

# Die positiven SB in der Schweiz von 1997 bis 2017

und auch vorher

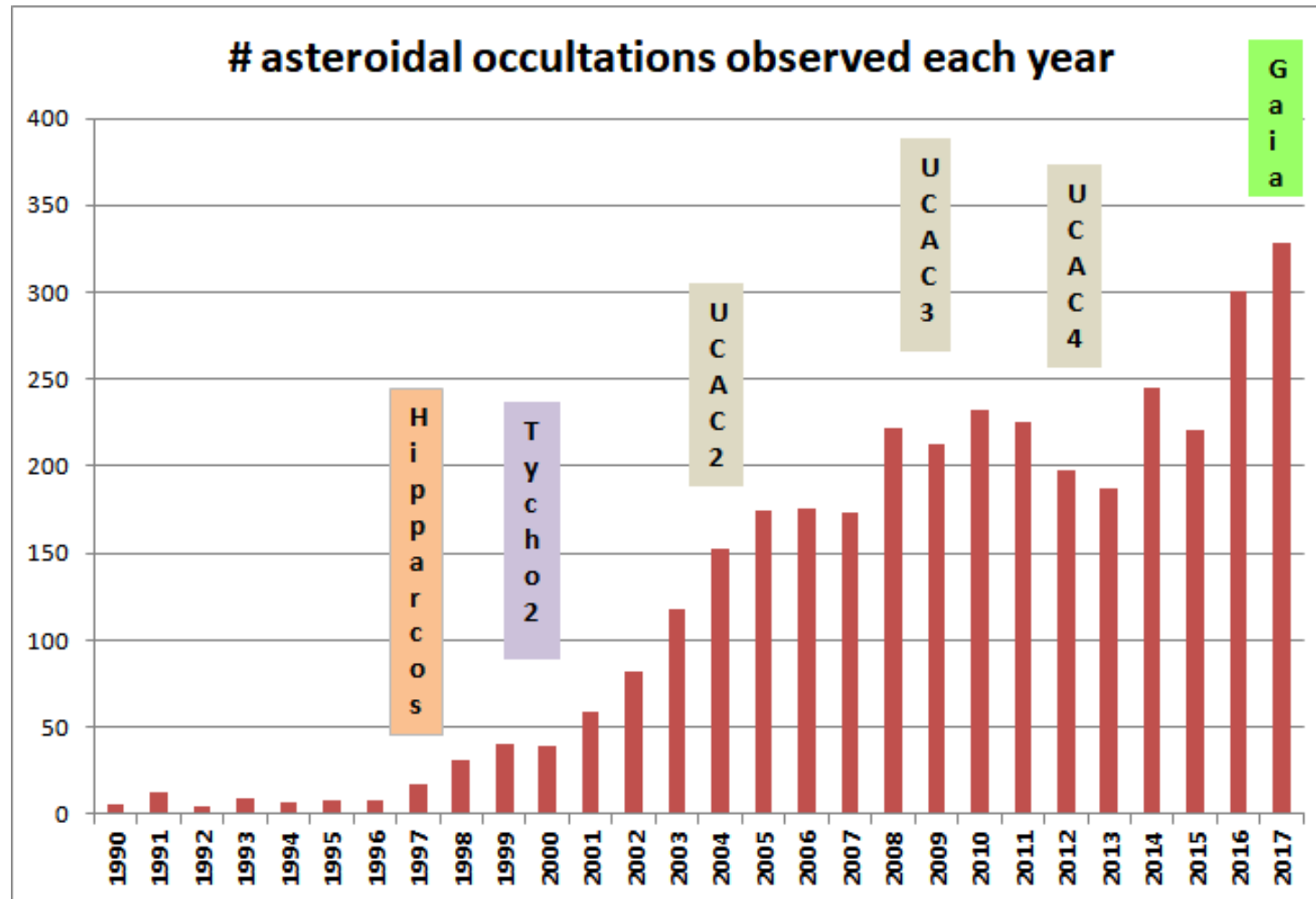
# Historisches

|                     |                                                               |
|---------------------|---------------------------------------------------------------|
| Erste               | 1958 Feb 19; (3) Juno; P.Bjorklund, S.Muller; Malmo,Sweden    |
| Zweite              | 1961 Feb 10; (2) Pallas; Uttar Pradesh S.Ob. Naini Tal, India |
| Dritte              | 1973 Jun 2; (2) Pallas; USA and Canada                        |
| 100 <sup>ste</sup>  | 1989 Oct 23 (521) Brixia; C. Sauter et al. ?                  |
| 500 <sup>ste</sup>  | 2003 Sep 11                                                   |
| 1000 <sup>ste</sup> | 2006 Nov 2                                                    |

Bis März 2018: 1156 Objekte mit SB (von 779'736 MPC-Orbitten) (0,14%)

Besonderheiten:

- Die ersten 100 KP sind schon “gemessen” worden
- Von KP N. 101 bis N. 200, sechs sind noch nicht “gemessen”: es sind (118) Peitho, (122) Gerda, (157) Dejanira, (169) Zelia, (180) Garumna, (183) Istria



Credit: Dave Herald

| Statistic<br>Euraster<br>Year | Total events<br>observed | Positive<br>events | Total<br>chords<br>O+ O- O? | Positives<br>chords<br>O+ (also<br>O+1 O+2<br>O+3) | Negative<br>chords<br>O- | Uncertain<br>chords<br>O? | Total<br>chords<br> CH | Positive chords<br>O+ (also O+1<br>O+2)  CH | Percent<br>chords | Percent<br>positive<br>chords |
|-------------------------------|--------------------------|--------------------|-----------------------------|----------------------------------------------------|--------------------------|---------------------------|------------------------|---------------------------------------------|-------------------|-------------------------------|
| 1997                          | 83                       | 9                  | 322                         | 10                                                 | 308                      | 4                         | 4                      | 1                                           | 1.2               | 10.0                          |
| 1998                          | 118                      | 12                 | 560                         | 38                                                 | 513                      | 9                         | 9                      | 0                                           | 1.6               | 0.0                           |
| 1999                          | 78                       | 16                 | 331                         | 46                                                 | 281                      | 4                         | 0                      | 0                                           | 0.0               | 0.0                           |
| 2000                          | 96                       | 14                 | 372                         | 58                                                 | 308                      | 6                         | 5                      | 2                                           | 1.3               | 3.4                           |
| 2001                          | 130                      | 20                 | 477                         | 102                                                | 364                      | 11                        | 10                     | 0                                           | 2.1               | 0.0                           |
| 2002                          | 106                      | 24                 | 486                         | 117                                                | 357                      | 12                        | 16                     | 4                                           | 3.3               | 3.4                           |
| 2003                          | 98                       | 25                 | 601                         | 165                                                | 417                      | 19                        | 13                     | 7                                           | 2.2               | 4.2                           |
| 2004                          | 181                      | 34                 | 581                         | 90                                                 | 473                      | 18                        | 11                     | 2                                           | 1.9               | 2.2                           |
| 2005                          | 278                      | 41                 | 694                         | 95                                                 | 583                      | 16                        | 17                     | 2                                           | 2.4               | 2.1                           |
| 2006                          | 282                      | 48                 | 575                         | 112                                                | 450                      | 13                        | 18                     | 1                                           | 3.1               | 0.9                           |
| 2007                          | 295                      | 47                 | 779                         | 129                                                | 633                      | 17                        | 18                     | 0                                           | 2.3               | 0.0                           |
| 2008                          | 237                      | 43                 | 658                         | 112                                                | 533                      | 13                        | 16                     | 0                                           | 2.4               | 0.0                           |
| 2009                          | 287                      | 56                 | 641                         | 101                                                | 532                      | 8                         | 12                     | 1                                           | 1.9               | 1.0                           |
| 2010                          | 234                      | 53                 | 753                         | 163                                                | 585                      | 5                         | 45                     | 6                                           | 6.0               | 3.7                           |
| 2011                          | 337                      | 67                 | 752                         | 152                                                | 597                      | 3                         | 54                     | 17                                          | 7.2               | 11.2                          |
| 2012                          | 320                      | 70                 | 727                         | 131                                                | 591                      | 5                         | 72                     | 8                                           | 9.9               | 6.1                           |
| 2013                          | 356                      | 47                 | 780                         | 101                                                | 674                      | 5                         | 110                    | 20                                          | 14.1              | 19.8                          |
| 2014                          | 505                      | 77                 | 1041                        | 172                                                | 866                      | 3                         | 121                    | 26                                          | 11.6              | 15.1                          |
| 2015                          | 493                      | 63                 | 945                         | 177                                                | 762                      | 6                         | 121                    | 26                                          | 12.8              | 14.7                          |
| 2016                          | 593                      | 97                 | 1056                        | 216                                                | 836                      | 4                         | 94                     | 20                                          | 8.9               | 9.3                           |
| 2017                          | 701                      | 106                | 1091                        | 188                                                | 897                      | 6                         | 178                    | 23                                          | 16.3              | 12.2                          |
|                               |                          |                    |                             |                                                    |                          |                           |                        | Mean                                        | 5.4               | 5.7                           |

## **Von 1997 bis 2017 sind in der Schweiz 83 positiven events mit 152 chords beobachtet worden**

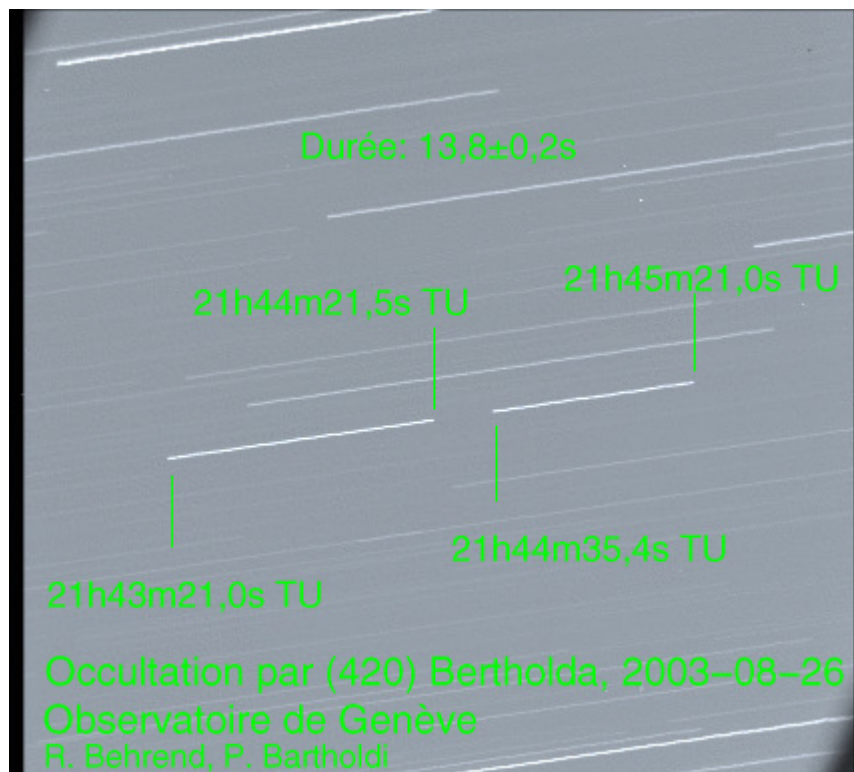
- KP Nummer: (7) Iris ... (134340) Pluto
- Zeitdauer: 0,60 s (6983) Komatsusakyo ... 153 s (134340) Pluto
- KP Durchmesser: 5,5 km (3970) Herran ... 2370 km (134340) Pluto
- Sechs doppelte SB: (51) Nemausa; (144) Vibilia; (151) Abundantia; (173) Ino; (442) Eichsfeldia; (134340) Pluto
- Neuer Doppelstern entdeckt: TYC 2849-00430-1
- Gradual D und R: HIP 28558 bei (1309) Hyperborea
- Die SB mit den meisten chords: (9) Metis, 11 in der Schweiz, 28 in Europa
- 33 Personen haben in der Schweiz ihren Namen in eine positive SB eingetragen; 18 im Tessin
- Die 94 entdeckte KP von Paul Wild, 7 sind "gemessen" worden. Es sind: (1687) Glarona, (891) Gondola, (1936) Lugano, (1960) Dufour, (2052) Hannibal, (2521) Heidi, (2731) Cucula (zwei Mal)

|                                       | <b>Chords</b> | <b>Year</b> |                   |           |
|---------------------------------------|---------------|-------------|-------------------|-----------|
| Behrend R./Bartholdi P.               | 1             | 2003        | Schweiz<br>Tessin | 153       |
| Chevalley Patrick                     | 1             | 2003        |                   | 126 (82%) |
| Delucchi Fausto                       | 4             | 2014-2017   |                   |           |
| De Queiroz Jose                       | 7             | 2013-2015   |                   |           |
| De Queiroz J./Behrend R./Behrend T.N. | 1             | 2016        |                   |           |
| Dubois Jan                            | 1             | 2003        |                   |           |
| Eyer L./Eminian C./Ullmann F.         | 1             | 2003        |                   |           |
| Fumagalli Francesco                   | 1             | 2011        |                   |           |
| George Michel                         | 1             | 2002        |                   |           |
| Iten Marco                            | 2             | 2011-2014   |                   |           |
| Kohl Mike                             | 4             | 1997-2015   |                   |           |
| Meister Stefan                        | 1             | 2014        |                   |           |
| Malagutti Y./Cibin L.                 | 1             | 2011        |                   |           |
| Manna Andrea                          | 19            | 2000-2017   |                   |           |
| Manna A./Berti L.                     | 1             | 2013        |                   |           |
| Manna A./Manna S.                     | 2             | 2014        |                   |           |
| Nobile Marco                          | 1             | 2011        |                   |           |
| Ossola Alberto                        | 26            | 2011-2017   |                   |           |
| Ramelli R./Bianda M.                  | 1             | 2011        |                   |           |
| Sauter Christof                       | 4             | 1989!-2015  |                   |           |
| Scheggia Ivo                          | 1             | 2011        |                   |           |
| Schenker Jonas                        | 4             | 2014-2017   |                   |           |
| Sposetti Stefano                      | 60            | 2000-2017   |                   |           |
| Sposetti S./Bernardi B.               | 2             | 2014        |                   |           |
| Sposetti S./Deluigi M.                | 1             | 2011        |                   |           |
| Sposetti S./Manna A.                  | 2             | 2013-2016   |                   |           |
| Sposetti S./Nannini J.                | 1             | 2013        |                   |           |
| Sposetti S./Pacciorini L.             | 1             | 2013        |                   |           |
| Steiner Daniel                        | 1             | 2002        |                   |           |

Behrend Raoul      2 SB

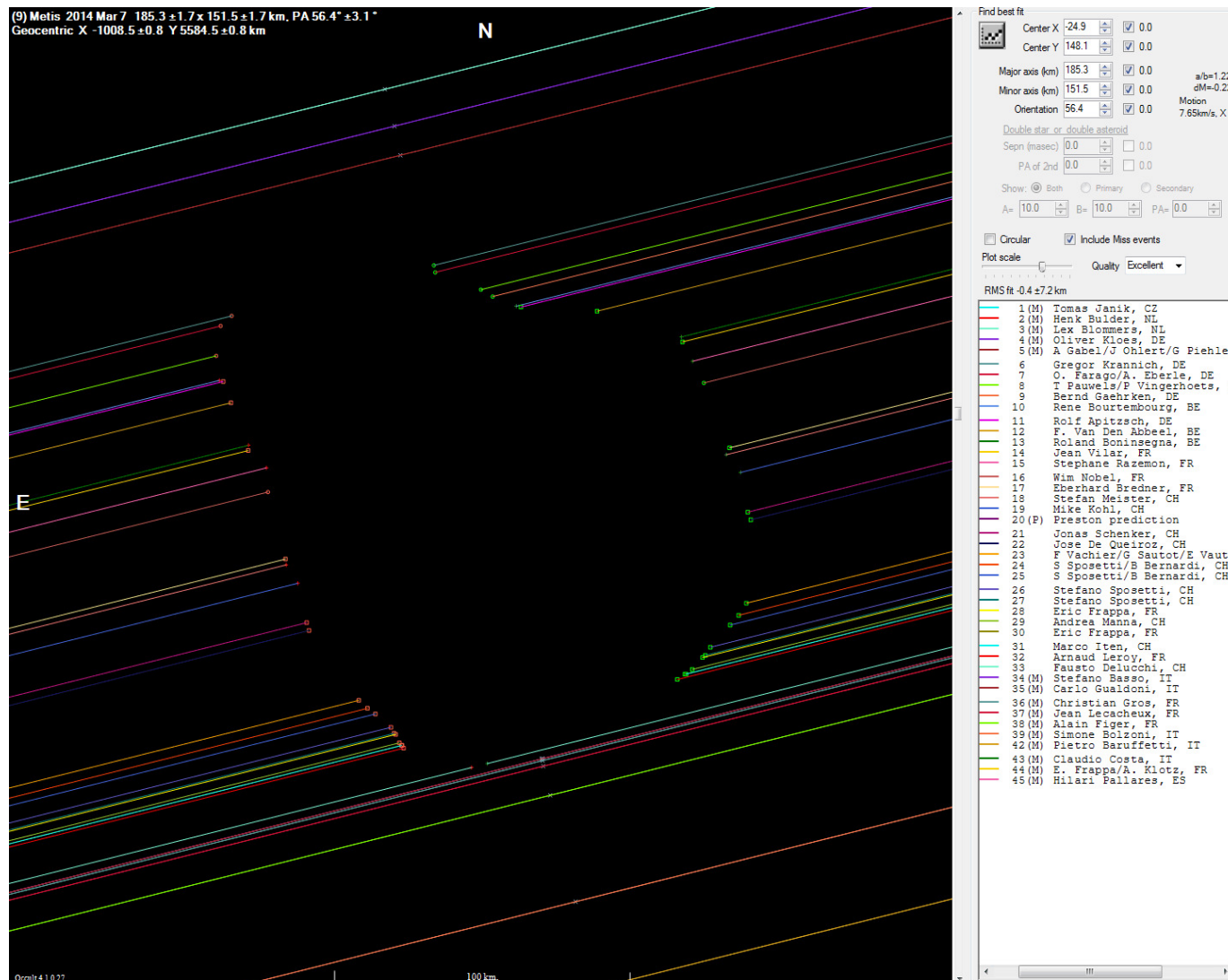
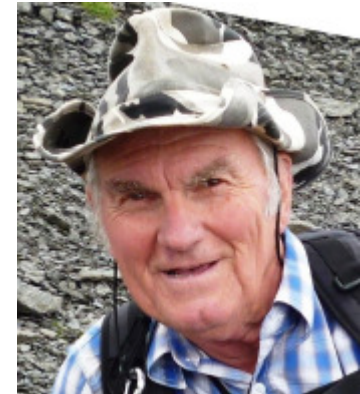
2003/08/26 | 420 | Bertholda | TYC 5757-00353-1  
2016/07/19 | 134340 | Pluto | 4UC345-180315

CCD; et al.  
VID; et al.



## Delucchi Fausto 4 SB

|            |  |     |  |            |  |                  |            |
|------------|--|-----|--|------------|--|------------------|------------|
| 2014/03/07 |  | 9   |  | Metis      |  | HIP 78193        | VIS; 0,7 s |
| 2015/03/12 |  | 216 |  | Kleopatra  |  | HIP 54599        | VIS        |
| 2017/10/23 |  | 154 |  | Bertha     |  | TYC 0638-00660-1 | VIS        |
| 2017/12/10 |  | 151 |  | Abundantia |  | TYC 1798-00616-1 | VIS        |

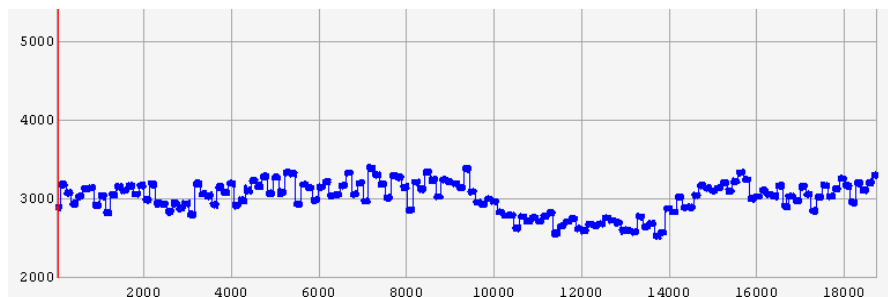




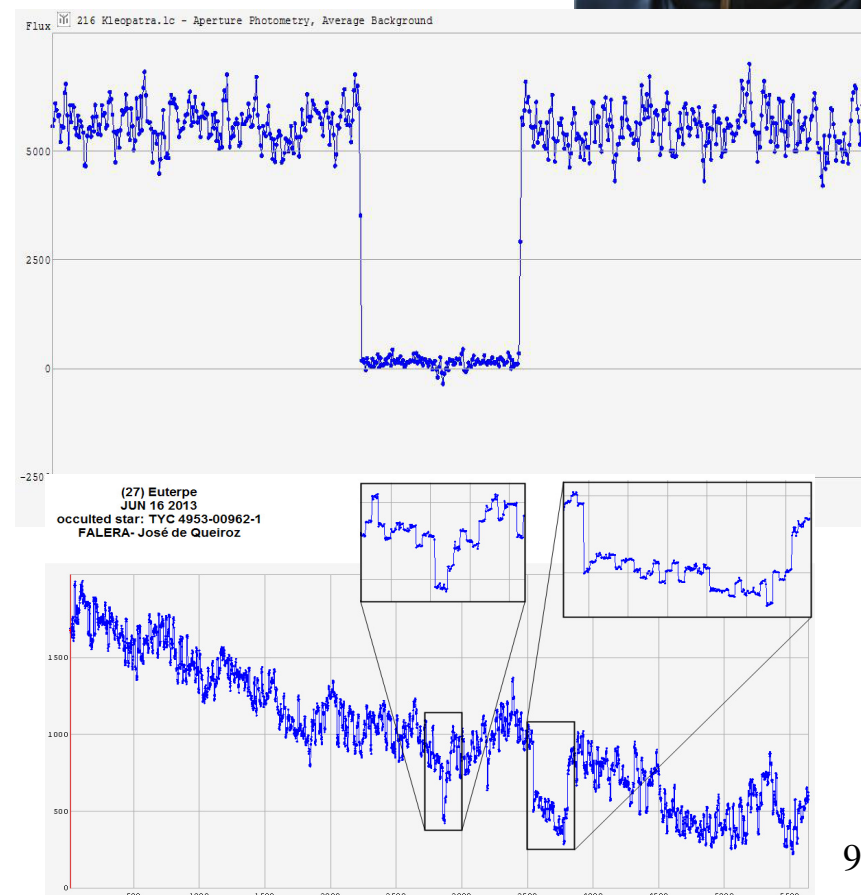
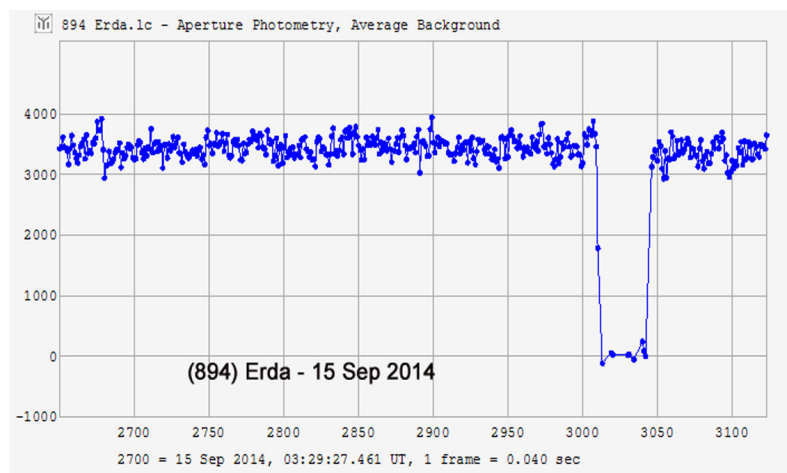
## De Queiroz Jose 7 + 1 SB

2013/06/16 | 27 | Euterpe | TYC 4953-00962-1  
 2013/08/22 | 134340 | Pluto | 4UC350-1505071  
 2014/03/07 | 9 | Metis | HIP 78193  
 2014/03/31 | 442 | Eichsfeldia | 2UCAC 37717864  
 2014/09/15 | 894 | Erda | TYC 0766-00205-1  
 2014/10/09 | 690 | Wratislavia | HIP 86605  
 2015/03/12 | 216 | Kleopatra | HIP 54599  
 2016/07/19 | 134340 | Pluto | 4UC345-180315

VID  
 VID; 16.3 magR; 153 s  
 VID  
 VID  
 VID  
 VID  
 VID; et al.



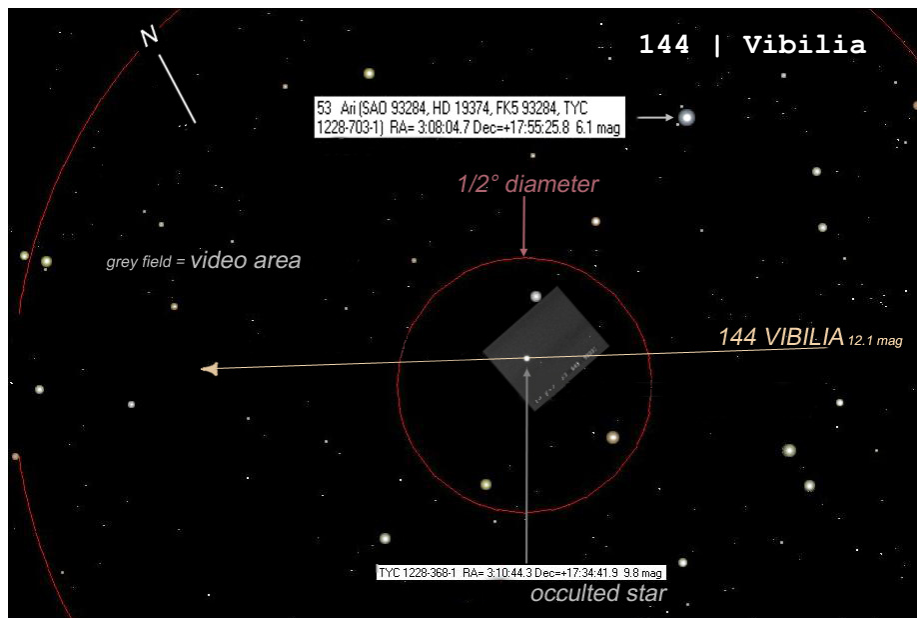
2013 AUG 22 - Pluto occultation from Falera, Switzerland - Jose de Queiroz



Iten Marco 2 SB

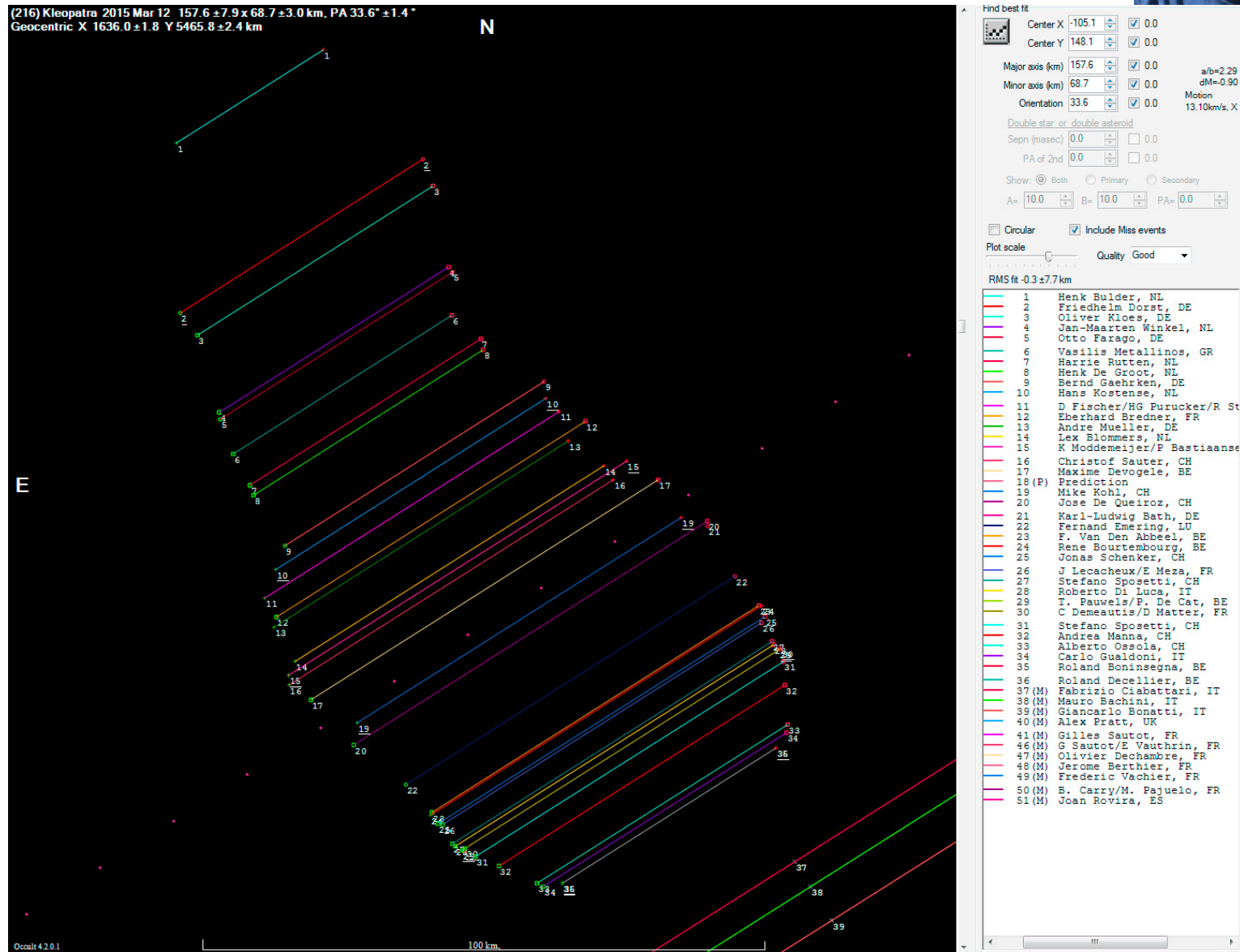
2011/01/25 | 144 | Vibilia | TYC 1228-00368-1  
2014/03/07 | 9 | Metis | HIP 78193

VID  
VID



Kohl Mike 4 SB

|            |  |     |  |           |  |                  |     |
|------------|--|-----|--|-----------|--|------------------|-----|
| 1997/11/03 |  | 524 |  | Fidelio   |  | PPM 126743       | VIS |
| 2003/08/26 |  | 420 |  | Bertholda |  | TYC 5757-00353-1 | VIS |
| 2014/03/07 |  | 9   |  | Metis     |  | HIP 78193        | VIS |
| 2015/03/12 |  | 216 |  | Kleopatra |  | HIP 54599        | VIS |



**Manna Andrea      19 + 5 SB**



|            |  |      |  |            |  |                  |  |                              |
|------------|--|------|--|------------|--|------------------|--|------------------------------|
| 2000/01/07 |  | 423  |  | Diotima    |  | GSC 2470 00150   |  | VIS                          |
| 2004/12/12 |  | 85   |  | Io         |  | TYC 0144-01868-1 |  | VIS                          |
| 2005/03/10 |  | 209  |  | Dido       |  | HIP 59732        |  | VIS                          |
| 2010/08/28 |  | 1214 |  | Richilde   |  | TYC 5758-00120-1 |  | VIS                          |
| 2011/01/25 |  | 144  |  | Vibilia    |  | TYC 1228-00368-1 |  | VIS                          |
| 2013/01/06 |  | 87   |  | Sylvia     |  | TYC 1856-00745-1 |  | VID; et al.; 25,3 s; Condove |
| 2013/06/10 |  | 640  |  | Brambilla  |  | TYC 5657-00027-1 |  | VID; et al.                  |
| 2014/01/15 |  | 508  |  | Princeton  |  | 2UCAC 45489325   |  | VID; et al.                  |
| 2014/03/07 |  | 9    |  | Metis      |  | HIP 78193        |  | VID                          |
| 2014/07/17 |  | 530  |  | Turandot   |  | TYC 6234-00405-1 |  | VID; et al.                  |
| 2015/03/09 |  | 51   |  | Nemusa     |  | 4UC382-077757    |  | VID                          |
| 2015/03/12 |  | 216  |  | Kleopatra  |  | HIP 54599        |  | VID                          |
| 2015/04/09 |  | 173  |  | Ino        |  | 2UCAC 37328537   |  | VID                          |
| 2015/08/20 |  | 409  |  | Aspasia    |  | 1UT571-046124    |  | VID                          |
| 2015/12/02 |  | 1114 |  | Lorraine   |  | 4UC493-006725    |  | VID                          |
| 2015/12/29 |  | 63   |  | Ausonia    |  | TYC 2405-00057-1 |  | VID                          |
| 2016/04/20 |  | 56   |  | Melete     |  | TYC 5758-01156-1 |  | VID                          |
| 2016/09/24 |  | 45   |  | Eugenia    |  | TYC 1298-00763-1 |  | VID; et al.; S. Bernardino   |
| 2016/12/15 |  | 514  |  | Armida     |  | 4UC558-038382    |  | VID; 0,96 s                  |
| 2016/12/30 |  | 754  |  | Malabar    |  | 2UCAC 27466644   |  | VID                          |
| 2017/03/19 |  | 412  |  | Elisabetha |  | TYC 6265-00413-1 |  | VID                          |
| 2017/10/08 |  | 173  |  | Ino        |  | TYC 5632-00827-1 |  | VID                          |
| 2017/10/14 |  | 543  |  | Charlotte  |  | 4UC611-020054    |  | VID                          |
| 2017/10/23 |  | 154  |  | Bertha     |  | TYC 0638-00660-1 |  | VID                          |

1985 5 1 MP746501.D85 746 MARLU P EMP 1984 ACT 4945 00243 9.63  
 138569 G5 8.9 SAO 138569 , RA,DEC2000= 120451.84057 -61156.6546

|                             |   |           |      |              |   |      |         |
|-----------------------------|---|-----------|------|--------------|---|------|---------|
| Minusio, Switz.             | D | 46.10     | 8.50 | Andrea Manna | 1 | 234. |         |
| 19850501.233200.0120217.974 |   | -55514.66 | 1    | Andrea Manna |   |      | 1       |
| 19850501.233201.8120217.974 |   | -55514.66 | 2    | Andrea Manna |   |      | 1       |
|                             |   |           | 0    |              |   |      | 0000000 |

## Sauter Christof 4! SB

1989 10 23; (521) Brixia; HIP 5578; VIS; 7,4 mag; 11,1 s

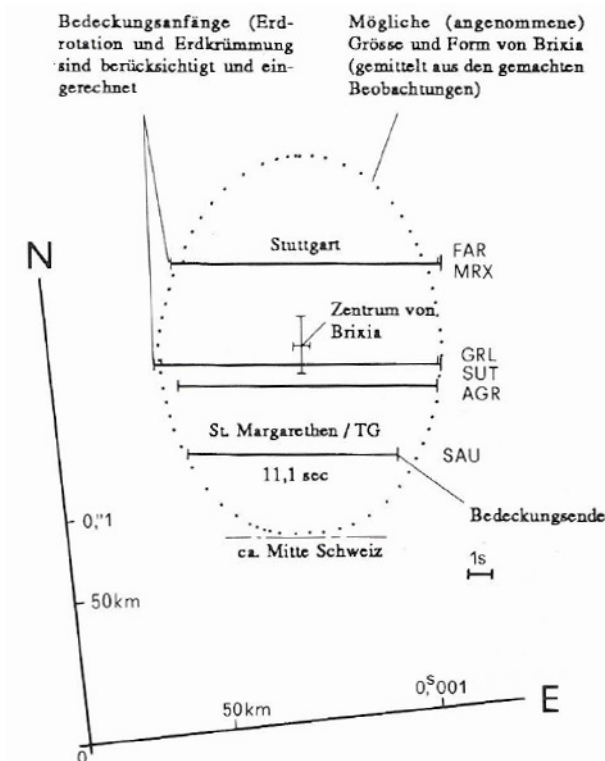
2002/09/17 | 345 | Tercidina | HIP 19388 VIS

2003/08/26 | 420 | Bertholda | TYC 5757-00353-1 VIS

2015/03/12 | 216 | Kleopatra | HIP 54599 VIS



|                         |                     |                |              |              |         |
|-------------------------|---------------------|----------------|--------------|--------------|---------|
| 1989 10 23 MP521023.D89 | 521 BRIXIA          | C              | EMP 1988 HIP | 5578         | 7.60    |
| 147658 G0               | 7.2 SAO 147658      | , RA, DEC2000= | 11132.10157  | -125034.3959 |         |
| Stuttgart1, Ger         | O 484700.7          | 91150.9        | O. FARAGO    | 1            | 354.    |
| 19891023.021758.6       | 10902.994-130629.89 | 1              | O. Farago    | 1            |         |
| 19891023.021812.1       | 10902.994-130629.89 | 2              | O. Farago    | 1            |         |
| Stuttgart2, Ger         | O 484700.2          | 91151.0        | H. MARX      | 2            | 350.    |
| 19891023.021757.9       | 10902.994-130629.89 | 1              | H. Marx      | 2            |         |
| 19891023.021812.1       | 10902.994-130629.89 | 2              | H. Marx      | 2            |         |
| Freiburg, Ger           | O 475333.1          | 75328.0        | P. SUTTERLIN | 3            | 1201.   |
| 19891023.021756.6       | 10902.994-130629.89 | 1              | P. Sutterlin | 3            |         |
| 19891023.021811.4       | 10902.994-130629.89 | 2              | P. Sutterlin | 3            |         |
| Zwiefkirchen, Ger       | O 482858.           | 120814.        | F. AGERER    | 4            | 400.    |
| 19891023.021736.2       | 10902.994-130629.89 | 1              | F. Agerer    | 4            |         |
| 19891023.021749.9       | 10902.994-130629.89 | 2              | F. Arerer    | 4            |         |
| St.Margarethen, SwzO    | 472022.7            | 90008.9        | C. SAUTER    | 5            | 512.    |
| 19891023.021744.0       | 10902.994-130629.89 | 1              | C. Sauter    | 5            |         |
| 19891023.021755.1       | 10902.994-130629.89 | 2              | C. Sauter    | 5            |         |
| 0                       |                     |                |              |              | 0000000 |



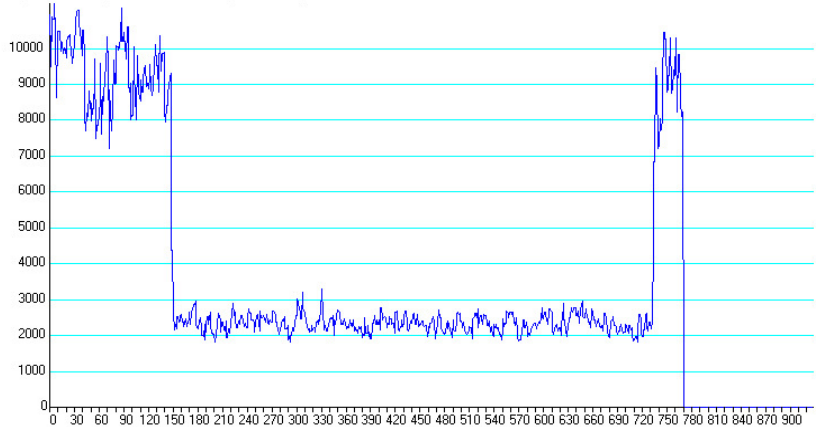


Schenker Jonas     4 SB

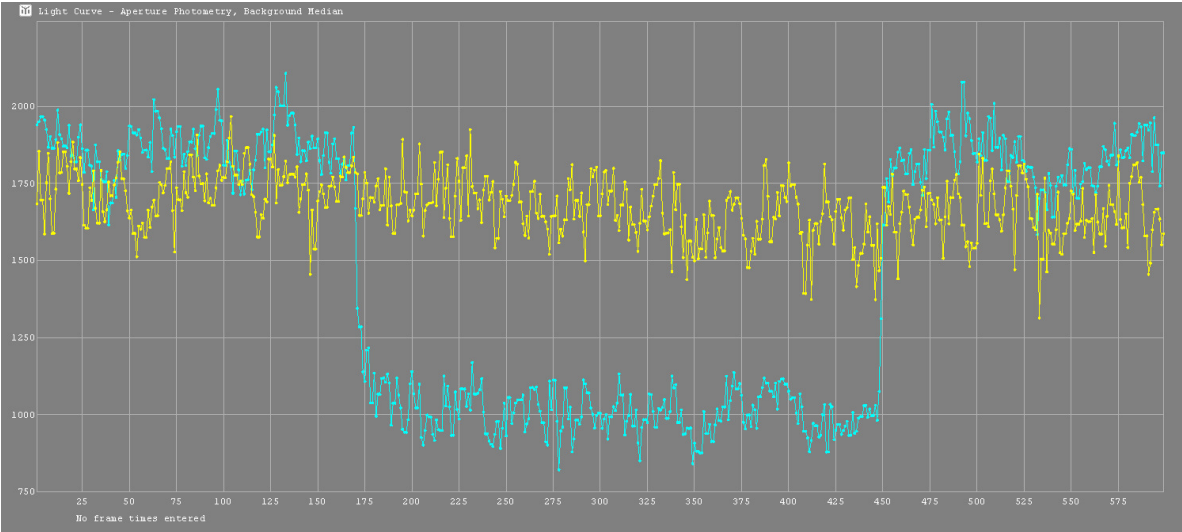
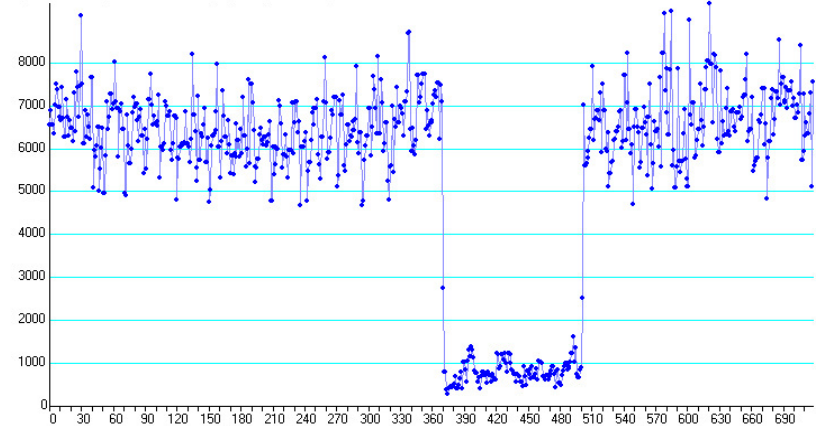
|            |     |           |                |     |
|------------|-----|-----------|----------------|-----|
| 2014/03/07 | 9   | Metis     | HIP 78193      | VID |
| 2015/03/12 | 216 | Kleopatra | HIP 54599      | VID |
| 2016/03/31 | 404 | Arsinoe   | 1UT397-120803  | VID |
| 2017/01/06 | 146 | Lucina    | 2UCAC 41687043 | VID |



Analyzed file name [ 20140307-030834.AVI] Photometry in each Frame



Analyzed file name [ 20150312-011112\_crop.AVI] Photometry in each Frame



# Ossola Alberto      26 SB

|            |      |            |                  |
|------------|------|------------|------------------|
| 2011/01/25 | 144  | Vibilia    | TYC 1228-00368-1 |
| 2011/12/29 | 198  | Ampella    | 2UCAC 40143290   |
| 2012/01/13 | 759  | Vinifera   | TYC 2849-00430-1 |
| 2012/11/24 | 1309 | Hyperborea | HIP 28558        |
| 2013/06/10 | 640  | Brambilla  | TYC 5657-00027-1 |
| 2013/08/10 | 268  | Adorea     | 4UC355-195889    |
| 2013/11/07 | 589  | Croatia    | TYC 5735-01661-1 |
| 2014/03/08 | 51   | Nemausa    | 4UC514-024427    |
| 2015/03/09 | 51   | Nemausa    | 4UC382-077757    |
| 2015/03/12 | 216  | Kleopatra  | HIP 54599        |
| 2015/04/09 | 173  | Ino        | 2UCAC 37328537   |
| 2015/06/04 | 322  | Phaeo      | TYC 6176-00728-1 |
| 2015/08/20 | 409  | Aspasia    | 1UT571-046124    |
| 2015/12/02 | 1114 | Lorraine   | 4UC493-006725    |
| 2015/12/29 | 63   | Ausonia    | TYC 2405-00057-1 |
| 2016/01/13 | 76   | Freia      | 4UC369-068390    |
| 2016/03/01 | 7    | Iris       | 2UCAC 21800401   |
| 2016/12/15 | 514  | Armida     | 4UC558-038382    |
| 2016/12/30 | 754  | Malabar    | 2UCAC 27466644   |
| 2017/03/19 | 412  | Elisabetha | TYC 6265-00413-1 |
| 2017/05/31 | 4035 | 1986 WD    | 4UC367-085332    |
| 2017/08/12 | 256  | Walpurga   | 4UC427-103028    |
| 2017/10/08 | 173  | Ino        | TYC 5632-00827-1 |
| 2017/10/23 | 154  | Bertha     | TYC 0638-00660-1 |
| 2017/11/21 | 151  | Abundantia | 2UCAC 40300883   |
| 2017/12/10 | 151  | Abundantia | TYC 1798-00616-1 |

CCD

CCD

CCD

VID

VID

VID

VID

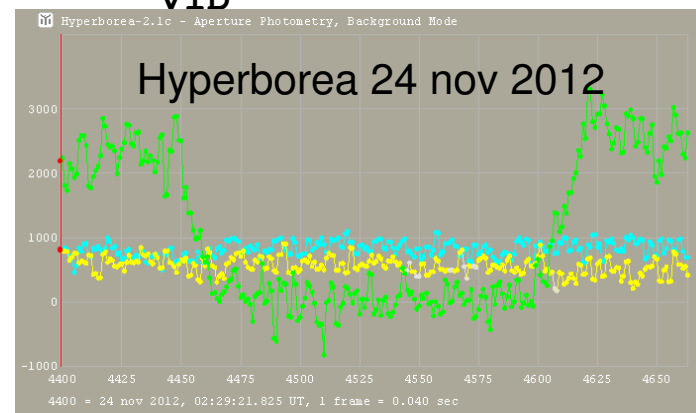
VID ←

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At least 36 km  
Major axis 41 km

**Sposetti Stefano    60 + 7 SB**

**2000/01/07 | 423 | Diotima | GSC 2470 00150**

...

...

**2017/12/22 | 1116 | Catriona | 4UC705-043934**

**CCD**

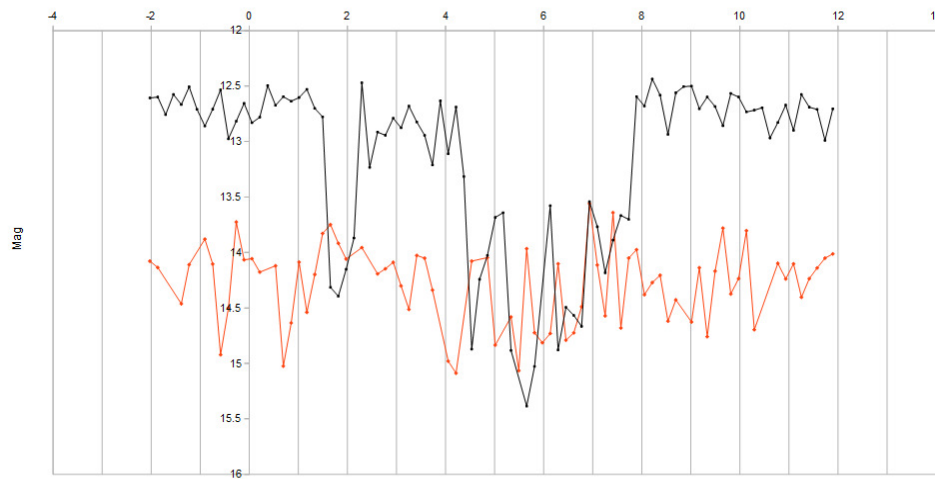
**VID**



### (2494) Inge - 7 NOV 2016

Observed by Stefano Sposetti, Gnosca, Switzerland

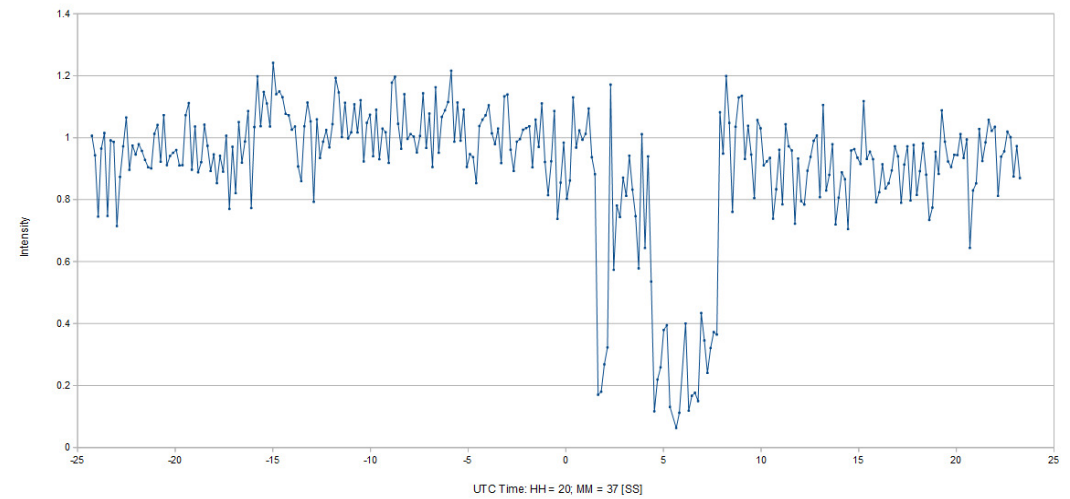
UTC Time: HH = 20; MM = 37 [SS]



### (2494) Inge - 7 NOV 2016

Observed by Stefano Sposetti, Gnosca, Switzerland

UTC Time: HH = 20; MM = 37 [SS]





# Eine der ersten SB mit sechs chords aus der Schweiz

Occultation of TYC 5757-00353-1 by 420 Bertholda on 2003 Aug 26 at 21h 46.2m UT

Star (2000):

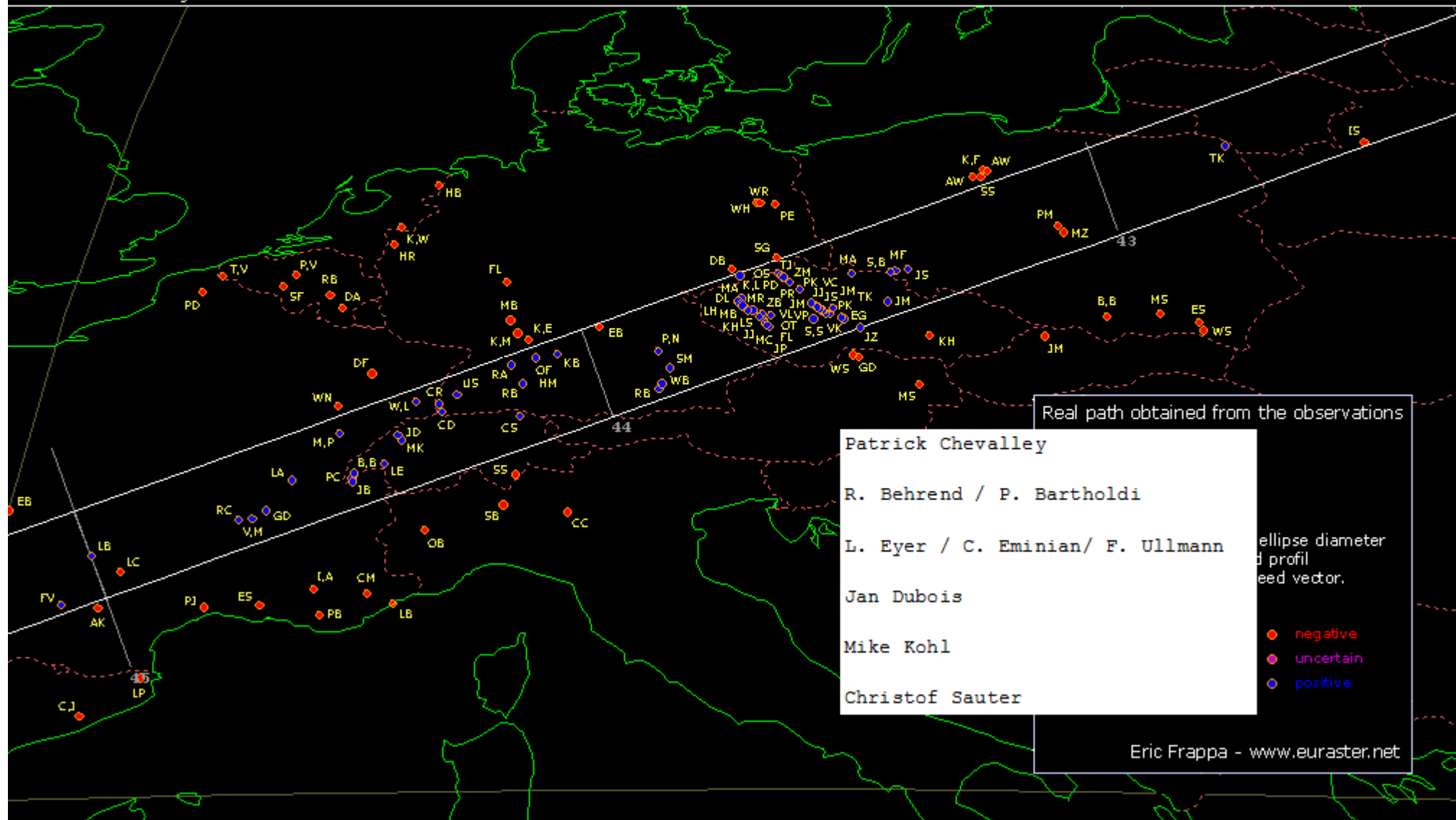
Mag = 8.6  
RA = 20 54 47.410  
Dec = - 8 10 52.50

Max Duration = 11.9 secs  
Mag Drop = 5.0  
Sun : Dist = 159 deg  
Moon: Dist = 163 deg  
illum = 1%

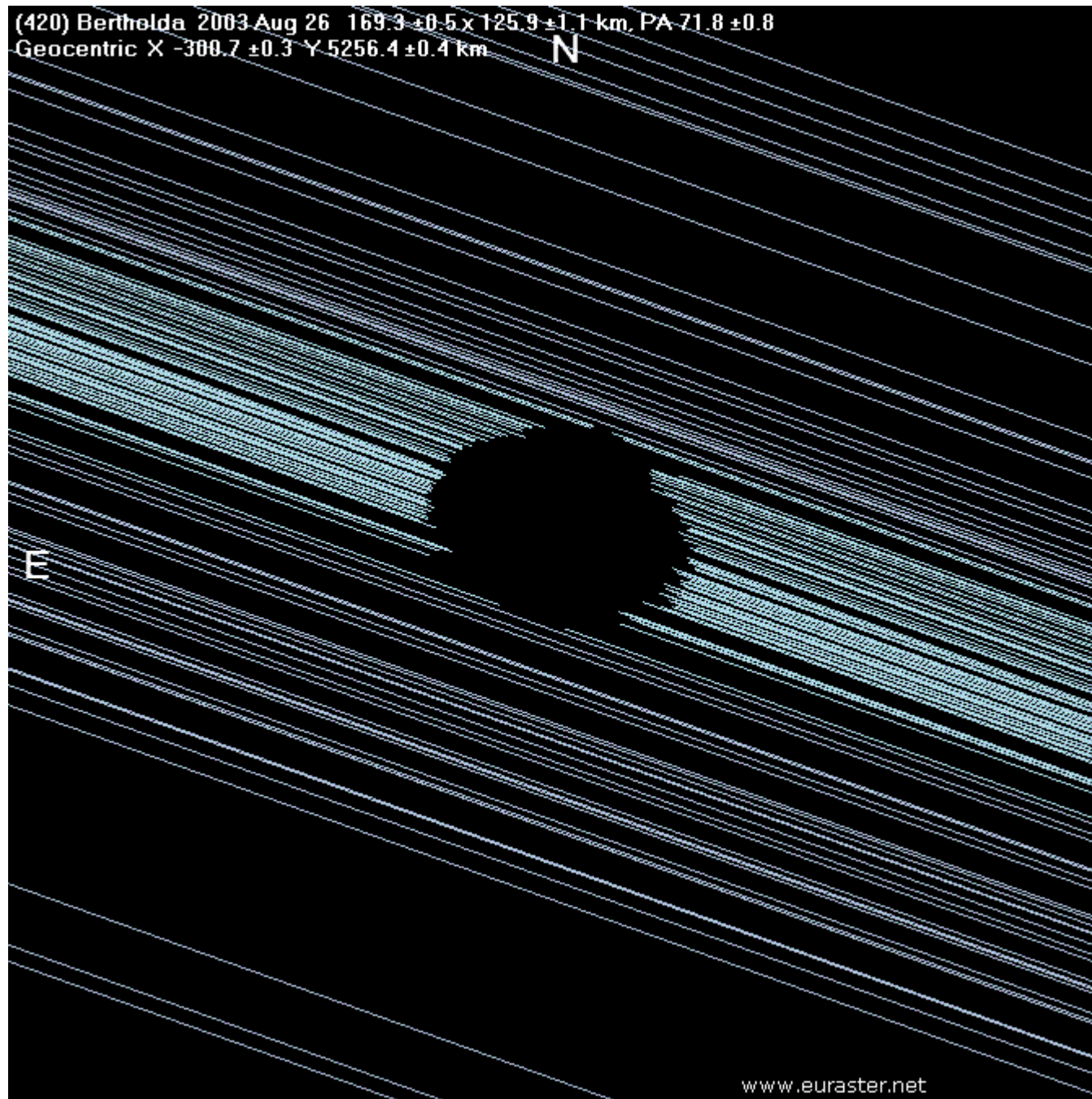
Asteroid:

Mag = 13.6  
Dia = 127km, 0.068"  
Parallax = 3.410"  
Hourly dRA = -1.495s  
dDec = -8.17"

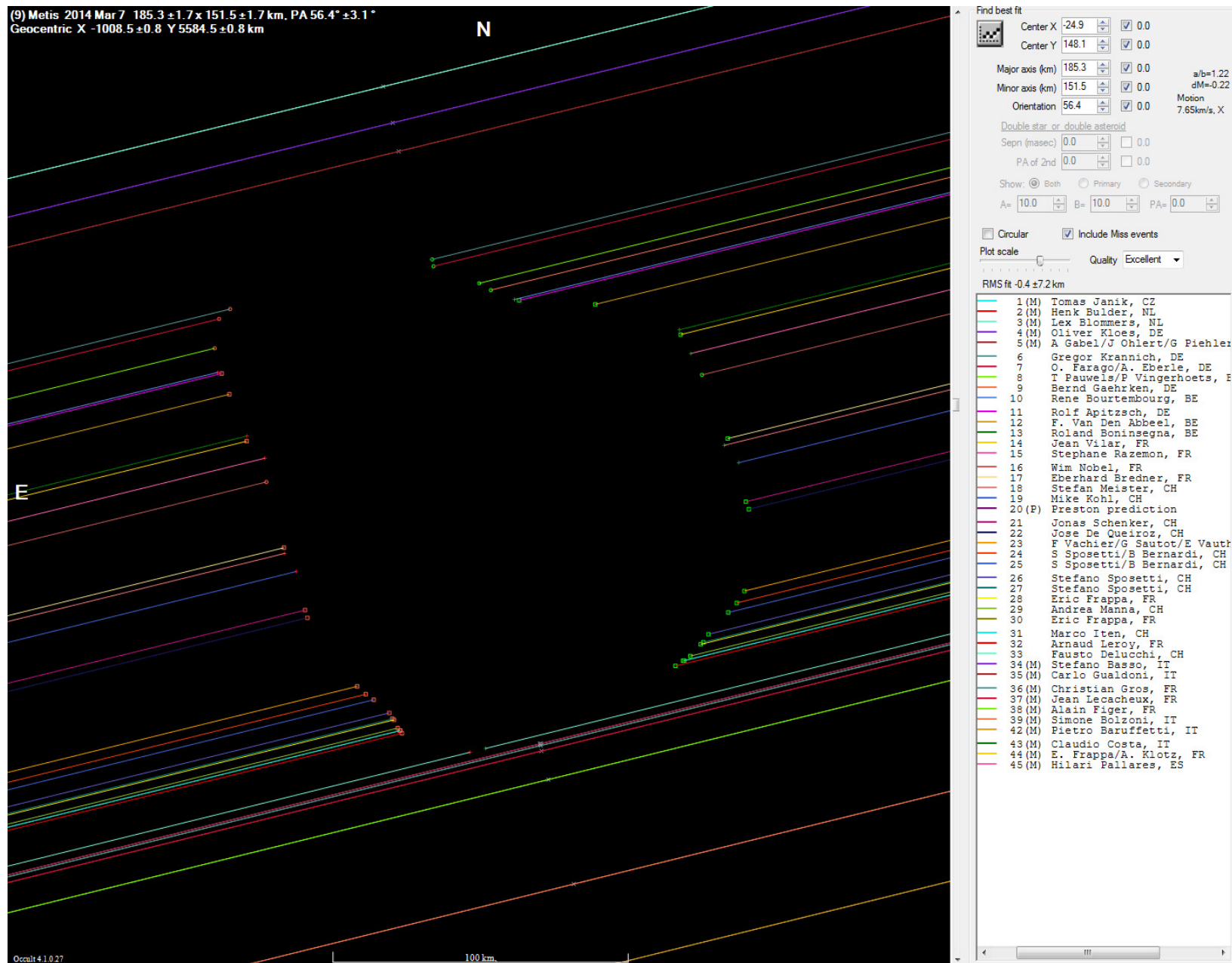
Plot for Long 9.0 Lat 47.0



# Eine der ersten SB mit sechs chords aus der Schweiz



# Die SB mit den meisten chords aus der Schweiz: 11 auf 28

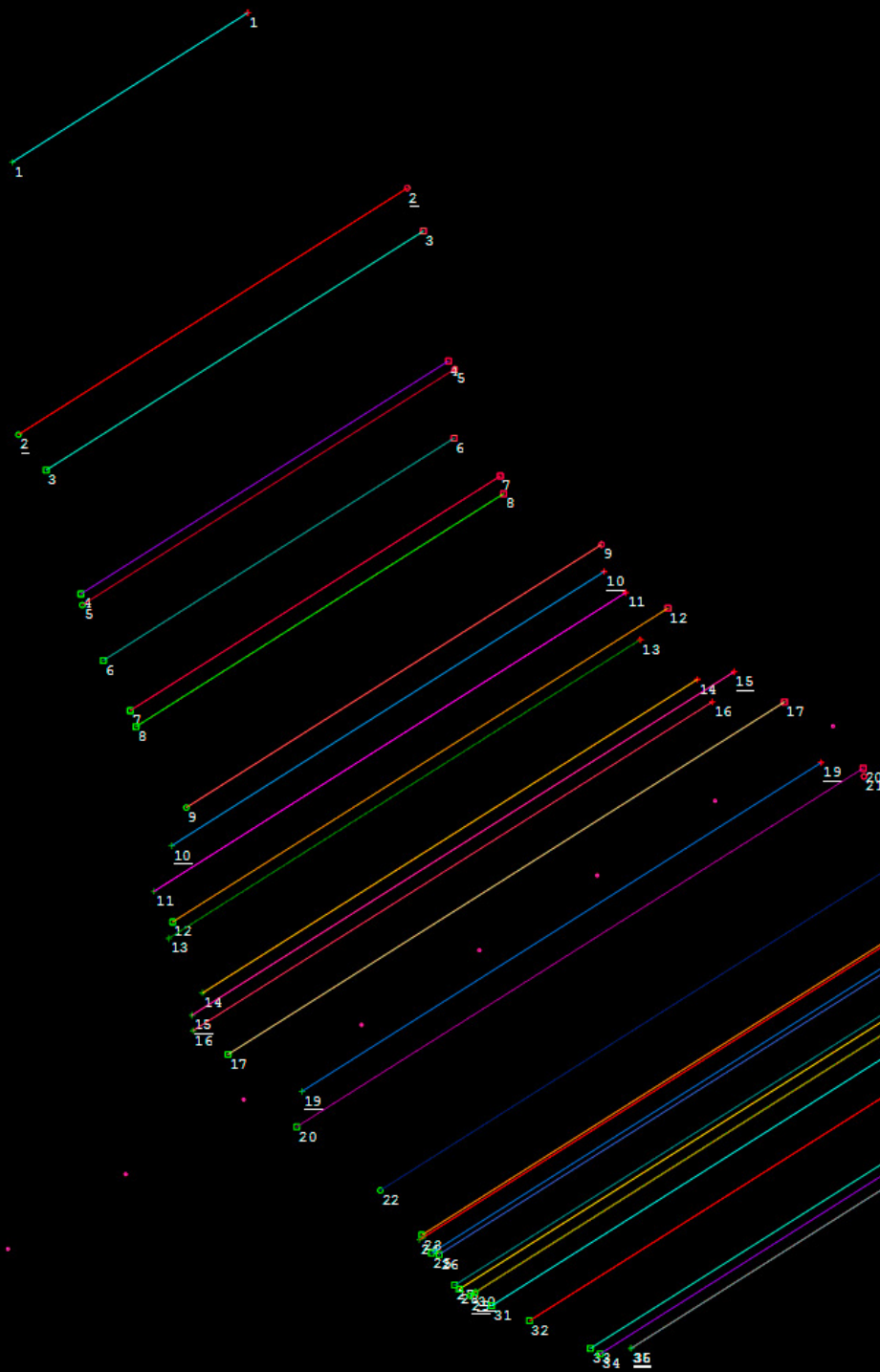




# Eine andere SB mit viele chords aus der Schweiz

(216) Kleopatra 2015 Mar 12 157.6 ± 7.9 × 68.7 ± 3.0 km, PA 33.6° ± 1.4°  
Geocentric X 1636.0 ± 1.8 Y 5465.8 ± 2.4 km

N



E

Find best fit

Center X -105.1 ☐ 0.0  
Center Y 148.1 ☐ 0.0

Major axis (km) 157.6 ☐ 0.0  
Minor axis (km) 68.7 ☐ 0.0  
Orientation 33.6 ☐ 0.0

a/b=2.29  
dM=-0.90  
Motion 13.10km/s, X

Double star or double asteroid  
Sepn (masec) 0.0 ☐ 0.0  
PA of 2nd 0.0 ☐ 0.0

Show: ☒ Both ☐ Primary ☐ Secondary  
A= 10.0 B= 10.0 PA= 0.0

☐ Circular ☒ Include Miss events

Plot scale  Quality Good

RMS fit -0.3 ± 7.7 km

|        |                            |
|--------|----------------------------|
| 1      | Henk Bulder, NL            |
| 2      | Friedhelm Dorst, DE        |
| 3      | Oliver Kloes, DE           |
| 4      | Jan-Maarten Winkel, NL     |
| 5      | Otto Farago, DE            |
| 6      | Vasilis Metallinos, GR     |
| 7      | Harrie Rutten, NL          |
| 8      | Henk De Groot, NL          |
| 9      | Bernd Gaehrken, DE         |
| 10     | Hans Kostense, NL          |
| 11     | D Fischer/HG Purucker/R St |
| 12     | Eberhard Bredner, FR       |
| 13     | Andre Mueller, DE          |
| 14     | Lex Blommers, NL           |
| 15     | K Moddemeijer/P Bastiaanse |
| 16     | Christof Sauter, CH        |
| 17     | Maxime Devogele, BE        |
| 18 (P) | Prediction                 |
| 19     | Mike Kohl, CH              |
| 20     | Jose De Queiroz, CH        |
| 21     | Karl-Ludwig Bath, DE       |
| 22     | Fernand Emering, LU        |
| 23     | F. Van Den Abbeel, BE      |
| 24     | Rene Bourtembourg, BE      |
| 25     | Jonas Schenker, CH         |
| 26     | J Lecacheux/E Meza, FR     |
| 27     | Stefano Sposetti, CH       |
| 28     | Roberto Di Luca, IT        |
| 29     | T. Pauwels/P. De Cat, BE   |
| 30     | C Demeautis/D Matter, FR   |
| 31     | Stefano Sposetti, CH       |
| 32     | Andrea Manna, CH           |
| 33     | Alberto Ossola, CH         |
| 34     | Carlo Gualdoni, IT         |
| 35     | Roland Boninsegna, BE      |
| 36     | Roland Decellier, BE       |
| 37 (M) | Fabrizio Ciabattari, IT    |
| 38 (M) | Mauro Bachini, IT          |
| 39 (M) | Giancarlo Bonatti, IT      |
| 40 (M) | Alex Pratt, UK             |
| 41 (M) | Gilles Sautot, FR          |
| 42 (M) | G Sautot/E Vauthrin, FR    |
| 43 (M) | Olivier Dechambre, FR      |
| 44 (M) | Jerome Berthier, FR        |
| 45 (M) | Frederic Vachier, FR       |
| 46 (M) | B. Carry/M. Pajuelo, FR    |
| 47 (M) | Joan Rovira, ES            |
| 48 (M) |                            |
| 49 (M) |                            |
| 50 (M) |                            |
| 51 (M) |                            |

# Was macht man mit den positiven Messungen?

The following list of 266 observers relating to astrometry derived from asteroidal occultations will be published in the Minor Planet Circulars in the next few days:

## 244 Geocentric Occultation Observation

D. Herald, 3 Lupin Pl., Murrumbateman, NSW 2582, Australia

[DRHerald@suppressed.au]

Observers F. Van Den Abbeel, F. Aceituno, R. Aikawa, H. Akazawa, E. Al,

W. Allen, C. Anderson, A. Asai, R. Auburger, M. Audejean, S. Baba,

P. Bacci, M. Bachini, J. Bardecker, S. Barksdale, T. Barry, J. Barton,

P. Baruffetti, J. Bean, V. Belousov, C. Bennett, M. Bigi, B. Billard,

P. Birtwhistle, T. Blank, J. Bogado, R. Boninsegna, M. Bonnardeau,

J. Bourgeois, G. Brabant, J. Bradshaw, E. Bredner, D. Breit, R. Bria,

D. Briggs, J. Broughton, M. Buie, W. Burzynski, R. Bush, V. Buso,

P. Cam, D. Campbell, R. Campbell, F. Casarramona, R. Casas, D. Caton.

L. Cervinka, M. Chesnes, P. Closas, F. Colas, S. Conard, M. Conjat

E. Conseil, I. Curtis, G. Dangi, O. Dechambre, S. Deen, J. DelgadoAs a general rule, events where there was only one successful observatio

P. Delincak, F. Delucchi, P. Denyer, A. Dobson, J. Dumont, B. Dunfasteroid astrometry received by the MPC, which is typically 100's of mas

D. Dunham, J. Dunham, E. Edens, D. Eisfeldt, C. Ellington, P. Enskuncertainties of around 1 mas or less.

P. Eschman, P. Facuna, J. Ferreira, M. Filipek, M. Forbes, E. Frap

M. Fulbright, B. Gaehrken, G. Galletti, G. Galli, J. Gangloff, J.

D. Gault, R. Gault, T. George, H. Gimple, W. Gimple, P. Graham,

V. Granata, K. Green, R. Greimel, H. De Groot, C. Gualdoni, K. Hal

H. Hamanowa, K. Hansen, A. Hashimoto, T. Hayamizu, S. Hayashi,

T. Haymes, D. Herald, L. Hermansson, D. Hooper, T. Horaguchi,

K. Hornoch, K. Hosoi, H. Ichikawa, M. Ida, R. Idaczyk, Y. Ikari, T

M. Inou, S. Insana, M. Ishida, M. Ishii, T. Ito, E. Iverson, T. Ja

M. Jennings, M. Johansson, L. Johnson, R. Jones, J. Juan, K. Kagey

H. Karasaki, H. Kasebe, M. Kashiwagura, E. Katayama, B. Kattentidt

A. Kawakita, R. Kawasaki, S. Kawawaki, M. Kehrl, J. Keller, S. Ke

S. Kidd, A. Kisanuki, K. Kitazaki, B. Klem, D. Klinglesmith, O. K

A. Klotz, T. Kojima, R. Komzik, S. Korecki, A. Kreutzer, B. Krobuz

J. Kubanek, J. Kuwahara, M. Lavayssiere, J. Lecacheux, B. Leonard,

B. Loader, G. Lyzenga, C. MacDougall, P. MacHado, P. Maksym, P. Mal

J. Manek, A. Manna, J. Marques, L. Martorell, P. Martorell, G. McK

C. McPartlin, R. Meadows, J. Menke, S. Messner, H. Miku?z, D. Mill

J. Milner, T. Minobe, K. Miyashita, P. Montague, J. Moore, Z. Mora

W. Morgan, T. Morikawa, G. Mroz, G. Murawski, Y. Nakashima,

Y. Nakasima, R. Neuvirt, J. Newman, O. Ninomiya, R. Nolthenius,

P. Nosworthy, R. Nugent, D. Oesper, J. Oliveira, A. Olsen, T. Orib

A. Ossola, I. Otsuki, M. Owada, W. Owen, A. Pal, L. Palmer, B. Palmquist,

C. Perello, J. Polak, A. Pratt, S. Preston, V. Priban, C. Ratinaud, R. Reaves,

C. Ries, J. Ripero, D. Roemer, W. Rothe, M. Rottenborn, J. Rovira,

B. Rutersten, J. Sanchez, B. Sandy, N. Sasanuma, H. Sato, M. Sato,

R. Schaefer, A. Scheck, J. Schenker, C. Schnabel, M. Scott, A. Selva,

Y. Shukuya, F. Signoret, M. Skrutskie, M. Smith, N. Smith, S. Sposetti,

R. Stanton, Y. Sugiyama, H. Suzuki, E. Swift, T. Swift, H. Takashima,

J. Talbot, T. Tanaka, N. Tatsumi, T. Terada, K. Terakubo, C. Terrill,

W. Thomas, H. Togashi, H. Tomioka, R. Trank, M. Turchenko, S. Uchiyama,

S. Uehara, Y. Ueno, M. Unwin, M. Urabe, L. Uruena, G. Vaudescal,

R. Venable, D. Vizzoni, E. Warner, H. Watanabe, M. Watanabe, D. Watson,

C. Wiesenborn, J. Winkel, A. Yaeza, H. Yamamura, R. Yken, K. Yokoyama,

H. Yoshihara

Measurers D. Herald, E. Frappa, T. Hayamizu, S. Kerr, B. Timerson

The astrometry is for the following 338 events. The columns are:

\* asteroid number

\* measured date of closest geocentric approach (year, month, day, uncertainty in days)

| N  | YYYY | M  | D.ddddddd ± D.ddddddd  | Δx s.ssss ± mas | PA ddd.ddd |
|----|------|----|------------------------|-----------------|------------|
| 3  | 2017 | 5  | 5.9939952 ± 0.0000953  | 2.1535 ± 82.4   | 279.808    |
| 5  | 2017 | 8  | 19.8370043 ± 0.0000911 | 0.2334 ± 46.9   | 296.762    |
| 8  | 2018 | 1  | 5.6588679 ± 0.0000362  | 5.2965 ± 123.7  | 199.447    |
| 10 | 2017 | 2  | 26.6949035 ± 0.0000013 | 1.0946 ± 7.4    | 179.150    |
| 12 | 2017 | 8  | 14.4648278 ± 0.0000117 | 0.4894 ± 58.8   | 192.727    |
| 13 | 2015 | 9  | 19.3459667 ± 0.0000410 | 4.2437 ± 118.9  | 353.347    |
| 18 | 2017 | 11 | 19.2351277 ± 0.0000005 | 1.8933 ± 0.6    | 16.880     |
| 19 | 2016 | 8  | 15.6010896 ± 0.0000561 | 2.5508 ± 161.2  | 161.272    |
| 19 | 2017 | 9  | 12.1598557 ± 0.0000148 | 1.7185 ± 78.3   | 11.065     |
| 20 | 2017 | 9  | 29.6987752 ± 0.0000240 | 3.5439 ± 77.5   | 179.877    |
| 20 | 2017 | 11 | 12.5860698 ± 0.0004922 | 3.0434 ± 79.2   | 347.598    |
| 22 | 2017 | 3  | 14.8900372 ± 0.0000295 | 2.0992 ± 63.7   | 7.747      |
| 25 | 2017 | 3  | 3.4553450 ± 0.0000050  | 3.6970 ± 32.9   | 340.957    |
| 25 | 2017 | 5  | 16.0867623 ± 0.0000094 | 4.0295 ± 52.5   | 307.912    |
| 25 | 2017 | 9  | 23.3539151 ± 0.0000144 | 6.8867 ± 64.5   | 59.534     |
| 25 | 2017 | 12 | 17.2062847 ± 0.0000060 | 2.4806 ± 34.6   | 358.456    |
| 31 | 2017 | 9  | 24.1881084 ± 0.0000282 | 1.1710 ± 113.0  | 323.132    |

# Danke

an diejenigen die mit positiven und mit negativen  
Messungen beigetragen haben.

Sie haben einen wichtigen Beitrag zur Astronomie geleistet.