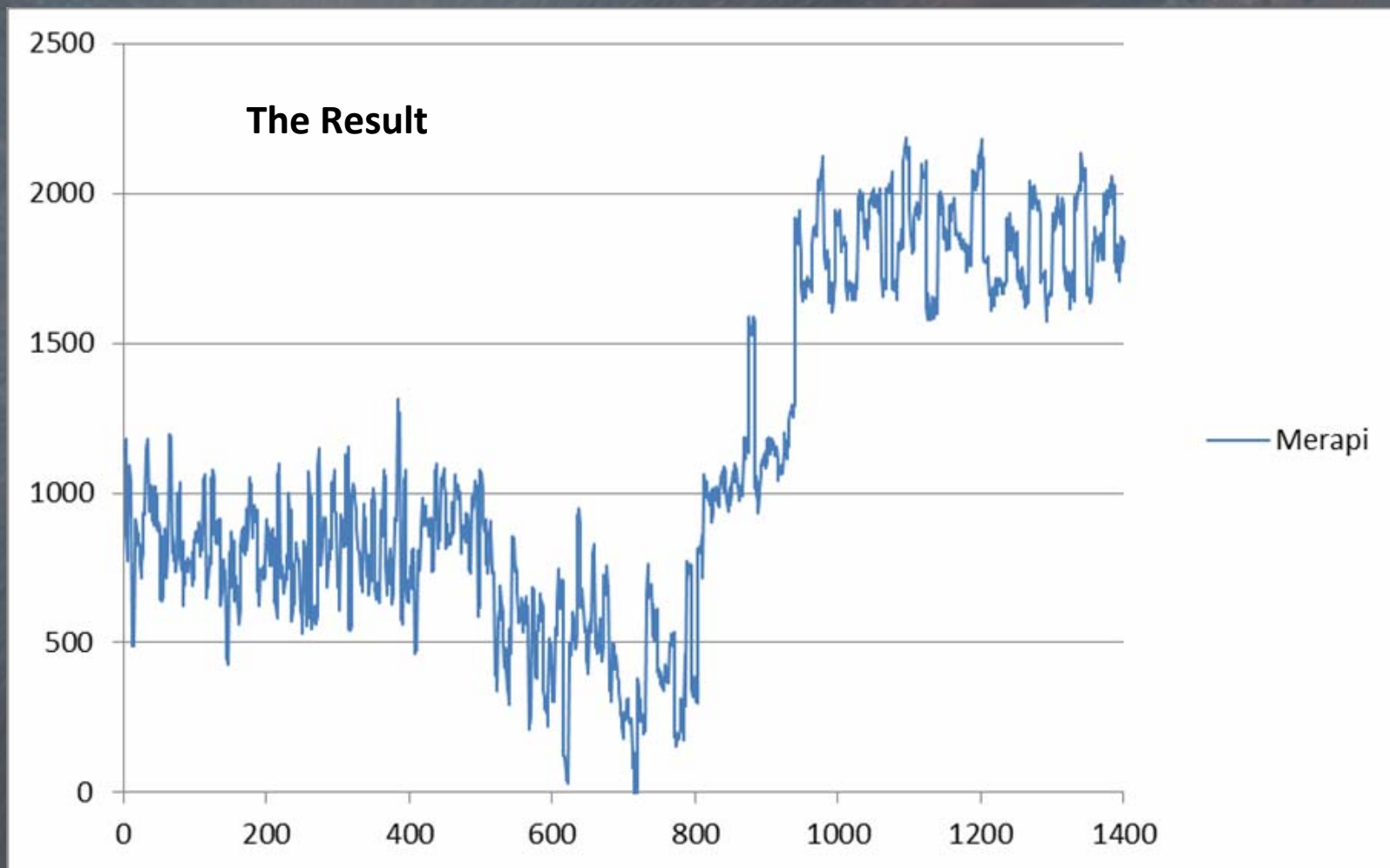
During the occultation star would disappear in cirrus clouds.....

Reset integration time of the Watec during the observation

Bad idea? Would the result be usable?????

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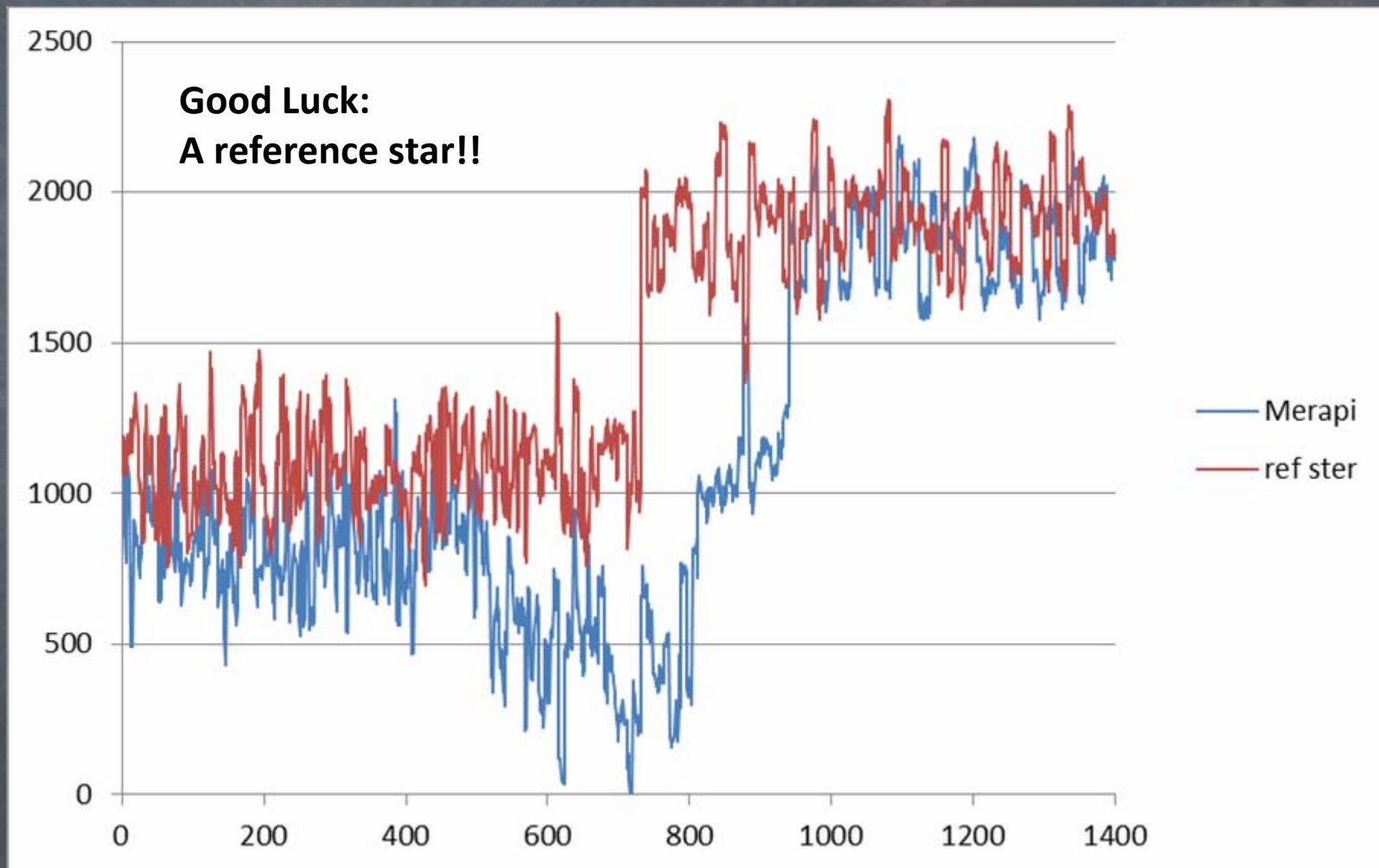


The Observation by Henk de Groot



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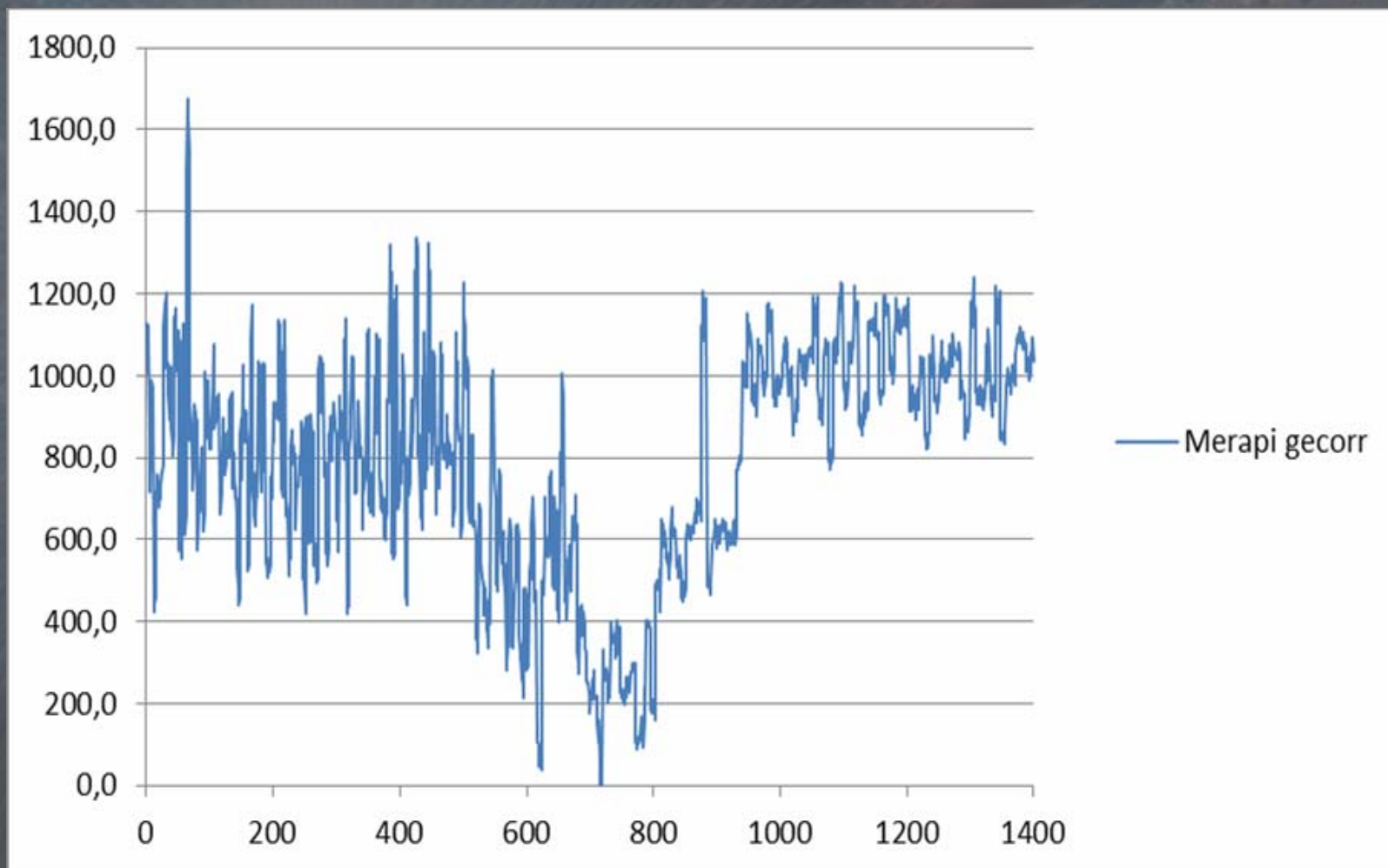


Now including a reference star



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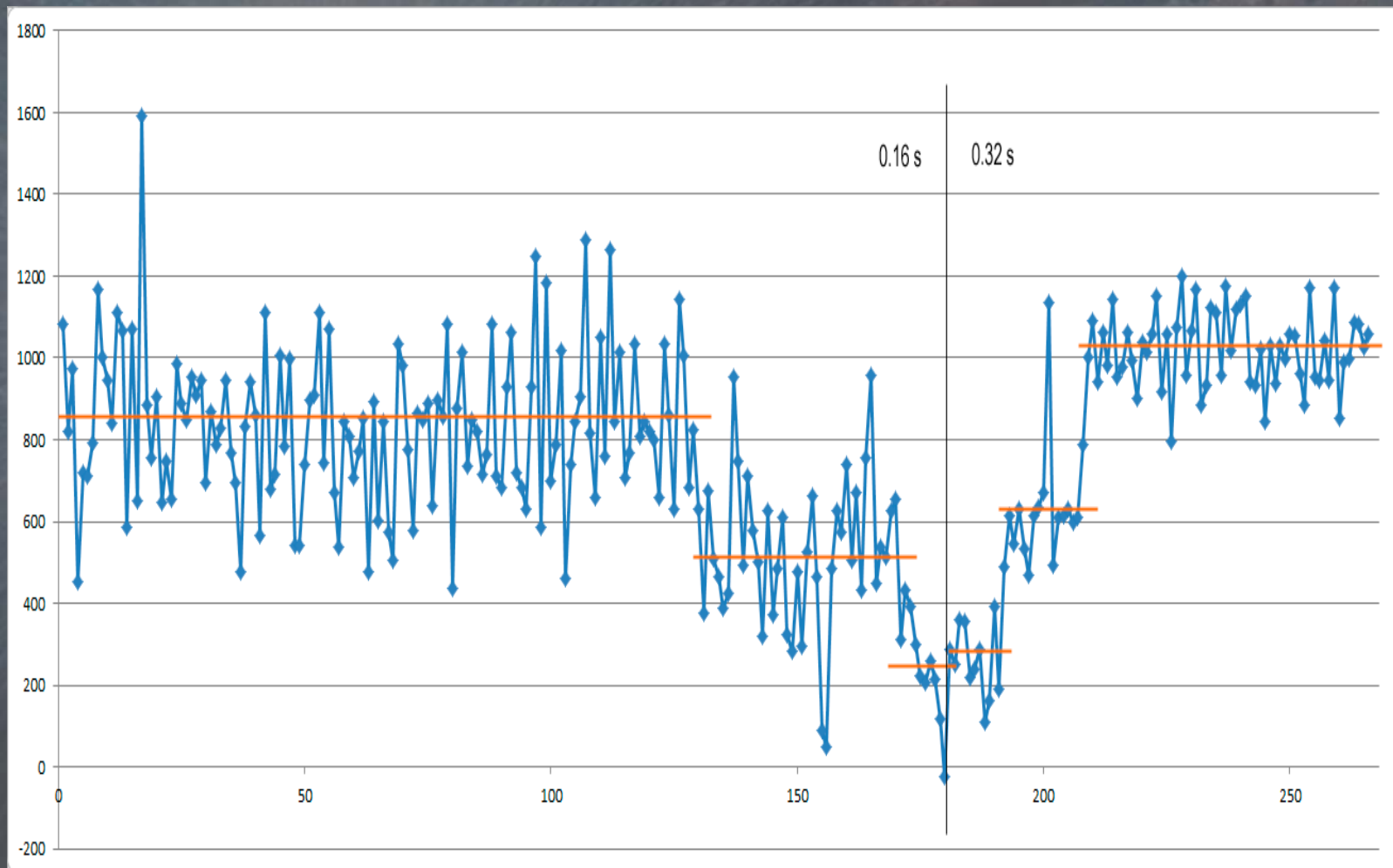


Normalised observation by Henk de Groot



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Normalised observation by Eric Frappa



The discovery of a binary star: UCAC 2 4291 3532?

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The screenshot shows a Mozilla Firefox browser window displaying the website www.euraster.net/results/2013/index.html. The page title is "euraster.net 2013 European Asteroidal Occultation Results". Below the title, it lists sources: "Sources : Planoccult mailing list, EAON, IOTA, IOTA-ES" and "Page maintained by Eric Frappa - frappa@euraster.net". The page is updated on "2013/04/29".

The main content is a list of occultation events, organized by month and then by day. Each entry includes the date, a list of asteroid names in parentheses, and a list of observer identifiers. For example, under April, there are 27 events, with the first being "(488) Kreusa, (17389) 1981EN30, 25 : (536) Merapi, (255) Oppavia".

At the bottom of the page, it states: "All the times are in UT. Observations are presented in reverse chronology."



The discovery of a binary star: UCAC 2 4291 3532?

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2013/01/27 | 536 | Merapi | 2UCAC 46691743

chords (preliminary)
double star

```
0- | Alex Pratt | 19:21:34 | 19:23:17 | M200 | VID | UK | W | 01 36 28.0 | N 53 50 15.4 | 114 | WS |
Wind interruptions 19:21:38/50, 19:22:02/05, 19:22:59/23:12. |;
0- | Tim Haymes | 19:21:07 | 19:23:09 | M300 | VID | UK | W | 00 48 58.2 | N 51 30 23.8 | 75 | WS |;
0+1| Henk De Groot | 19:18:17 | 19:24:24 | M356 | VID | NL | E | 05 47 57.3 | N 51 49 46.4 | 7 | W |
11.43 | 19:21:34.99 | 0.08 | 19:21:46.42 | 0.16 | GPS++ | | |;
0+2| Henk De Groot | 19:18:17 | 19:24:24 | M356 | VID | NL | E | 05 47 57.3 | N 51 49 46.4 | 7 | W |
10.04 | 19:21:41.57 | 0.08 | 19:21:51.61 | 0.16 | GPS++ | | |;
0+ | Donatas Tamonis | 19:18:04 | 19:22:16 | M200 | CCD | LT | E | 24 02 56 | N 54 55 15 | 65 | WS |
6.4 | 19:20:13.9 | 0.5 | 19:20:20.3 | 0.5 | RAD+ | | |;
Autoguider signal recorded on DSLR video. |;
```

2013/01/26 | 100 | Hekate | TYC 0835-01282-1

asteroid measurement: at least 70 km

```
0+ | Stefano Sposetti | 20:44:50 | 20:47:00 | M400 | VID | CH | E | 09 01 26.5 | N 46 13 53.2 | 260 | WS |
4.8 | 20:45:52.9 | 0.4 | 20:45:57.7 | 0.2 | GPS++ | | |;
0- | Michele Bigi | 20:40:00 | 20:48:00 | M300 | VID | IT | E | 10 02 45.6 | N 44 02 19.4 | 19 | W |;
```

2013/01/25 | 6879 | Hyogo | 3UC187-106729

```
0- | Stefano Sposetti | 23:00:10 | 23:04:28 | M400 | VID | CH | E | 09 01 26.5 | N 46 13 53.2 | 260 | WS |;
0- | Jose De Queiroz | 22:54:58 | 23:03:38 | M900 | VID | CH | E | 09 13 27.2 | N 46 48 15.1 | 1288 | WS |;
```

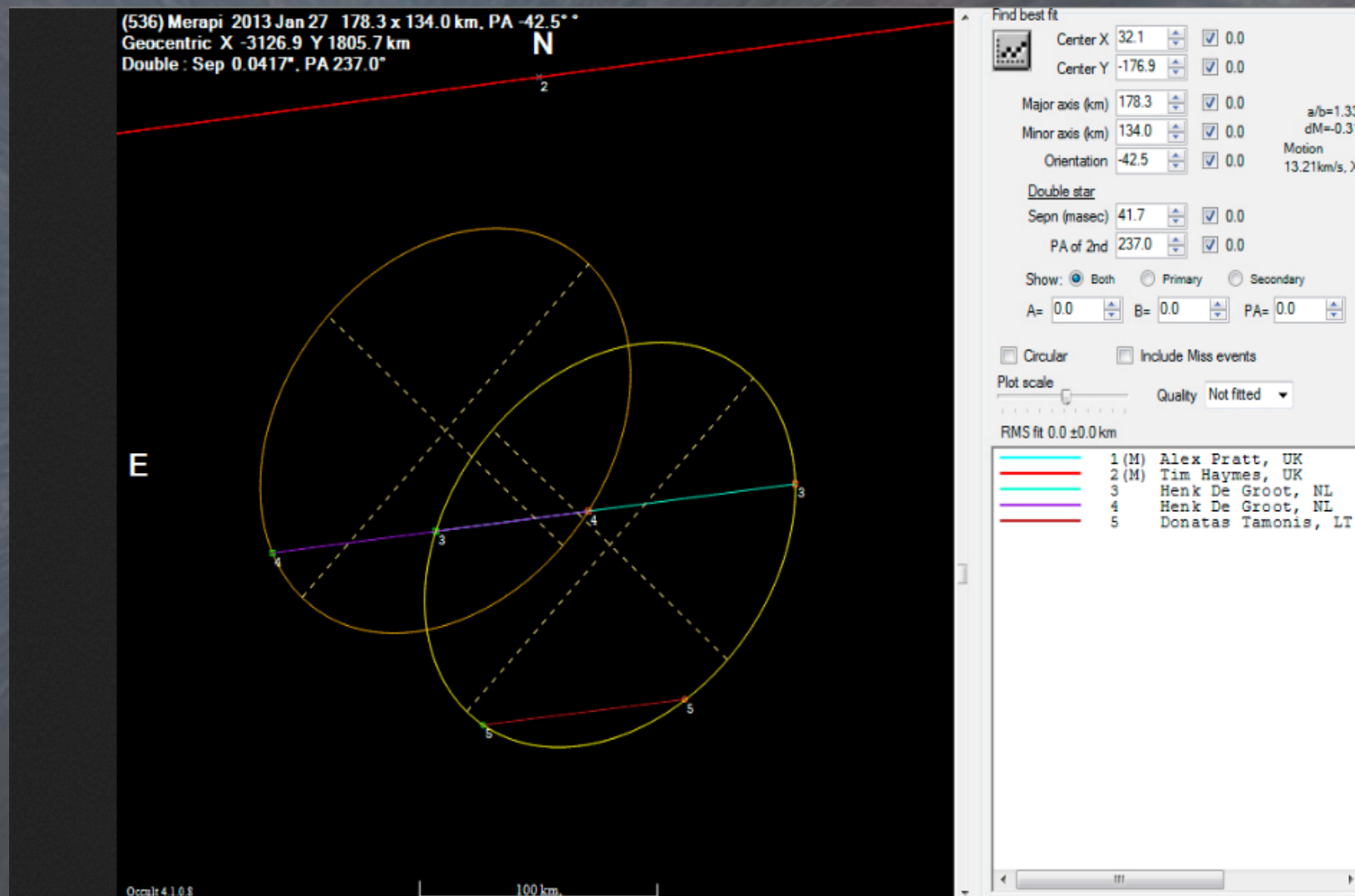
2013/01/18 | 907 | Rhoda | TYC 3368-01094-1

```
0- | Artyom Novichonok | 20:38:00 | 20:42:30 | M200 | VIS | RU | E | 34 01 11 | N 62 07 46 | 50 | |;
```



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Th

binary star: UCAC 2 4291 3532?

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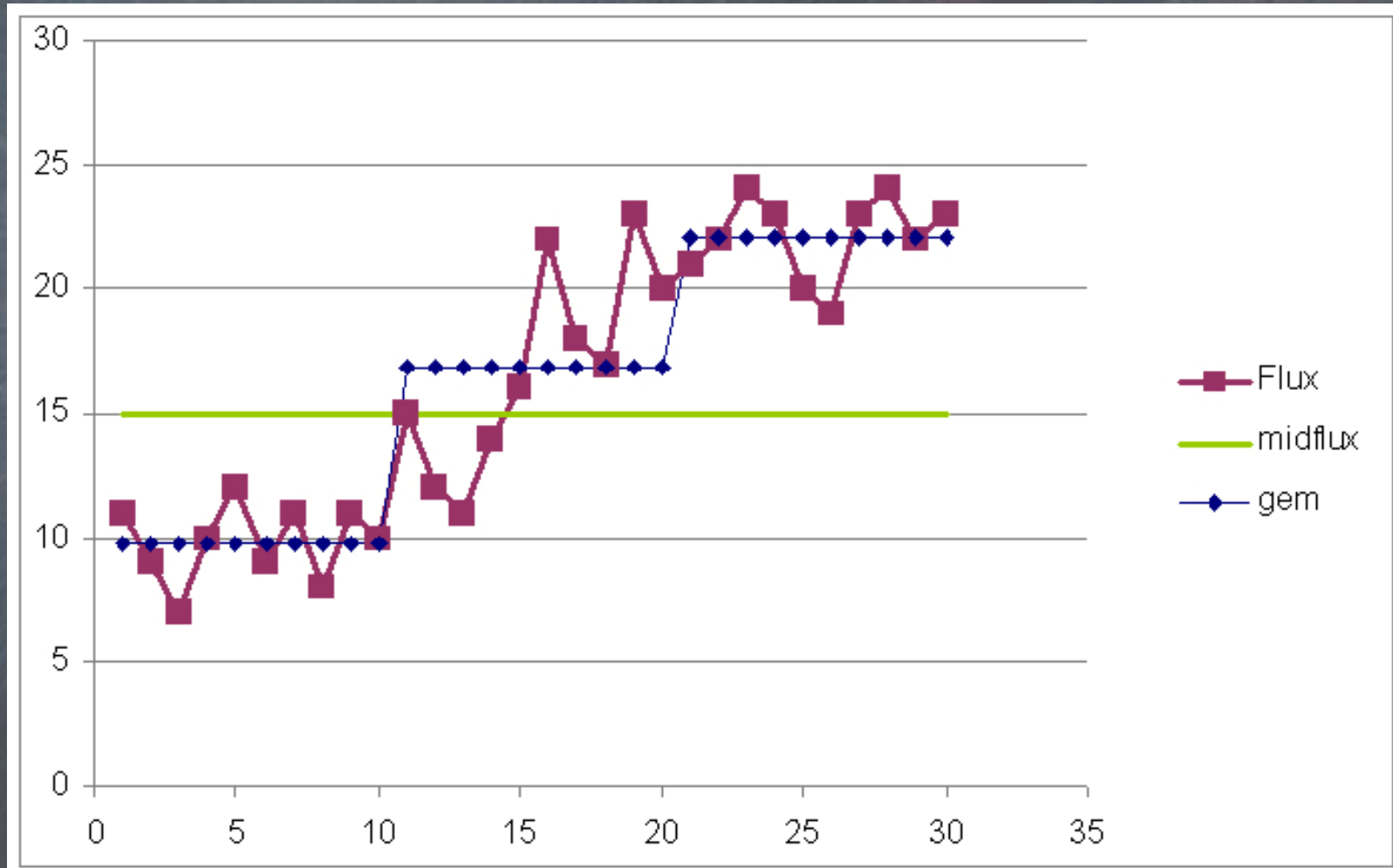
frame	flux	gem
1	11	9,8
2	9	9,8
3	7	9,8
4	10	9,8
5	12	9,8
6	9	9,8
7	11	9,8
8	8	9,8
9	11	9,8
10	10	9,8
11	15	16,8
12	12	16,8
13	11	16,8
14	14	16,8
15	16	16,8
16	22	16,8
17	18	16,8
18	17	16,8
19	23	16,8
20	20	16,8
21	21	22,1
22	22	22,1
23	24	22,1
24	23	22,1
25	20	22,1
26	19	22,1
27	23	22,1
28	24	22,1
29	22	22,1
30	23	22,1

Trend(frame1:frame10;Flux1:Flux10;Flux_gem)



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**Any Questions...
Just Ask!**

