

自宅近くの田んぼのあぜ道での観測です。観測地に着いたときは明るく北極星も見えず、雲もありました。望遠鏡を組み立てたところに、ようやく北極星が双眼鏡で確認することができ望遠鏡のセットも完了です。目的星も比較的楽に導入することができました。目的星に近づく小惑星もわかりました。今回はSERでの記録です。limovie2004Eで解析しました。HACSTIP改良版HACSTIP 2.0.0.12を使わず観測しましたので、観測開始直ぐに止まっていた。以下、観測前と後のGPS Time Logです。

GPS Time Log :

[Time difference (ms)] = [PC Time] - [GPS Time]

6019.69	2026-02-04 18:46:48.019	2026-02-04 18:46:42.000
6019.77	2026-02-04 18:46:49.019	2026-02-04 18:46:43.000
6019.73	2026-02-04 18:46:50.019	2026-02-04 18:46:44.000
6019.83	2026-02-04 18:46:51.019	2026-02-04 18:46:45.000 Set_PC_Time
-3.13	2026-02-04 18:46:45.996	2026-02-04 18:46:46.000 Set_PC_Time
-5.56	2026-02-04 18:46:46.994	2026-02-04 18:46:47.000 Set_PC_Time
-2.11	2026-02-04 18:46:47.997	2026-02-04 18:46:48.000 Set_PC_Time

↑観測前に停止している ↓観測後に再立ち上げ この間に観測。秒の狂いはなし。

GPS Time Log :

[Time difference (ms)] = [PC Time] - [GPS Time]

6.97	2026-02-04 18:54:01.006	2026-02-04 18:54:01.000
7.07	2026-02-04 18:54:02.007	2026-02-04 18:54:02.000
7.08	2026-02-04 18:54:03.007	2026-02-04 18:54:03.000
7.11	2026-02-04 18:54:04.007	2026-02-04 18:54:04.000
7.14	2026-02-04 18:54:05.007	2026-02-04 18:54:05.000 Set_PC_Time
-5.26	2026-02-04 18:54:05.994	2026-02-04 18:54:06.000 Set_PC_Time
-2.32	2026-02-04 18:54:06.997	2026-02-04 18:54:07.000 Set_PC_Time
0.01	2026-02-04 18:54:08.000	2026-02-04 18:54:08.000 Set_PC_Time
0.11	2026-02-04 18:54:09.000	2026-02-04 18:54:09.000 Set_PC_Time

1 PPS を使って補正は可能

Limovie II "AETHER" protomodel 2.0.0.4E

2026.02.04 09:52:23:673

CLR

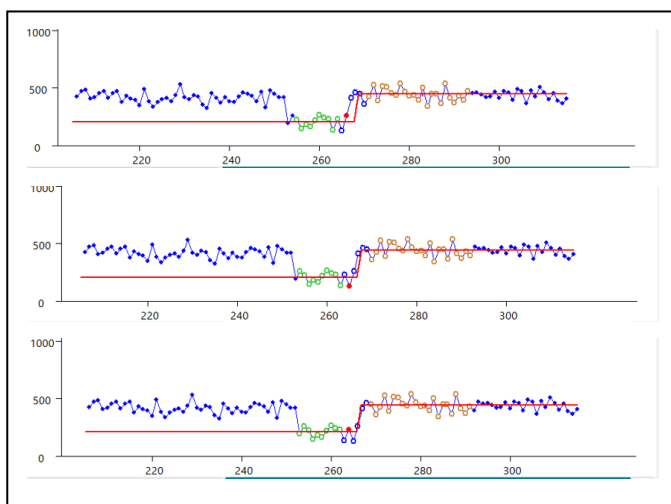
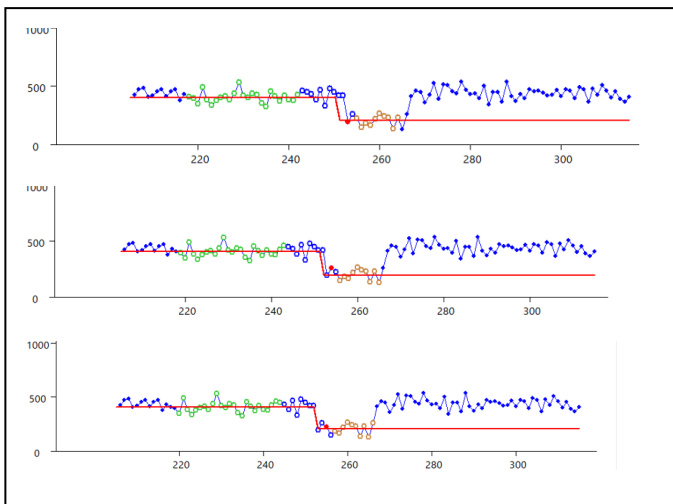
2500
2000
1500
1000
500
0

300

Copy to Clipboard Save to file Zoom Position

BKG shape
 Standard LunarLimb
 Image to Clipboard
 Star image fit Edit53
 5
 Aperture 3 Background Inner 5 Outer 20
 Tracking radius 6 Track Drift Tolerance
 Linked tracking 3
 Current operation A_pply to measure
 2026.02.04 Exposure 338.0007 msec
 09 52 28.2944 28.4634 28.6324
 A_pply to measu
 B_base of trackin
 E:\2026\20
 Video
 Preliminary LED Time Measure / identify Diffraction fit Report Files Tools
 <<<Light measurement : obtaining a light
 Click the target star on video image.
 The measurement region will be centered on the star.
 To add other comparison star, right click the star
 and select "Add star"
 Perform mesurement with [stop icon], and stop with [stop icon].
 Correction for thin cloud absorption <<< If necessary
 <<< Identify penomenon / Observer / Site>>>
 Spectral chart
 Read Asteroid / Star information
 and Set Observer / Site
 <<< Make a set of .dat format light curve data for
 Light curve data which is displayed
 in left graph will be added to
 observation report text as above. Add .dat format Light
 curve data to report
 Next, go to Diffraction fit

赤●位置を変えてフィッティングをする。DR とも 3つ目を採用



Limovie II "AETHER" protomodel 2.0.0.4E

2026 02 04 09:52:26:984

CLR

2026 Feb 4, (76)Freia occults UCAC4 479-001350 observed by Miyoshi Ida

Copy to Clipboard Save to file Zoom Position

BKG shape: Standard LunarLimb

Image to Clipboard: Star image fit

Tracking radius: 6, Drift: 3, Tolerance: 3

Aperture: 3, 5, 20

Current operation: A_pply to measure

2026.02.04 Exposure 338.0007 msec

09 52 26.6044 26.7734 26.9424

E:\2026\20

Preliminary	LED Time	Measure / identify	Diffraction fit	Report Files	Tools
D/R	h m s	1 sigma error	S/N	Notes	% Time as Int64
D1	9 52 25.934	0.088	4.24		100 6390579554593395

D 9 52 25.934 0.088 4.24 100

Double / multiple star: Angular diameter 0.0 mas, Contact angle 0 deg.

Fitting range: Use predicted mag drop

Statistic range: Average

Fit to diffraction curve / obtain event time

Auto fit: None Contact A. Step height Time dif.

Make Report

Limovie II "AETHER" protomodel 2.0.0.4E

2026 02 04 09:52:30:026

CLR

2026 Feb 4, (76)Freia occults UCAC4 479-001350 observed by Miyoshi Ida

Copy to Clipboard Save to file Zoom Position

BKG shape: Standard LunarLimb

Image to Clipboard: Star image fit

Tracking radius: 6, Drift: 3, Tolerance: 3

Aperture: 3, 5, 20

Current operation: A_pply to measure

2026.02.04 Exposure 338.0007 msec

09 52 29.6464 29.8154 29.9844

E:\2026\20

Preliminary	LED Time	Measure / identify	Diffraction fit	Report Files	Tools
D/R	h m s	1 sigma error	S/N	Notes	% Time as Int64
D1	9 52 25.934	0.088	4.24		100 6390579554593395
R1	9 52 30.594	0.098	3.97		100 6390579555059406

R 9 52 30.594 0.098 3.97 100

Double / multiple star: Angular diameter 0.0 mas, Contact angle 0 deg.

Fitting range: Use predicted mag drop

Statistic range: Average

Fit to diffraction curve / obtain event time

Auto fit: None Contact A. Step height Time dif.

Make Report

観測地 滋賀県東近江市市辺町
北緯35度6分16.0秒 東経136度10分41.1秒
海拔120m (国土地理院電子国土Webより)

***** Asteroid occultation Report *****

[Date] 2026. 2. 4 [Approx hour] 9.8
[Star] UCAC4 479-001350 VMag=13.89 RMag=13.42
[Asteroid] (76)Freia 14.02 mag.

[Observer] 1: Miyoshi Ida 2:
[Location] Higashiomi, Shiga, JPN
[Longitude] 136o10'41.1" E
[Latitude] 35o06'16.0" N
[Altitude] 120m
[Datum] WGS84

[Event time] D: 9h52m25.934s +/- 0.088s (UTC) S/N=4.24 Ctt=0
R: 9h52m30.594s +/- 0.098s (UTC) S/N=3.97 Ctt=0
[Predicted Time error] 0.27 sec [RUWE] 1.05

[Recorded] From 9h51m1s
To 9h54m27s

[Mag. drop] D: Measured: 0.75 ; Predicted: 0.8
R: Measured: 0.79 ; Predicted: 0.8

[Telescope] Aperture: 20cm Type: SCT F=4.0
[Camera] a Analog or Digital video , Model= ZWO ASI290MM
[Exposure] Set: 338.0msec, Measure: 338.0007msec
[Setting] Area: 1936x1096 ; Binning=2
Gain: 390 ; Brightness: 125 ; High Speed Mode: Off
[Time keep] a GPS ; Model: GT502MGG-N
[Evidence] GPS Time Log : Recorded ; Screen shot: Recorded

[Condition] Stability: 1 Steady Transparency: 1 Clear
[Remarks]

[Additional comment]

<AsteroidOccultations>

<Event>

<Date>2026|2|4| 9.8</Date>

<Details>

<Star>UCAC4|479-

001350|0|0.000000000|0.000000000|0.00|0.00|0.00|0|0.00000000|0.0000000|25.00|25.00|25.00|0</Star>

<Asteroid>76|Freia|0.00000000|0.00000000|0.0000000|0.0000000|0.0000000|0.0000000|1.00000|0.00000|0.0|1.0|20.0</Asteroid>

</Details>

<Observations>
<Observer>
<ID>1|Miyoshi Ida||0|Higashiomi, Shiga|JPN|+136 10 41.1|+35 06 16.0|120| |20|3|a|a</ID>
<Conditions>1|1|||</Conditions>
<D>9 52 25.934|D|0.088||| </D>
<R>9 52 30.594|D|0.098||| </R>
</Observer>
</Observations>
<LastEdited>2026|2|7</LastEdited>
</Event>
</AsteroidOccultations>

Text-based Light curve
(76)_0000002026 Feb 4_095210_Miyoshi_Ida.dat

Date: 2026 Feb 4 9:52:10.21: 36.84: 110
Star: 0: 0: 0: 0-0-0: 479-001350
Observer: +136:10:41.1: +35:06:16.0: 120: Miyoshi Ida
Object: Asteroid: 76: Freia
Values:427:471:487:405:420:458:473:411:455:475:380:429:406:
395:348:490:386:339:378:404:414:384:438:533:418:400:437:423
:355:324:457:412:370:417:386:376:424:460:447:430:386:469:33
1:481:449:417:418:197:261:226:149:186:163:221:268:243:229:1
35:229:131:259:414:460:449:361:425:527:388:514:508:457:440:
538:468:434:437:395:501:340:448:450:367:539:413:374:433:398
:470:456:463:442:419:423:467:412:472:459:394:490:470:365:47
8:424:509:463:400:458:388:367:410