

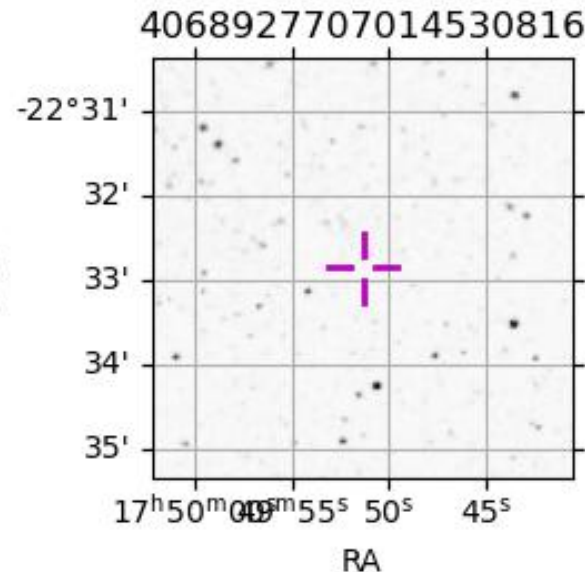
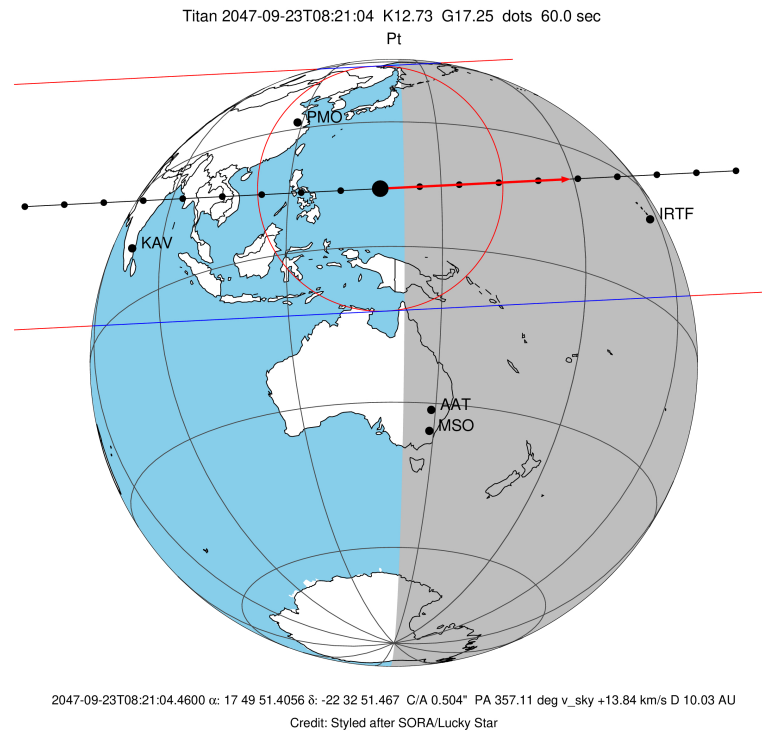
target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2047-09-23T08:21:04.460  
 Event type : Pt  
 : Titan occs: topocentric, not geocentric  
 : Not a ringed target  
 Gaia source ID : 4068927707014530816  
 2Mass ID (if available) : 17495142-2232515

ICRS Star Coord at Epoch: 17h 49m 51.40555s -22:32:51.46691s  
 RUWE (>1.4 is poor) : 0.96  
 K magnitude : 12.732  
 G magnitude : 17.247  
 RP magnitude : 16.008  
 BP magnitude : 18.674  
 DUPflag : 0  
 Distance (au) : 10.033  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 13.84  
 Sun-Target sep (deg) : 88.07  
 Sun-Moon sep (deg) : 38.73  
 B (ring opening deg) : 26.85  
 PA of pole (deg) : 5.47  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.503  
 C/A sky separation (km) : 3661.9  
 NAIF SPICE kernels : RAJobs\_U111+rgf16.spk

URKALLv1.spk  
 naif0012.tls  
 nep097.bsp  
 nep101.bsp  
 sat4401.bsp

Observable events with sun below -5 deg and altitude above 5 deg

| Obs  | Location                          | lat   | Elon  | Target | Observed Events Interval    | OCode |
|------|-----------------------------------|-------|-------|--------|-----------------------------|-------|
| PIC  | Pic du Midi                       | 42.9  | 0.1   |        |                             | Pnn   |
| PAL  | Palomar Mt (200")                 | 33.4  | 243.1 |        |                             | Pnn   |
| PMO  | Purple Mtn Obs. Nanking           | 32.1  | 118.8 |        |                             | Pnn   |
| KPNO | Kitt Peak Natl Obs                | 32.0  | 248.4 |        |                             | Pnn   |
| MCD  | McDonald Obs. 2.7m                | 30.7  | 256.0 |        |                             | Pnn   |
| TEN  | Teide Obs./Tenerife               | 28.3  | 343.5 |        |                             | Pnn   |
| IRTF | Mauna Kea/IRTF                    | 19.8  | 204.5 | + +    | SEP 23 08:24 - SEP 23 08:30 | Pie   |
| KAV  | Kavalur Observatory               | 12.6  | 78.8  |        |                             | Pnn   |
| RIO  | Rio de Janeiro                    | -22.9 | 316.8 |        |                             | Pnn   |
| ESO  | European Southern Obs. (3.6m)     | -29.3 | 289.3 |        |                             | Pnn   |
| AAT  | Siding Spring (AAT)               | -31.3 | 149.1 |        |                             | Pnn   |
| SAAO | So. Afr. Astro. Obs. (Sutherland) | -32.4 | 20.8  |        |                             | Pnn   |
| MSO  | Mt. Stromlo Observatory           | -35.3 | 149.0 |        |                             | Pnn   |



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target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2047-09-23T08:27:49.310
Event type           : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code        : IRTF
Location             : Mauna Kea/IRTF
Latitude (deg)       : 19.82622
E. Longitude (deg)   : 204.52800
Altitude (km)        : 4.168
Gaia source ID       : 4068927707014530816
2Mass ID (if available) : 17495142-2232515
ICRS Star Coord at Epoch: 17h 49m 51.40555s -22:32:51.46691s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 12.732
G magnitude          : 17.247
RP magnitude         : 16.008
BP magnitude         : 18.674
DUPflag             : 0
Distance (au)        : 10.033
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 13.84
Sun-Target sep (deg) : 88.07
Sun-Moon sep (deg)   : 39.59
B (ring opening deg) : 26.85
PA of pole (deg)     : 5.47
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.141
C/A sky separation (km) : 1024.7
NAIF SPICE kernels   : RAJobs_U111+rgf16.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
IAU_NEPTUNE_for_RINGFIT.tpc.BECAREFUL
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk

```

x: target alt < 5.0 deg or sun > -5.0 deg

| Target | I/E | UTC                     | alt   | alt-sun | radius | lat-geo | lat-geodetic |
|--------|-----|-------------------------|-------|---------|--------|---------|--------------|
| Titan  | I   | 2047-09-23T08:24:56.548 | 14.00 | -56.83  | 2575.2 | -12.84  | -12.85       |
| Titan  | E   | 2047-09-23T08:30:41.943 | 12.82 | -57.96  | 2575.1 | -28.62  | -28.63       |

