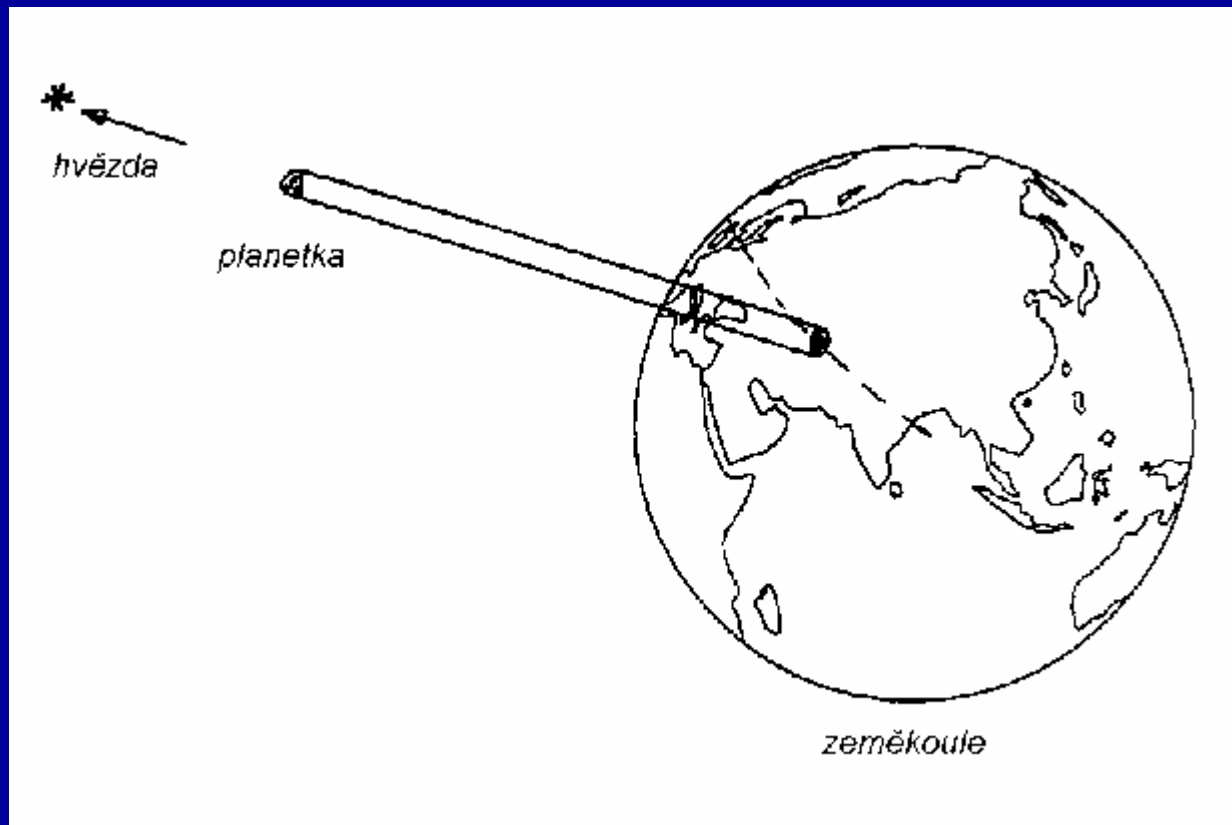


Zákryty hvězd planetkami

(historie, předpovědi a
pozorování)

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jan.manek@worldonline.cz

Co to je ?



K čemu to slouží

- Určení rozměru planetky
- Určení tvaru planetky
- Určení vlastností hvězdy
- pro okamžik daný pozorováním

Jak to začalo

- 1952
- Gordon Taylor
- Handbook of the British Astronomical Ass. 1953



NOTES FROM OBSERVATORIES

OBSERVATIONS OF THE OCCULTATION OF BD $-5^{\circ} 5863$ BY PALLAS

By S. D. Sinhal, N. B. Santwal and M. C. Pande

Uttar Pradesh State Observatory, Naini Tal, India

An occultation of the star BD $-5^{\circ} 5863$ by Pallas on 1961 October 2 had been predicted¹. Subsequently, a circular to that effect was also received by us from Mr. G. E. Taylor of the Royal Greenwich Observatory. At the Uttar Pradesh State Observatory the occultation was observed both visually and photoelectrically.

The visual observations were carried out on a 15-inch reflector with a focal length of 225 inches. While the emergence of the star from behind the planet could be timed with some certainty, its immersion could not be judged accurately since one could not be certain at any instant that the dimming of light had reached a stage beyond which the light would not decline further. As such the visual observations, as compared with photoelectric ones (to be described below), were considerably in error.

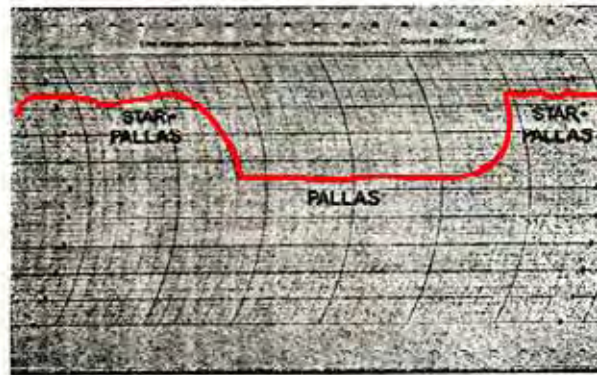


FIG. 1

Trace of the occultation by Pallas of the star B.D. $-5^{\circ} 5863$.

The photoelectric observations were carried out on a 10-inch refractor, using a photometer with a V filter and a 1P21 photomultiplier. The output of the photomultiplier was fed on to an Esterline Angus recorder via a d.c. amplifier. To increase the spread of the observations, the recorder was run at its fastest speed. The timings were noted on a Cambridge pen chronograph, one of the pens of which recorded seconds pips from a quartz clock. One second on the chronograph tape averaged 26.75 mm. A second pen on the chronograph as well as the side pen on the recorder were operated

- 19/02/58
Malmö, S
7.2 sekun
- 02/10/61
Naini Tal
25.53 se

8 8.2m
Muller

1 9.0m
I, Pande

První upřesnění

- 24/01/75 (433)Eros kappa Gem 3.7mag
- Několik dní předem
- 6 hodin předem
- přesun na nová místa
- minuty před zákrytem
- 8 pozorovatelů
- zákryt < 3 sekundy
- Triedry a stopky

Pokračujeme ve vývoji

- 07/06/78 (532) Herculina
SAO 120774 6.2mag i se
- 11/12/79 (9)Metis G
SAO 80950 6.8mag foto

David W. Dunham



Nástup amatérů

- 29/05/83 (2) Pallas 1 Vulpeculae 4.8mag
- jih USA
- články ve Sky&Telescope
- upřesňování
- celkem dobré počasí
- 26 fotoelektrických
- 114 vizuálních + 1?
- 529.6 x 511.2 (+- 1.2 km)

(2) Pallas 1983 May 29 530.2 $\pm$ 1.0 $\times$ 513.4 $\pm$ 2.9 km PA -40.4 $\pm$ 3.8
Geocentric: X -5331.3 $\pm$ 0.9 Y 2391.6 $\pm$ 0.9 km N
Double: Sep 2.0 $\pm$ 0.6", PA 294.0 $\pm$ 16.7"

1200

0

Y (km)

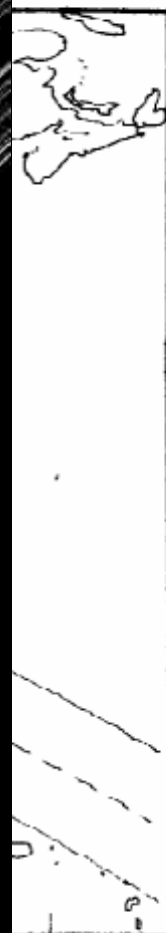
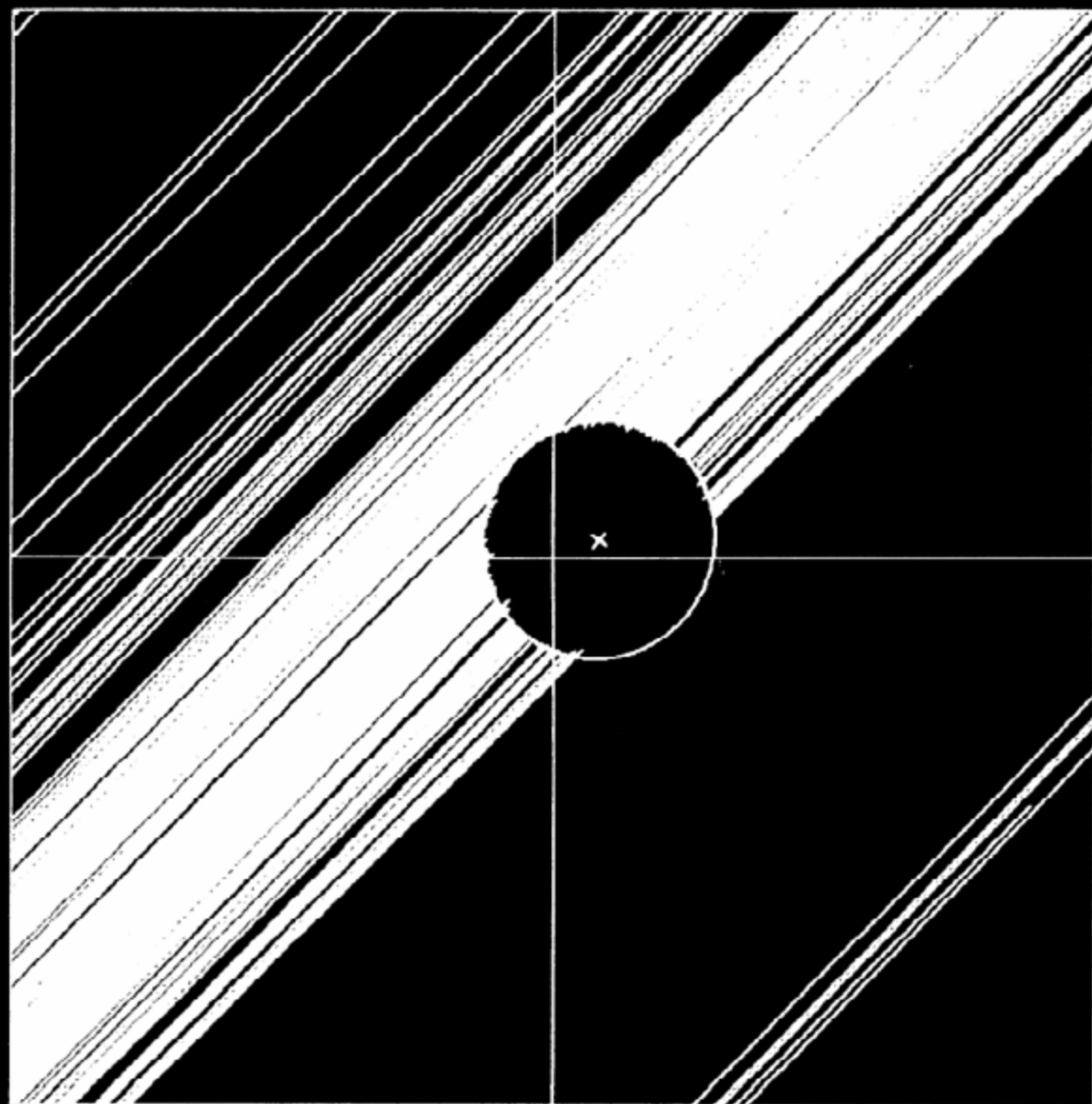
-1200

1200

X (km)

0

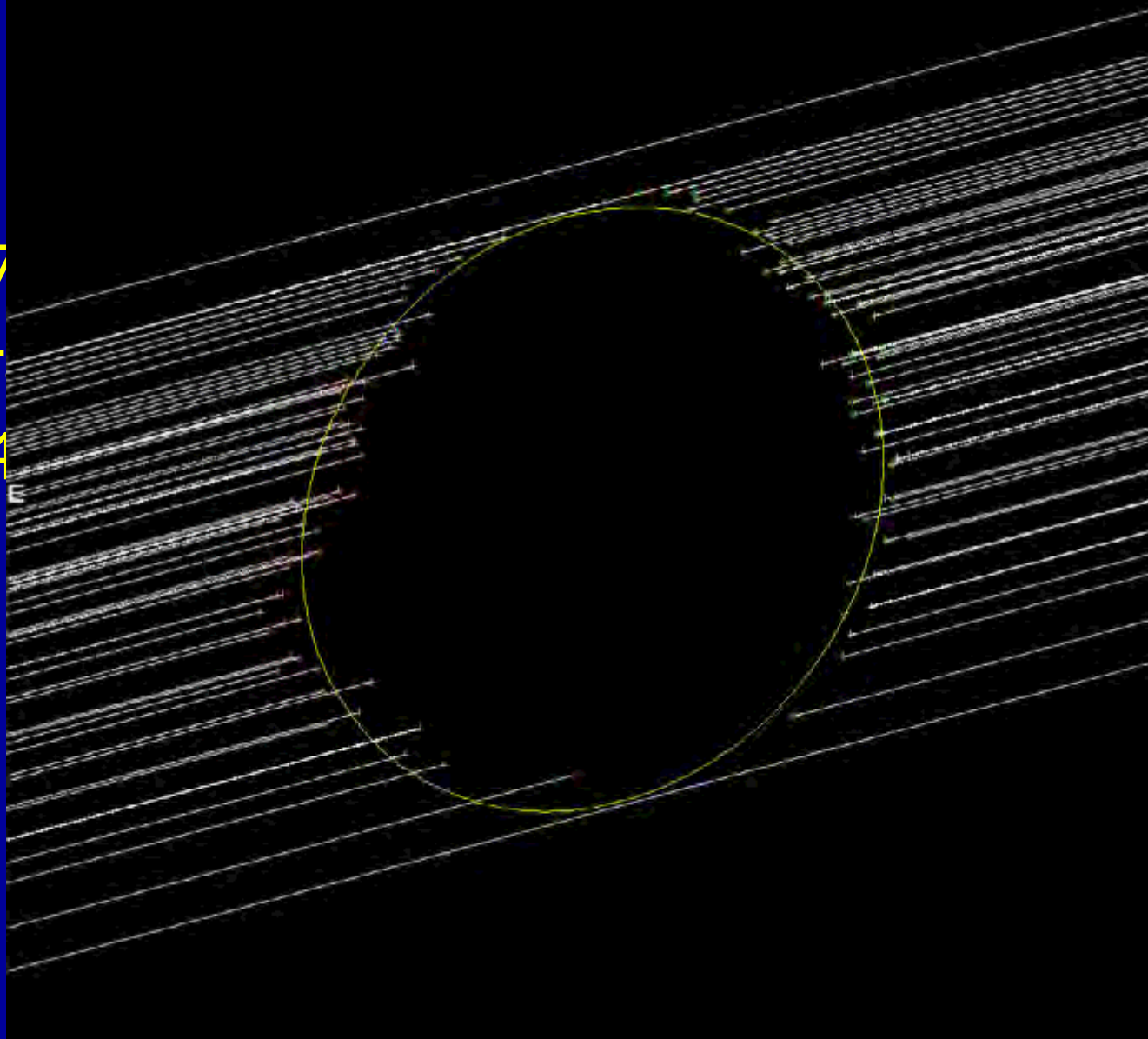
-1200



-65 -60

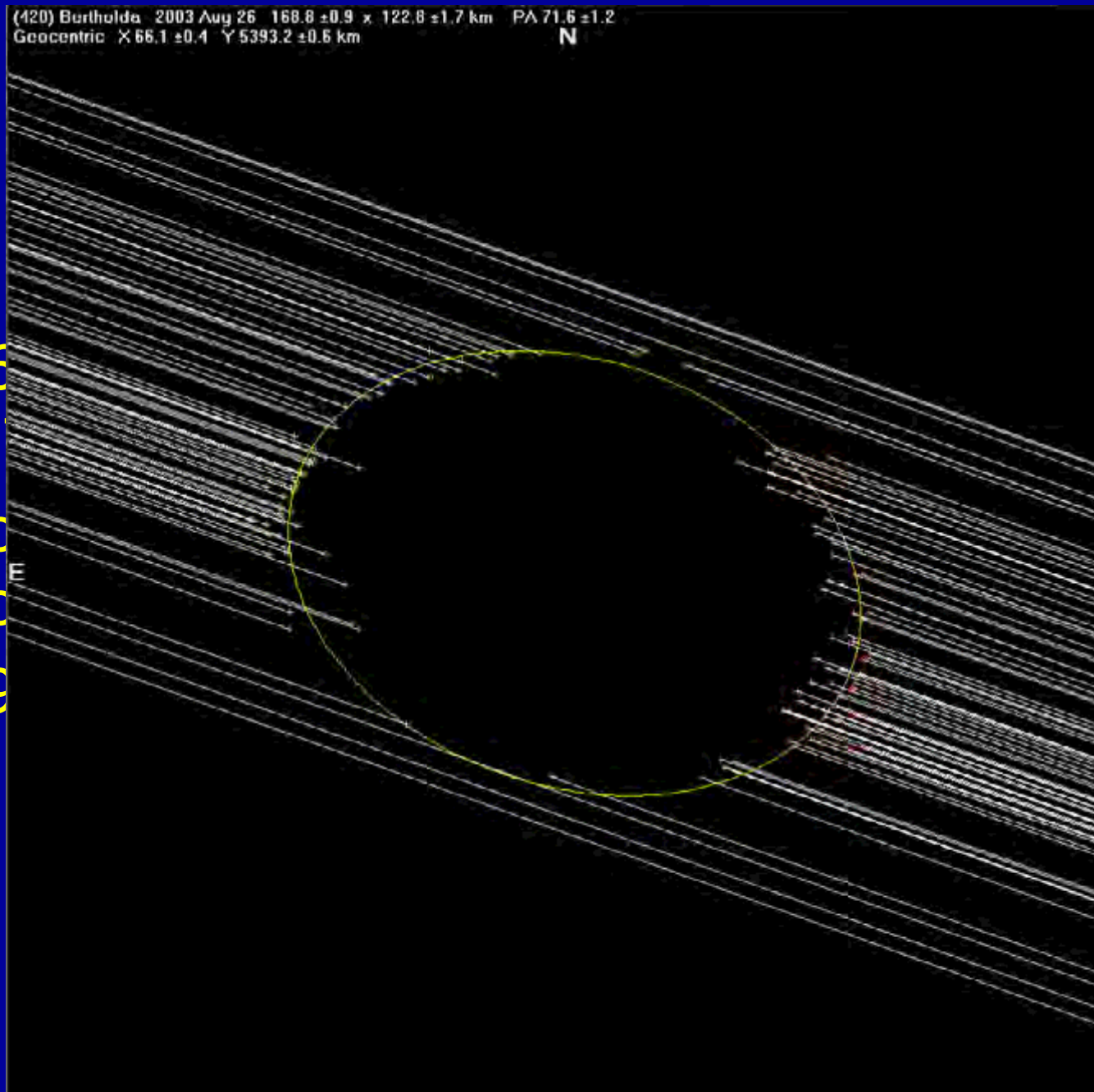
(345) Tercidinn 2002 Sep 17 107.5 ± 0.8 × 91.1 ± 0.8 km PA 38.4 ± 2.3
Geocentric X -3170.2 ± 0.2 Y 3401.4 ± 0.4 km N

- 17
- Fr
- 64



magn

(120) Bertholda 2003 Aug 26 168.8 ± 0.9 x 122.8 ± 1.7 km PA 71.6 ± 1.2
 Geocentric X 66.1 ± 0.4 Y 5393.2 ± 0.6 km N



- 26
- 8.
- Po
- Po
- 79

ie,



144 Vibia – TYC 1888–00747–1

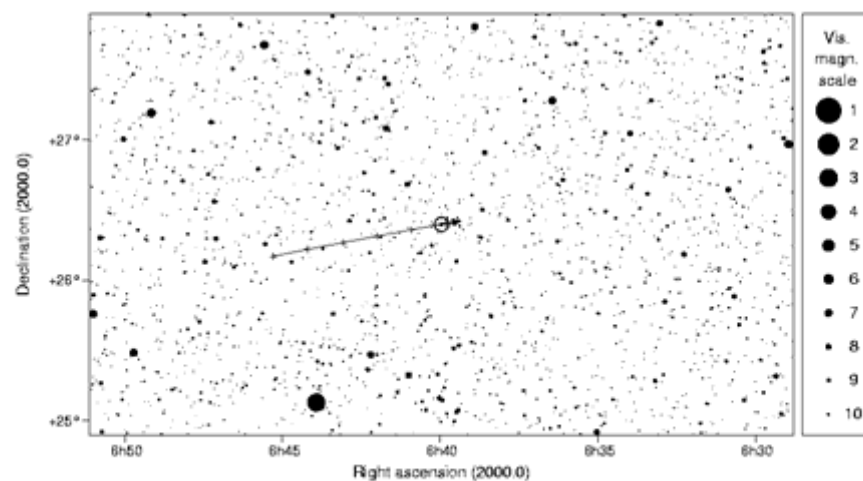
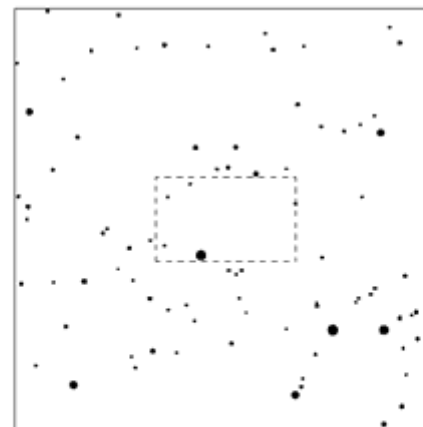
2007 Jan 4 21^h 6.5^m U.T.

Planet :

V. mag. = 11.11 Diam. = 178.0 km = 0.16"
 μ = 36.81"/h π = 5.72" Ref. = EG2004
 Δm = 1.8 Max. dur. = 15.6s

Star :

Source cat. TYC2
 α = 6^h39^m57.296^s δ = +26°23'48.21"
 V. mag. = 9.60 Ph. mag. = 9.80
 Sun : 173° Moon : 21°, 98%



Upřesňování (updates)

- last minute
- last second
- FASTT
- nová dráha planetky
- nové informace o hvězdě
- dostupně dny i týdny předem

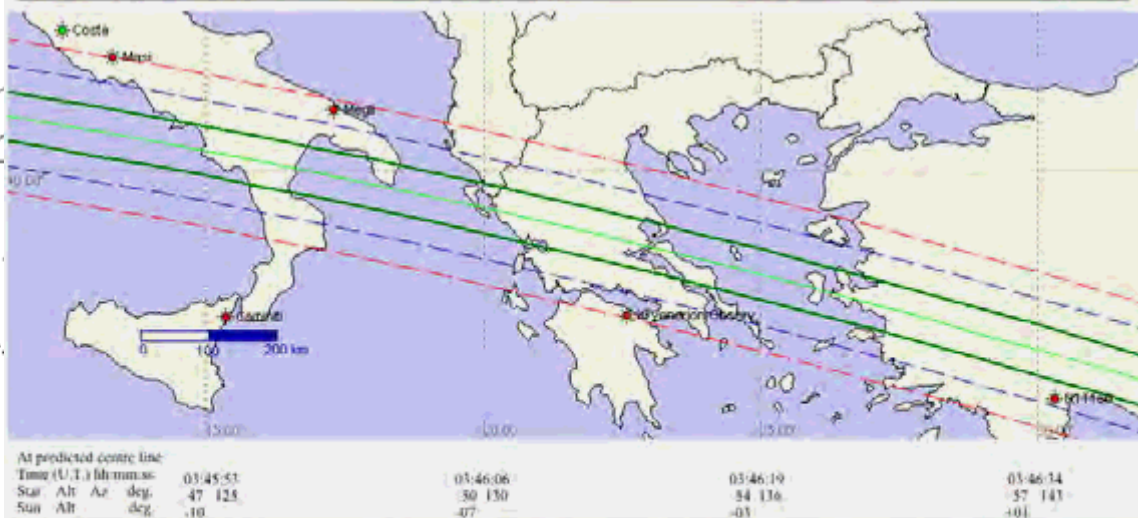
Mag = 14.2
Dia = 70km, 0.042°
Parallax = 3.827"
Hourly dRA = 3.690s
dDec = -19.43"

121 Hermione

Star (2000) :

Mr = 10.0 Mp
 RA = 13 52 56.3
 Dec = - 5 37 27.4

Plot for Long 15.0



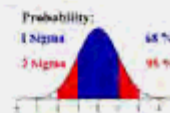
Path predicted by Steve Preston,
2006 Aug 07

Map: Oliver Klös, 2006 Sep 03

 Fixed Station
  Movable Station
  Mobile Station, Exposition Site

 Path Limits
  Centre Line

Uncertainty
  1 sigma
  2 sigma
  3 sigma





najdete

ccultations.com (Preston)

z (Mánek)

l/Pozaktual.htm (Šándor)

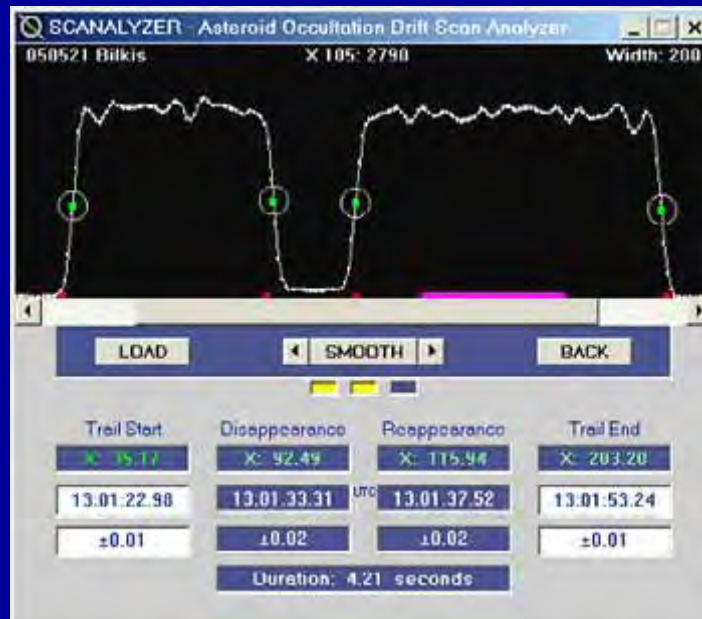
Vizuální

- dalekohled
- stopky
- časový signál
- zkušenosti



CCD

- pokud už ji někdo má
- nutná kalibrace
- fotometricky se dělá vlastně astrometrie



Video

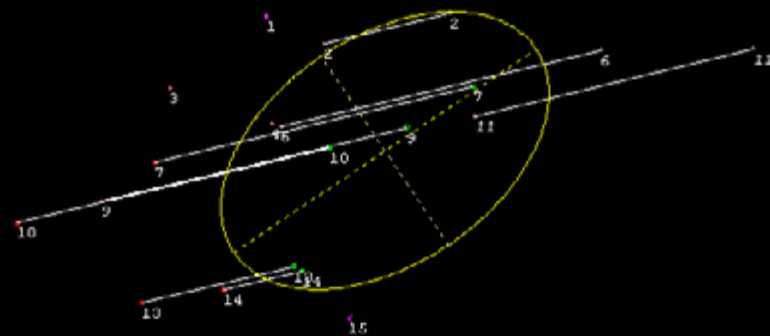
- objektivnost
- přesnost
- časové rozlišení
- malé pole



(166) Rhodope 2005 Oct 19 72.0 $\pm$ 8.6 $\times$ 45.0 $\pm$ 19.1 km PA -56.0 $\pm$ 17.3
Geocentric X -4522.4 $\pm$ 5.8 Y 3395.4 $\pm$ 3.4 km

N

E



Co si vybírat

- Pokud jsme blízko stínu nebo v něm
- Vhodná jasnost
- Vhodný pokles jasnosti
- Vhodná délka zákrytu

Kam s pozorováním

- <http://mpocc.astro.cz/results/report.html>
- místním organizátorům
- Planoccult list (jan@vangestel.be
Pierre.Vingerhoets@telenet.be)

Děkuji za pozornost
(a ukázka na konec)