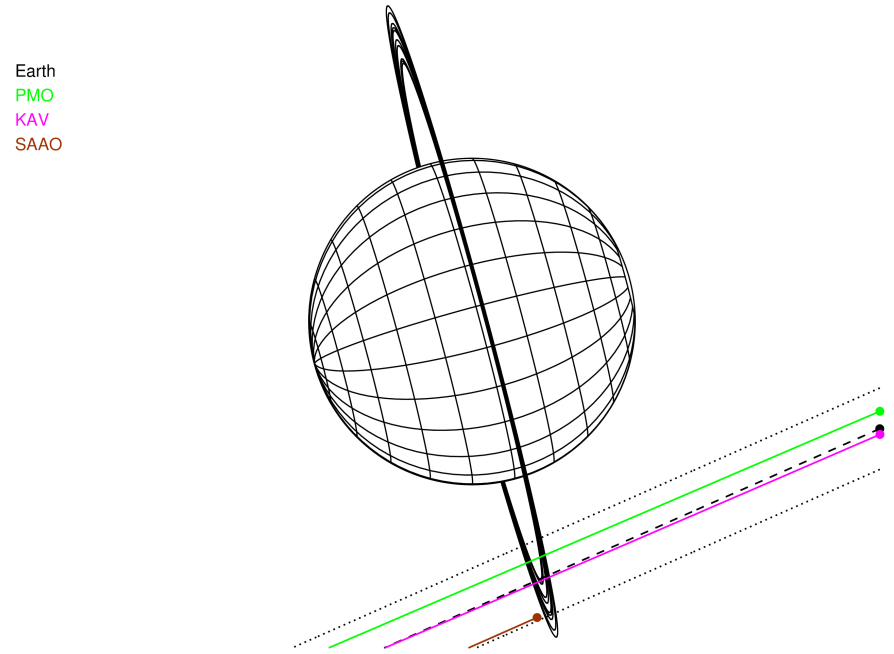
Stellar occultation prediction by rfrench@wellesley.edu Sun Jun 25 02:50:09 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2049-01-21T20:03:44.340
Event type : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Gaia source ID : 3816725131427497472
2Mass ID (if available) : 11051552+0643383

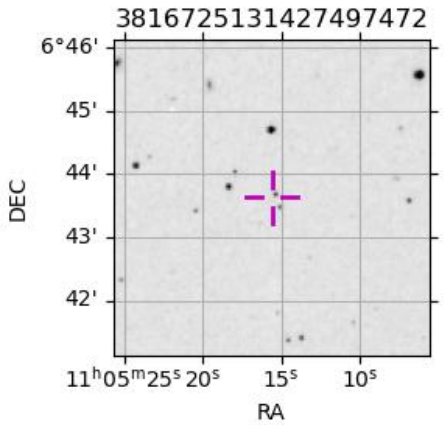
ICRS Star Coord at Epoch: 11h 05m 15.57712s +06:43:36.73923s
RUWE (>1.4 is poor) : 0.92
K magnitude : 13.821
G magnitude : 17.331
RP magnitude : 16.203
BP magnitude : 18.589
DUPflag : 0
Distance (au) : 17.560
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : -14.79
Sun-Target sep (deg) : 136.73
Sun-Moon sep (deg) : 14.22
B (ring opening deg) : 2.71
PA of pole (deg) : 104.97

#	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

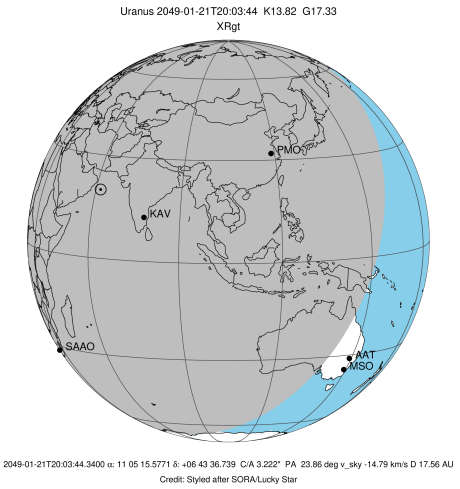


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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	++++++++++		++++++++++	JAN 21 20:08 - JAN 21 20:11	PnnRie
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	+++++++++		+++++++++	JAN 21 20:12 - JAN 21 20:15	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



Uranus_2049-01-21T20_03_44.3400_PMO.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:21:32 2023

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target                  : Uranus
target radius (km)      :  25559.00
C/A epoch               : 2049-01-21T20:04:04.060
Event type              : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Observer code           : PMO
Location                : Purple Mtn Obs. Nanking
Latitude (deg)          :  32.06667
E. Longitude (deg)      : 118.82089
Altitude (km)           :   0.364
Gaia source ID          : 3816725131427497472
2Mass ID (if available) : 11051552+0643383
ICRS Star Coord at Epoch: 11h 05m 15.57712s +06:43:36.73923s
RUWE (>1.4 is poor)     :   0.92
K magnitude             : 13.821
G magnitude             : 17.331
RP magnitude            : 16.203
BP magnitude            : 18.589
DUPflag                 : 0
Distance (au)           : 17.560
f0 (km)                 :       0.000
g0 (km)                 :       0.000
skyplane vel. (km/s)    : -14.79
Sun-Target sep (deg)    :  136.73
Sun-Moon sep (deg)      :   14.62
B (ring opening deg)    :    2.71
PA of pole (deg)        :  104.97
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (")  :   2.993
C/A sky separation (km) :  38120.1
NAIF SPICE kernels      : RAJobs_U111+rgf15.spk
URKALLv1.spk
ura111.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.ura111.bsp
ura161.bsp
vgr2.ura161.bsp
peph.ura160.bsp
earthstns_itrf93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
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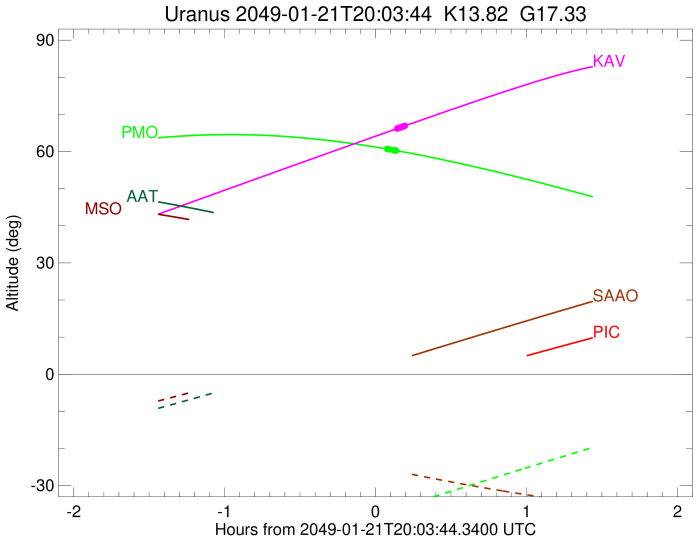


b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

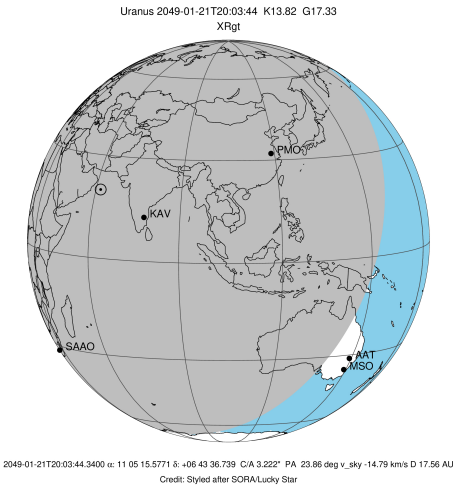
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2049-01-21T20:08:23.790		60.68	-36.90	50937.25	-208.70		
lambda	I	2049-01-21T20:08:28.241		60.67	-36.88	50026.72	-201.92		
delta	I	2049-01-21T20:08:37.024		60.65	-36.85	48300.34	-190.89		
gamma	I	2049-01-21T20:08:40.597		60.65	-36.84	47626.59	-186.09		
eta	I	2049-01-21T20:08:43.040		60.64	-36.83	47176.12	-182.64		
beta	I	2049-01-21T20:08:51.454		60.63	-36.80	45646.54	-169.52		
alpha	I	2049-01-21T20:08:56.345		60.62	-36.78	44750.76	-160.35		
4	I	2049-01-21T20:09:10.966		60.59	-36.73	42525.99	-132.45		
5	I	2049-01-21T20:09:14.960		60.58	-36.72	42314.02	-129.04		
6	I	2049-01-21T20:09:14.467		60.58	-36.72	41842.41	-122.81		

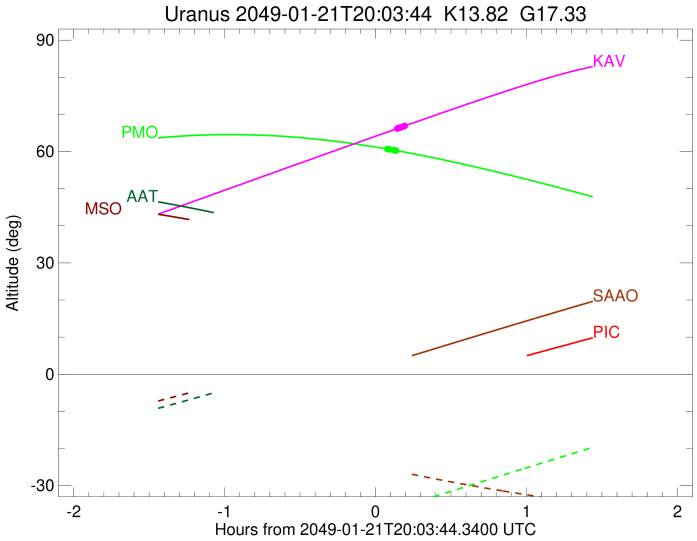
No planet occultations

6	E	2049-01-21T20:10:58.455		60.38	-36.35	41871.20	123.00		
5	E	2049-01-21T20:11:06.585		60.36	-36.32	42297.58	129.22		
4	E	2049-01-21T20:11:05.843		60.36	-36.33	42540.45	132.64		
alpha	E	2049-01-21T20:11:20.559		60.33	-36.27	44743.28	160.51		
beta	E	2049-01-21T20:11:25.998		60.32	-36.25	45642.45	169.67		
eta	E	2049-01-21T20:11:34.866		60.30	-36.22	47176.11	182.77		
gamma	E	2049-01-21T20:11:37.335		60.30	-36.21	47631.40	186.21		
delta	E	2049-01-21T20:11:40.882		60.29	-36.20	48300.35	191.01		
lambda	E	2049-01-21T20:11:49.666		60.27	-36.17	50026.71	202.02		
epsilon	E	2049-01-21T20:11:56.646		60.26	-36.15	51464.61	208.80		

Uranus_2049-01-21T20_03_44.3400_KAV.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:32:14 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2049-01-21T20:07:12.450
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 : 3816725131427497472
2Mass ID (if available) : 11051552+0643383
ICRS Star Coord at Epoch: 11h 05m 15.57712s +06:43:36.73923s
RUWE (>1.4 is poor) : 0.92
K magnitude : 13.821
G magnitude : 17.331
RP magnitude : 16.203
BP magnitude : 18.589
DUPflag : 0
Distance (au) : 17.560
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : -14.79
Sun-Target sep (deg) : 136.73
Sun-Moon sep (deg) : 14.05
B (ring opening deg) : 2.71
PA of pole (deg) : 104.97
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.264
C/A sky separation (km) : 41572.3
NAIF SPICE kernels : RAJobs_U111+rgf15.spk
URKALLv1.spk
ura111.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.ura111.bsp
ura161.bsp
vgr2.ura161.bsp
peph.ura160.bsp
earthstns_itrf93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk





b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2049-01-21T20:12:21.633		66.19	-70.33	50976.84	-181.58		
lambda	I	2049-01-21T20:12:27.030		66.21	-70.31	50026.71	-172.23		
delta	I	2049-01-21T20:12:37.521		66.25	-70.27	48300.34	-156.46		
gamma	I	2049-01-21T20:12:41.920		66.27	-70.25	47627.33	-149.38		
eta	I	2049-01-21T20:12:44.992		66.28	-70.24	47176.12	-144.20		
beta	I	2049-01-21T20:12:56.131		66.33	-70.20	45644.47	-123.68		
alpha	I	2049-01-21T20:13:03.323		66.36	-70.17	44752.14	-108.61		
4	I	2049-01-21T20:13:31.122		66.47	-70.07	42527.16	-47.97		
5	I	2049-01-21T20:13:38.978		66.50	-70.04	42314.51	-35.83		

No planet occultations

5	E	2049-01-21T20:14:09.858		66.62	-69.92	42310.33	36.08		
4	E	2049-01-21T20:14:12.543		66.63	-69.91	42532.40	48.20		
alpha	E	2049-01-21T20:14:40.458		66.74	-69.81	44747.08	108.82		
beta	E	2049-01-21T20:14:48.242		66.77	-69.78	45641.48	123.88		
eta	E	2049-01-21T20:14:59.871		66.82	-69.74	47176.12	144.39		
gamma	E	2049-01-21T20:15:02.968		66.83	-69.73	47631.17	149.56		
delta	E	2049-01-21T20:15:07.340		66.85	-69.71	48300.34	156.64		
lambda	E	2049-01-21T20:15:17.830		66.89	-69.67	50026.71	172.40		
epsilon	E	2049-01-21T20:15:25.746		66.92	-69.64	51434.37	181.75		