

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-07-21T02:13:50.220
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 52029680500892288
 2Mass ID (if available) : 04091059+2050143

Uranus 2026-07-21T02:13:50 K10.80 G12.63 PgtRgt

ICRS Star Coord at Epoch: 04h 09m 10.56858s +20:50:14.59254s

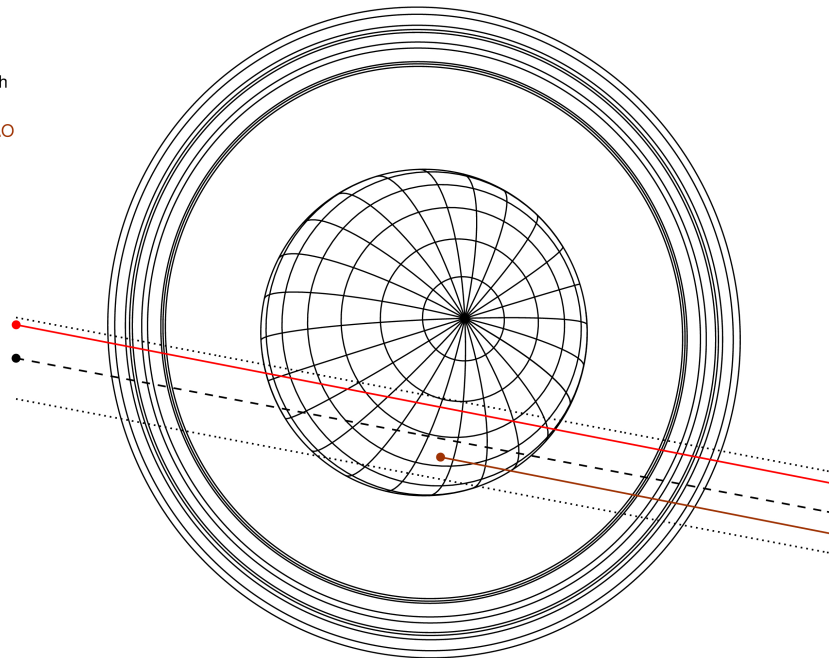
RUWE (>1.4 is poor) : 1.03
 K magnitude : 10.802
 G magnitude : 12.629
 RP magnitude : 12.010
 BP magnitude : 13.071
 DUPflag : 0
 Distance (au) : 20.038
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 23.94
 Sun-Target sep (deg) : 53.76
 Sun-Moon sep (deg) : 139.32
 B (ring opening deg) : 74.65
 PA of pole (deg) : -70.83

Uranus 2026-07-21T02:13:50 K10.80 G12.63
 PgtRgt



2026-07-21T02:13:50.2200 ex: 04 09 10.5686 s: +20 50 14.593 C/A 1.0877 PA 349.28 deg v_sky +23.94 km/s D 20.04 AU
 Credit: Styled after SORA/Lucky Star

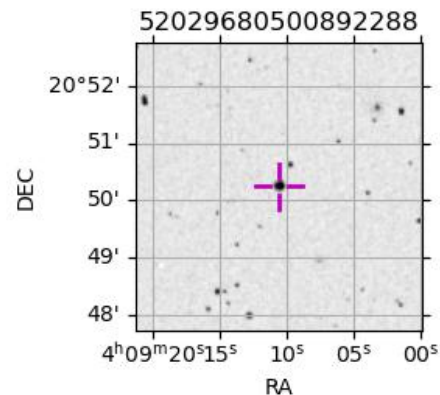
Earth
 PIC
 SAAO



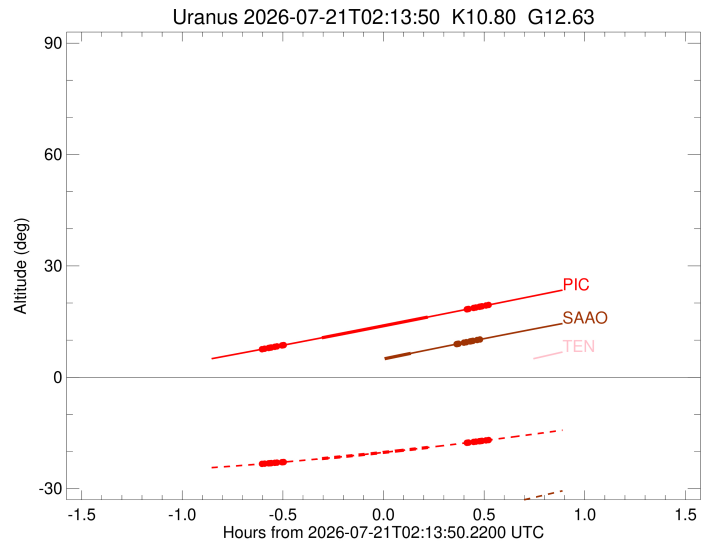
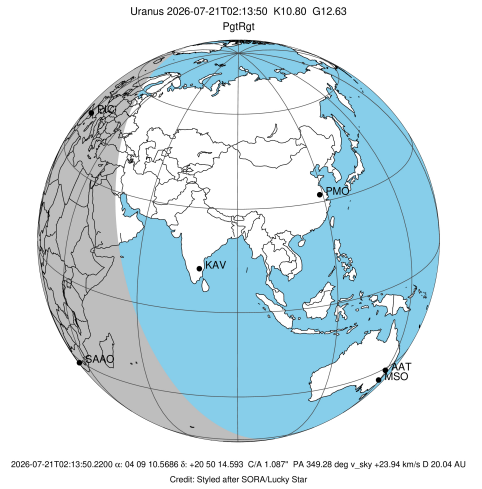
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

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	+++++	+ +	+++++	JUL 21 01:37 - JUL 21 02:44	PieRie
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					PnnRnn
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		+	+++++	JUL 21 02:21 - JUL 21 02:42	PneRne
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



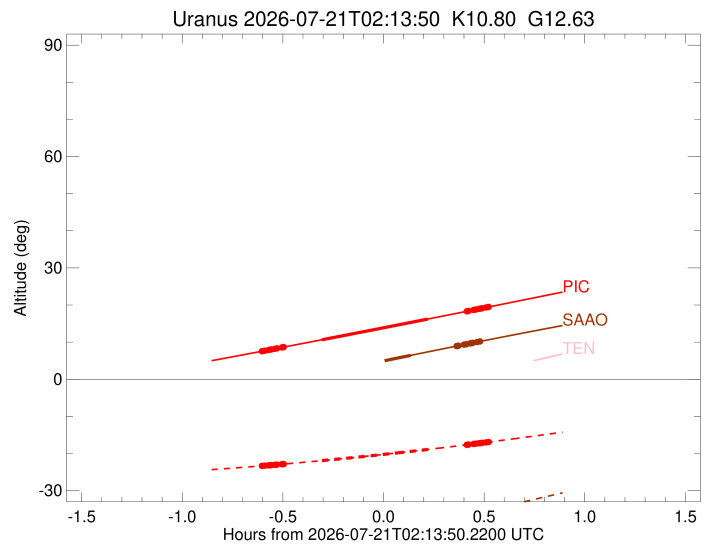
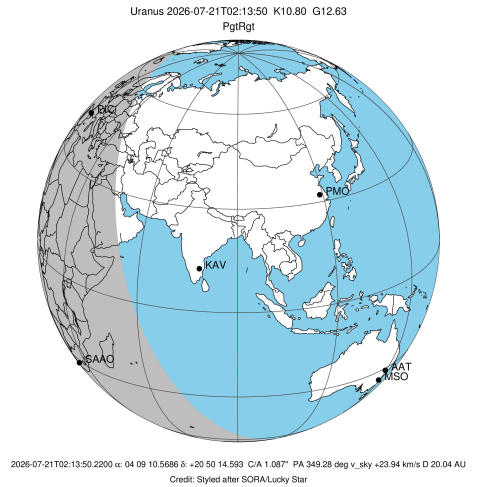
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-07-21T02:11:07.000
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 52029680500892288
 2Mass ID (if available) : 04091059+2050143
 ICRS Star Coord at Epoch: 04h 09m 10.56858s +20:50:14.59254s
 RUWE (>1.4 is poor) : 1.03
 K magnitude : 10.802
 G magnitude : 12.629
 RP magnitude : 12.010
 BP magnitude : 13.071
 DUPflag : 0
 Distance (au) : 20.038
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 23.94
 Sun-Target sep (deg) : 53.76
 Sun-Moon sep (deg) : 138.98
 B (ring opening deg) : 74.65
 PA of pole (deg) : -70.83
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.756
 C/A sky separation (km) : 10983.6
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itr93_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	2026-07-21T01:37:26.600		7.52	-23.34	51399.52	-24.07		
lambda	I	2026-07-21T01:38:23.595		7.69	-23.27	50026.71	-24.07		
delta	I	2026-07-21T01:39:35.390		7.89	-23.18	48300.35	-24.02		
gamma	I	2026-07-21T01:40:03.268		7.97	-23.15	47630.96	-24.00		
eta	I	2026-07-21T01:40:22.224		8.03	-23.13	47176.12	-23.99		
beta	I	2026-07-21T01:41:25.772		8.21	-23.05	45654.33	-23.94		
alpha	I	2026-07-21T01:42:05.549		8.32	-23.00	44700.06	-23.91		
4	I	2026-07-21T01:43:36.814		8.58	-22.88	42529.14	-23.82		
5	I	2026-07-21T01:43:49.200		8.62	-22.86	42240.12	-23.82		
6	I	2026-07-21T01:44:03.783		8.66	-22.84	41878.88	-23.79		
Uranus	I	2026-07-21T01:55:29.685		10.64	-21.91	25017.25		-15.31	-16.00
Uranus	E	2026-07-21T02:27:02.373		16.22	-18.91	25383.29		8.55	8.95
6	E	2026-07-21T02:38:37.873		18.30	-17.66	41797.13	23.69		
5	E	2026-07-21T02:38:57.652		18.36	-17.62	42271.09	23.73		
4	E	2026-07-21T02:39:12.432		18.40	-17.59	42616.06	23.73		
alpha	E	2026-07-21T02:40:42.242		18.67	-17.42	44748.39	23.80		
beta	E	2026-07-21T02:41:21.158		18.79	-17.35	45676.07	23.84		
eta	E	2026-07-21T02:42:24.057		18.98	-17.23	47176.12	23.88		
gamma	E	2026-07-21T02:42:42.776		19.03	-17.20	47623.22	23.89		
delta	E	2026-07-21T02:43:11.106		19.12	-17.14	48300.35	23.91		
lambda	E	2026-07-21T02:44:23.241		19.34	-17.00	50026.71	23.95		
epsilon	E	2026-07-21T02:44:54.901		19.43	-16.94	50785.37	23.95		

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target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2026-07-21T02:09:47.100
Event type          : PgtRgt
: Uranus occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code       : SAAO
Location            : So. Afr. Astro. Obs. (Sutherland)
Latitude (deg)      : -32.37953
E. Longitude (deg)  : 20.81070
Altitude (km)       : 1.768
Gaia source ID      : 52029680500892288
2Mass ID (if available) : 04091059+2050143
ICRS Star Coord at Epoch: 04h 09m 10.56858s +20:50:14.59254s
RUWE (>1.4 is poor) : 1.03
K magnitude          : 10.802
G magnitude          : 12.629
RP magnitude         : 12.010
BP magnitude         : 13.071
DUPflag             : 0
Distance (au)       : 20.038
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : 23.94
Sun-Target sep (deg) : 53.76
Sun-Moon sep (deg)  : 138.79
B (ring opening deg) : 74.65
PA of pole (deg)    : -70.83
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.284
C/A sky separation (km) : 18654.8
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLvl.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
    
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Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2026-07-21T01:37:44.257	-1.94x	-49.49	51346.41	-22.78			
lambda	I	2026-07-21T01:38:42.153	-1.75x	-49.28	50026.71	-22.74			
delta	I	2026-07-21T01:39:58.286	-1.51x	-49.02	48300.35	-22.60			
gamma	I	2026-07-21T01:40:27.921	-1.41x	-48.91	47631.31	-22.55			
eta	I	2026-07-21T01:40:48.129	-1.35x	-48.84	47176.12	-22.50			
beta	I	2026-07-21T01:41:55.863	-1.13x	-48.60	45657.79	-22.36			
alpha	I	2026-07-21T01:42:38.398	-0.99x	-48.46	44705.53	-22.26			
4	I	2026-07-21T01:44:16.925	-0.67x	-48.11	42533.14	-22.01			
5	I	2026-07-21T01:44:29.780	-0.63x	-48.06	42255.52	-21.99			
6	I	2026-07-21T01:44:46.313	-0.58x	-48.01	41876.41	-21.91			
Uranus	I	2026-07-21T01:58:05.118	1.97x	-45.19	25064.16			-14.60	-15.26
Uranus	E	2026-07-21T02:21:58.791	6.44	-40.14	25531.45			3.36	3.52
6	E	2026-07-21T02:35:35.424	8.93	-37.26	41800.72	21.82			
5	E	2026-07-21T02:35:57.468	8.99	-37.18	42284.46	21.90			
4	E	2026-07-21T02:36:12.714	9.04	-37.13	42613.88	21.92			
alpha	E	2026-07-21T02:37:49.679	9.33	-36.79	44750.84	22.17			
beta	E	2026-07-21T02:38:31.425	9.45	-36.64	45678.25	22.26			
eta	E	2026-07-21T02:39:38.520	9.65	-36.41	47176.12	22.40			
gamma	E	2026-07-21T02:39:58.499	9.71	-36.34	47624.02	22.44			
delta	E	2026-07-21T02:40:28.602	9.80	-36.23	48300.35	22.50			
lambda	E	2026-07-21T02:41:45.112	10.03	-35.96	50026.71	22.63			
epsilon	E	2026-07-21T02:42:17.540	10.13	-35.85	50761.41	22.66			