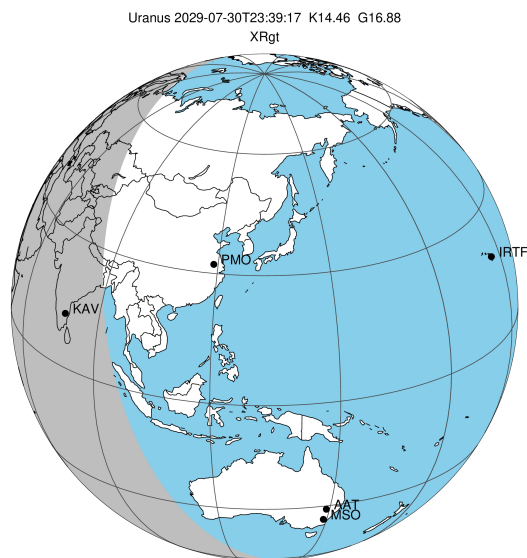


target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2029-07-30T23:39:17.070  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 3418319773164420992  
 2Mass ID (if available) : 05030819+2248143

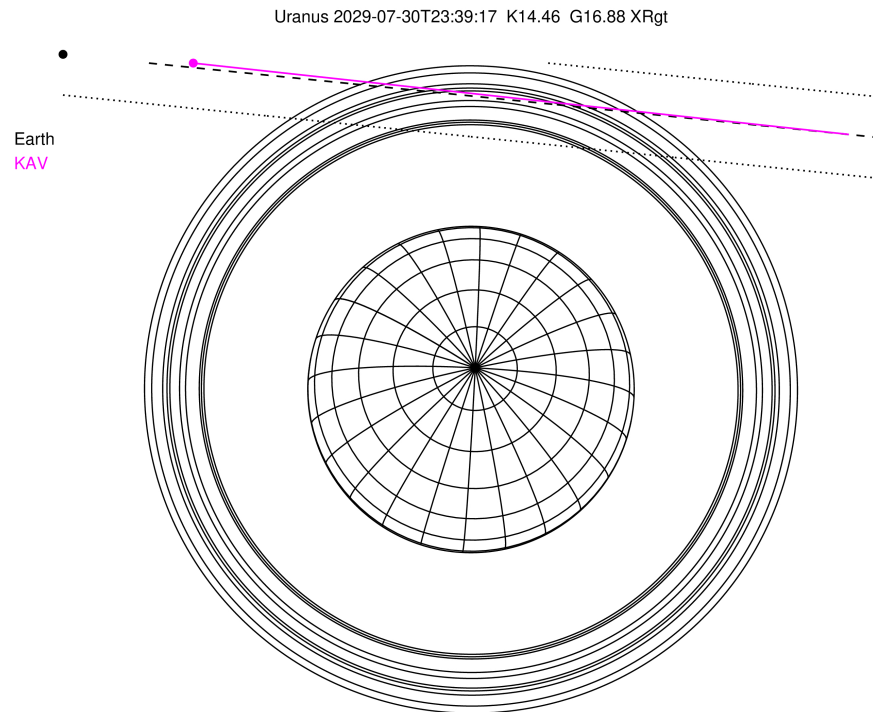
ICRS Star Coord at Epoch: 05h 03m 08.18587s +22:48:14.26035s

RUWE (>1.4 is poor) : 1.11  
 K magnitude : 14.457  
 G magnitude : 16.884  
 RP magnitude : 16.131  
 BP magnitude : 17.461  
 DUPflag : 0  
 Distance (au) : 19.875  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 25.18  
 Sun-Target sep (deg) : 50.75  
 Sun-Moon sep (deg) : 66.53  
 B (ring opening deg) : 82.24  
 PA of pole (deg) : -10.98

#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

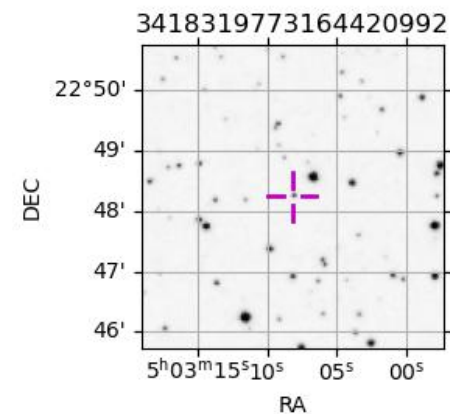


2029-07-30T23:39:17.0700 ex: 05 03 08.1859 s: +22 48 14.260 C/A 3.177" PA 174.18 deg v\_sky +25.18 km/s D 19.88 AU  
 Credit: Styled after SORA/Lucky Star



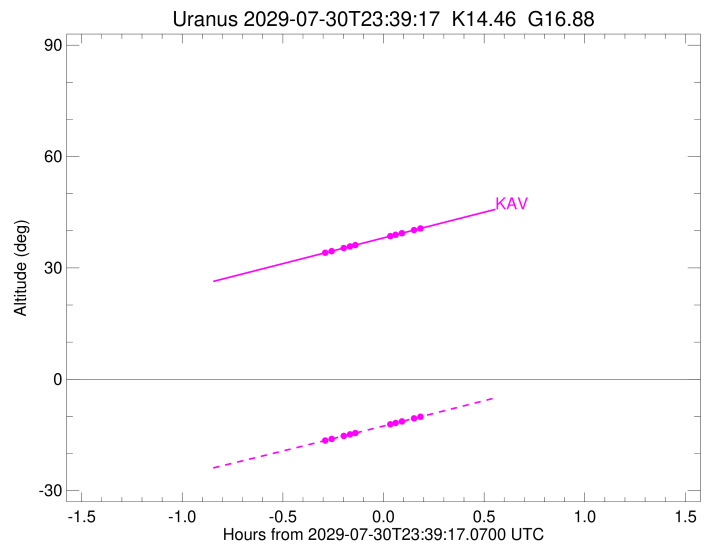
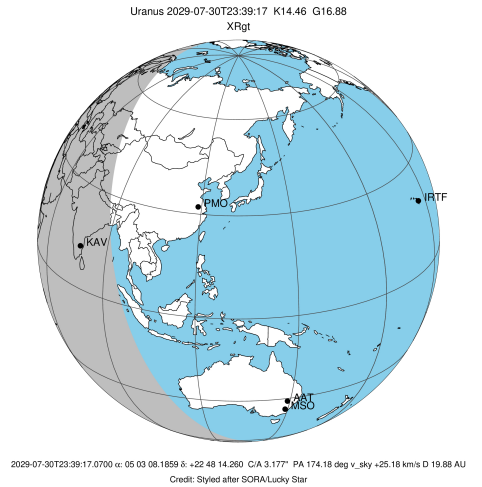
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4					PnnRnn
MCD	McDonald Obs. 2.7m	30.7	256.0					PnnRnn
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observatory	12.6	78.8	+++++		+++++	JUL 30 23:21 - JUL 30 23:49	PnnRie
RIO	Rio de Janeiro	-22.9	316.8					PnnRnn
ESO	European Southern Obs	-29.3	289.3					PnnRnn
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2029-07-30T23:36:08.670
Event type          : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Observer code       : KAV
Location            : Kavalur Observatory
Latitude (deg)      : 12.57556
E. Longitude (deg)  : 78.83167
Altitude (km)       : 0.722
Gaia source ID      : 3418319773164420992
2Mass ID (if available) : 05030819+2248143
ICRS Star Coord at Epoch: 05h 03m 08.18587s +22:48:14.26035s
RUWE (>1.4 is poor) : 1.11
K magnitude         : 14.457
G magnitude         : 16.884
RP magnitude        : 16.131
BP magnitude        : 17.461
DUPflag            : 0
Distance (au)       : 19.875
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : 25.18
Sun-Target sep (deg) : 50.75
Sun-Moon sep (deg)  : 66.76
B (ring opening deg) : 82.24
PA of pole (deg)    : -10.98
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.198
C/A sky separation (km) : 46102.4
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall1.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall1.bsp
ural61.bsp
vgr2.ural61.bsp
peph.ural60.bsp
earthstns_itrf93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
  
```



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2029-07-30T23:21:59.065		34.09	-16.49	51114.31	-10.14		
lambda	I	2029-07-30T23:23:50.695		34.52	-16.07	50026.71	-9.15		
delta	I	2029-07-30T23:27:28.299		35.36	-15.26	48300.35	-6.67		
gamma	I	2029-07-30T23:29:21.138		35.79	-14.83	47625.01	-5.29		
eta	I	2029-07-30T23:30:56.956		36.16	-14.48	47176.12	-4.07		

No planet occultations

eta	E	2029-07-30T23:41:14.823		38.54	-12.15	47176.12	4.07		
gamma	E	2029-07-30T23:42:51.154		38.91	-11.79	47627.27	5.29		
delta	E	2029-07-30T23:44:43.697		39.34	-11.37	48300.35	6.66		
lambda	E	2029-07-30T23:48:21.646		40.18	-10.54	50026.71	9.14		
epsilon	E	2029-07-30T23:49:45.065		40.50	-10.23	50825.58	10.12		