

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2034-11-10T14:44:42.900  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 3379730655944579328  
 2Mass ID (if available) : 06424674+2323351

ICRS Star Coord at Epoch: 06h 42m 46.74692s +23:23:35.04597s

RUWE (>1.4 is poor) : 1.08  
 K magnitude : 14.535  
 G magnitude : 16.059  
 RP magnitude : 15.548  
 BP magnitude : 16.389  
 DUPflag : 0  
 Distance (au) : 18.272  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -11.93  
 Sun-Target sep (deg) : 127.98  
 Sun-Moon sep (deg) : 123.10  
 B (ring opening deg) : 66.49  
 PA of pole (deg) : 73.78

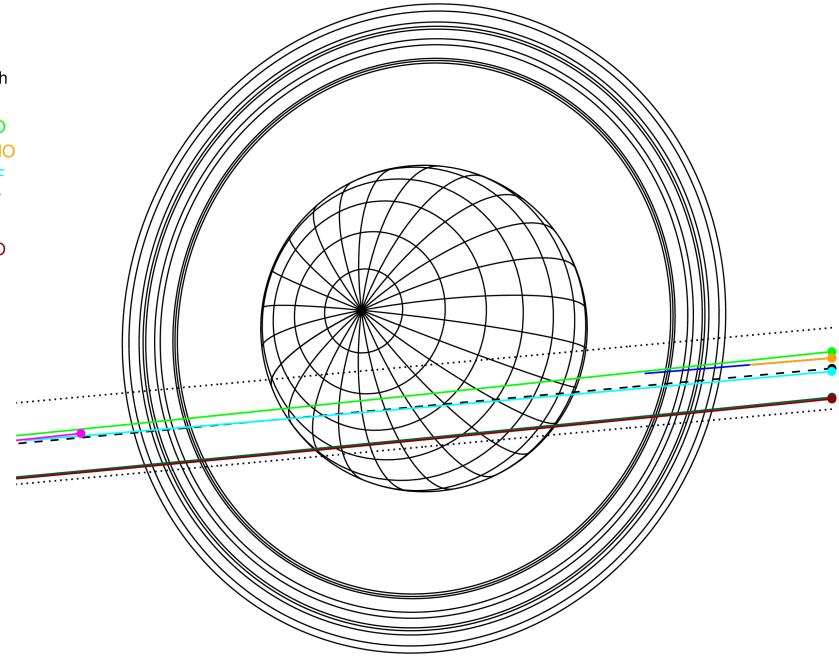
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2034-11-10T14:44:42.9000 a: 06 42 46.7469 s: +23 23 35.046 C/A 0.902" PA 5.27 deg v\_sky -11.92 km/s D 18.27 AU  
 Credit: Styled after SORA/Lucky Star

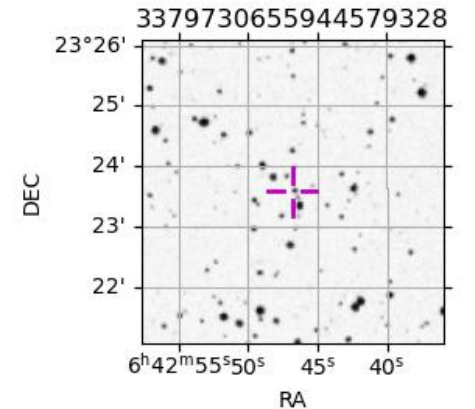
Uranus 2034-11-10T14:44:42 K14.54 G16.06 PgtRgt

Earth  
 PAL  
 PMO  
 KPNO  
 IRTF  
 KAV  
 AAT  
 MSO

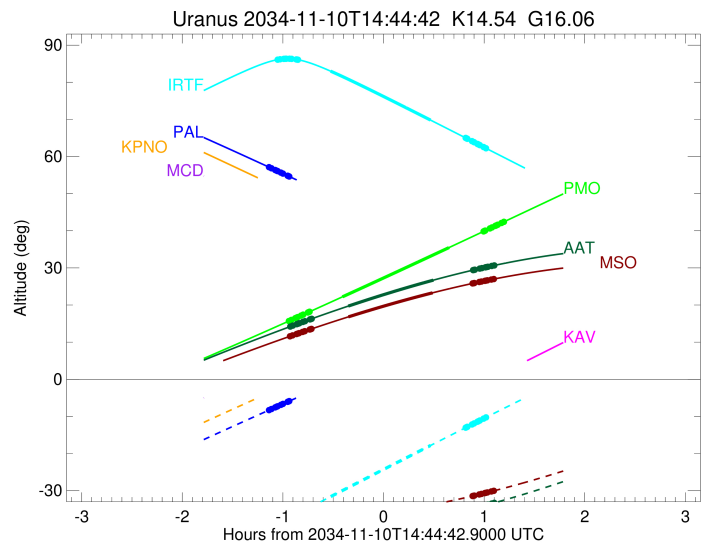
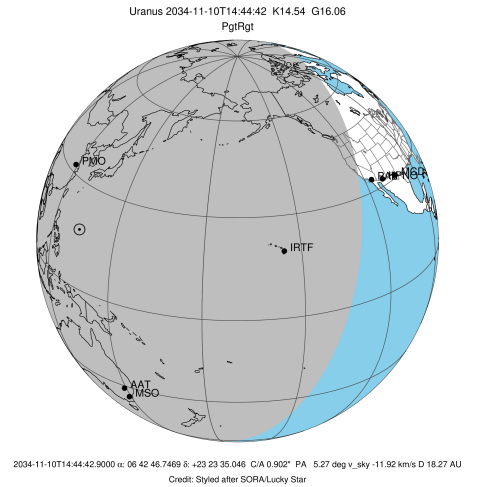


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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	+++++			NOV 10 13:36 - NOV 10 13:48	PnnRin
PMO	Purple Mtn Obs. Nanki	32.1	118.8	+++++	+ +	+++++	NOV 10 13:47 - NOV 10 15:56	PieRie
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	+++++	+ +	+++++	NOV 10 13:41 - NOV 10 15:45	PieRie
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	+++++	+ +	+++++	NOV 10 13:48 - NOV 10 15:50	PieRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+++++	+ +	+++++	NOV 10 13:48 - NOV 10 15:50	PieRie



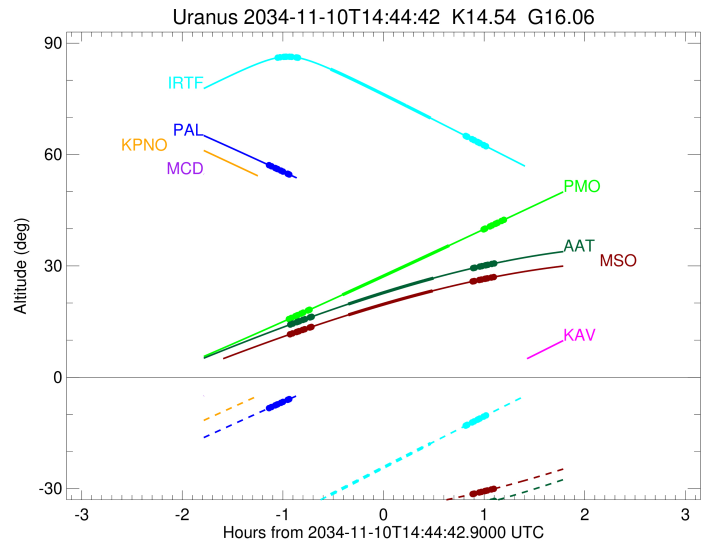
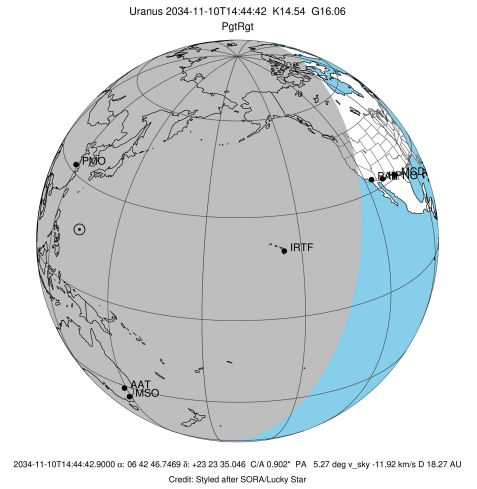
target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2034-11-10T14:39:18.850  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : PAL  
 Location : Palomar Mt (200")  
 Latitude (deg) : 33.35622  
 E. Longitude (deg) : 243.13601  
 Altitude (km) : 1.706  
 Gaia source ID : 3379730655944579328  
 2Mass ID (if available) : 06424674+2323351  
 ICRS Star Coord at Epoch: 06h 42m 46.74692s +23:23:35.04597s  
 RUWE (>1.4 is poor) : 1.08  
 K magnitude : 14.535  
 G magnitude : 16.059  
 RP magnitude : 15.548  
 BP magnitude : 16.389  
 DUPflag : 0  
 Distance (au) : 18.272  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -11.93  
 Sun-Target sep (deg) : 127.98  
 Sun-Moon sep (deg) : 123.94  
 B (ring opening deg) : 66.49  
 PA of pole (deg) : 73.78  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.741  
 C/A sky separation (km) : 9816.5  
 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



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

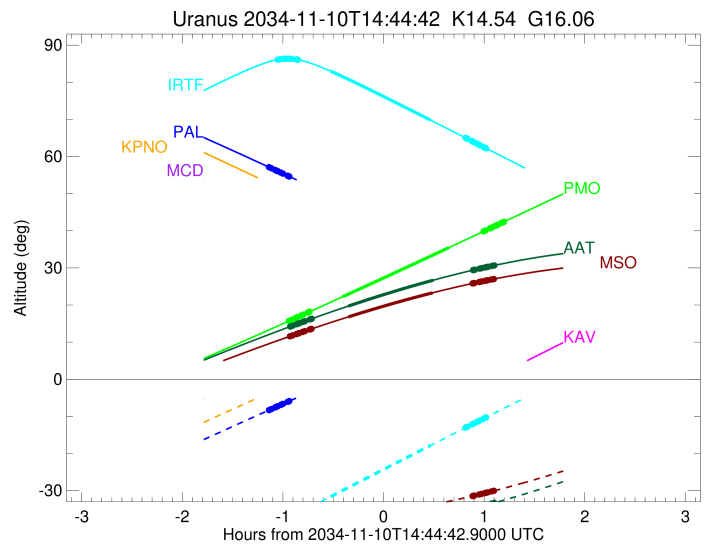
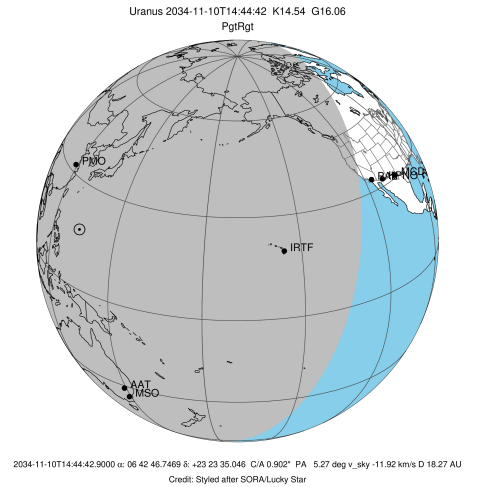
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-11-10T13:36:01.193		57.23	-8.40	51495.21	-12.94		
lambda	I	2034-11-10T13:37:54.851		56.83	-8.02	50026.71	-12.91		
delta	I	2034-11-10T13:40:08.662		56.37	-7.57	48300.35	-12.89		
gamma	I	2034-11-10T13:41:01.319		56.19	-7.39	47621.79	-12.88		
eta	I	2034-11-10T13:41:35.925		56.07	-7.27	47176.12	-12.88		
beta	I	2034-11-10T13:43:31.994		55.66	-6.89	45681.22	-12.85		
alpha	I	2034-11-10T13:44:48.638		55.40	-6.63	44701.14	-12.84		
4	I	2034-11-10T13:47:31.832		54.83	-6.08	42610.56	-12.80		
5	I	2034-11-10T13:48:05.286		54.71	-5.97	42193.11	-12.79		
6	I	2034-11-10T13:48:31.797		54.62	-5.88	41857.31	-12.80		
Uranus	I	2034-11-10T14:07:43.226		50.61	-2.07x	25067.89		-23.49	-24.48
Uranus	E	2034-11-10T15:11:20.322		37.27	10.09x	25297.78		16.78	17.53
6	E	2034-11-10T15:31:45.496		33.02	13.78x	41836.42	12.68		
5	E	2034-11-10T15:32:17.511		32.91	13.88x	42241.18	12.68		
4	E	2034-11-10T15:32:42.747		32.82	13.95x	42546.20	12.69		
alpha	E	2034-11-10T15:35:33.955		32.23	14.46x	44721.69	12.72		
beta	E	2034-11-10T15:36:46.533		31.98	14.67x	45643.18	12.73		
eta	E	2034-11-10T15:38:46.755		31.56	15.02x	47176.12	12.75		
gamma	E	2034-11-10T15:39:22.291		31.44	15.13x	47629.20	12.75		
delta	E	2034-11-10T15:40:14.905		31.26	15.28x	48300.35	12.76		
lambda	E	2034-11-10T15:42:30.119		30.79	15.68x	50026.71	12.78		
epsilon	E	2034-11-10T15:43:38.903		30.56	15.88x	50905.75	12.80		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2034-11-10T14:51:55.390  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : 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 : 3379730655944579328  
 2Mass ID (if available) : 06424674+2323351  
 ICRS Star Coord at Epoch: 06h 42m 46.74692s +23:23:35.04597s  
 RUWE (>1.4 is poor) : 1.08  
 K magnitude : 14.535  
 G magnitude : 16.059  
 RP magnitude : 15.548  
 BP magnitude : 16.389  
 DUPflag : 0  
 Distance (au) : 18.272  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -11.93  
 Sun-Target sep (deg) : 127.98  
 Sun-Moon sep (deg) : 123.05  
 B (ring opening deg) : 66.49  
 PA of pole (deg) : 73.78  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.773  
 C/A sky separation (km) : 10247.1  
 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



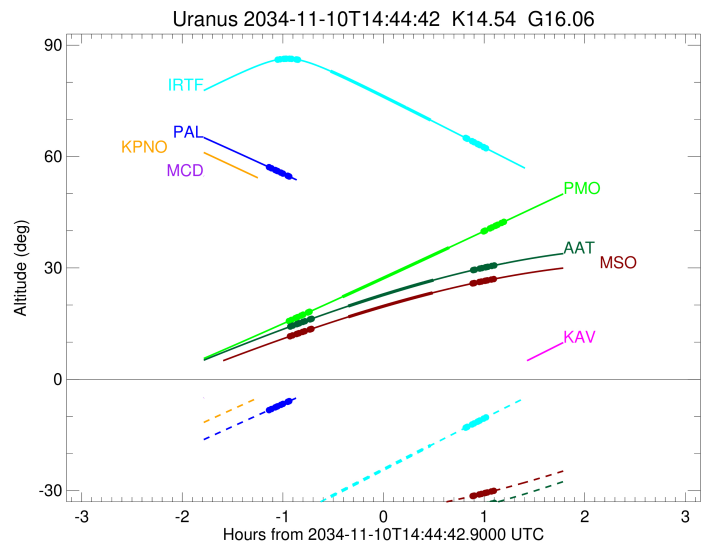
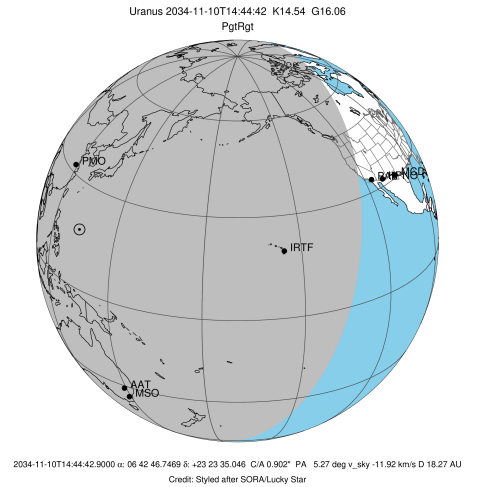
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-11-10T13:47:51.523		15.59	-59.05	51492.56	-12.63		
lambda	I	2034-11-10T13:49:47.746		15.99	-59.43	50026.71	-12.61		
delta	I	2034-11-10T13:52:04.777		16.45	-59.88	48300.35	-12.59		
gamma	I	2034-11-10T13:52:58.685		16.63	-60.06	47621.83	-12.58		
eta	I	2034-11-10T13:53:34.113		16.75	-60.17	47176.12	-12.58		
beta	I	2034-11-10T13:55:32.907		17.15	-60.56	45681.22	-12.56		
alpha	I	2034-11-10T13:56:51.302		17.42	-60.82	44701.46	-12.55		
4	I	2034-11-10T13:59:38.279		17.99	-61.36	42610.33	-12.52		
5	I	2034-11-10T14:00:12.433		18.10	-61.47	42193.80	-12.51		
6	I	2034-11-10T14:00:39.626		18.19	-61.55	41856.94	-12.51		
Uranus	I	2034-11-10T14:20:16.300		22.21	-65.24	25067.75		-23.50	-24.48
Uranus	E	2034-11-10T15:23:47.832		35.48	-74.34	25317.80		16.10	16.82
6	E	2034-11-10T15:44:21.315		39.83	-75.35	41837.76	12.72		
5	E	2034-11-10T15:44:52.931		39.94	-75.36	42238.66	12.72		
4	E	2034-11-10T15:45:18.386		40.03	-75.37	42547.40	12.73		
alpha	E	2034-11-10T15:48:08.835		40.63	-75.38	44720.64	12.77		
beta	E	2034-11-10T15:49:21.211		40.89	-75.38	45643.46	12.78		
eta	E	2034-11-10T15:51:20.868		41.31	-75.37	47176.12	12.81		
gamma	E	2034-11-10T15:51:56.218		41.44	-75.37	47629.07	12.82		
delta	E	2034-11-10T15:52:48.571		41.62	-75.36	48300.35	12.83		
lambda	E	2034-11-10T15:55:03.020		42.10	-75.31	50026.71	12.85		
epsilon	E	2034-11-10T15:56:12.131		42.34	-75.29	50915.39	12.88		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2034-11-10T14:42:47.090  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : IRTF  
 Location : Mauna Kea/IRTF  
 Latitude (deg) : 19.82622  
 E. Longitude (deg) : 204.52800  
 Altitude (km) : 4.168  
 Gaia source ID : 3379730655944579328  
 2Mass ID (if available) : 06424674+2323351  
 ICRS Star Coord at Epoch: 06h 42m 46.74692s +23:23:35.04597s  
 RUWE (>1.4 is poor) : 1.08  
 K magnitude : 14.535  
 G magnitude : 16.059  
 RP magnitude : 15.548  
 BP magnitude : 16.389  
 DUPflag : 0  
 Distance (au) : 18.272  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -11.93  
 Sun-Target sep (deg) : 127.98  
 Sun-Moon sep (deg) : 123.94  
 B (ring opening deg) : 66.49  
 PA of pole (deg) : 73.78  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.928  
 C/A sky separation (km) : 12292.9  
 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



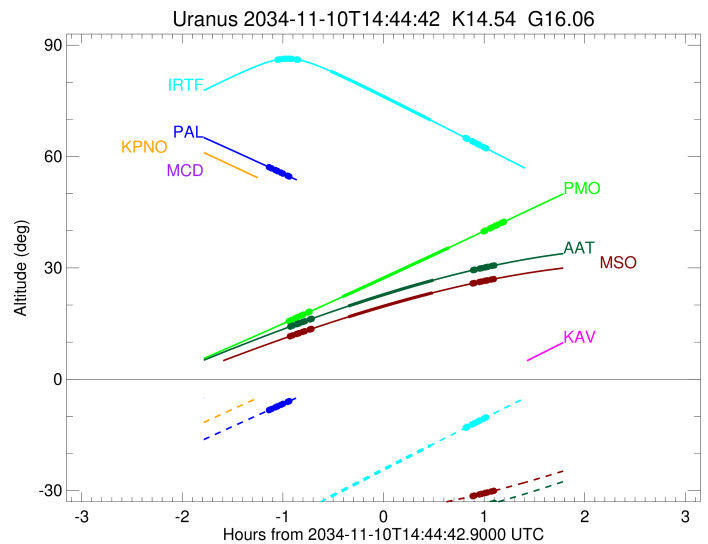
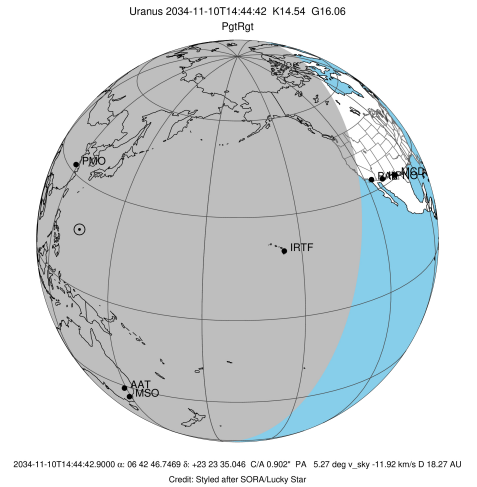
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-11-10T13:41:09.666		86.06	-39.08	51504.34	-12.93		
lambda	I	2034-11-10T13:43:04.174		86.20	-38.64	50026.71	-12.89		
delta	I	2034-11-10T13:45:18.238		86.31	-38.12	48300.35	-12.86		
gamma	I	2034-11-10T13:46:11.033		86.34	-37.91	47621.66	-12.85		
eta	I	2034-11-10T13:46:45.721		86.35	-37.78	47176.12	-12.84		
beta	I	2034-11-10T13:48:42.159		86.34	-37.32	45681.23	-12.81		
alpha	I	2034-11-10T13:49:59.233		86.31	-37.02	44699.64	-12.78		
4	I	2034-11-10T13:52:43.026		86.16	-36.39	42611.75	-12.73		
5	I	2034-11-10T13:53:16.983		86.11	-36.25	42189.33	-12.72		
6	I	2034-11-10T13:53:43.206		86.08	-36.15	41859.41	-12.72		
Uranus	I	2034-11-10T14:13:16.000		82.98	-31.60	25076.88		-23.26	-24.23
Uranus	E	2034-11-10T15:12:44.771		69.82	-17.84	25352.92		14.84	15.51
6	E	2034-11-10T15:33:40.941		65.02	-13.04	41839.23	12.70		
5	E	2034-11-10T15:34:12.254		64.90	-12.92	42235.92	12.70		
4	E	2034-11-10T15:34:38.049		64.80	-12.83	42548.71	12.71		
alpha	E	2034-11-10T15:37:28.399		64.15	-12.18	44719.60	12.76		
beta	E	2034-11-10T15:38:40.864		63.87	-11.90	45643.76	12.79		
eta	E	2034-11-10T15:40:40.454		63.41	-11.45	47176.12	12.82		
gamma	E	2034-11-10T15:41:15.770		63.28	-11.31	47628.94	12.83		
delta	E	2034-11-10T15:42:08.090		63.08	-11.12	48300.35	12.84		
lambda	E	2034-11-10T15:44:22.397		62.56	-10.61	50026.71	12.87		
epsilon	E	2034-11-10T15:45:32.056		62.29	-10.34	50923.61	12.90		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2034-11-10T14:48:50.420  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : AAT  
 Location : Siding Spring (AAT)  
 Latitude (deg) : -31.27703  
 E. Longitude (deg) : 149.06608  
 Altitude (km) : 1.164  
 Gaia source ID : 3379730655944579328  
 2Mass ID (if available) : 06424674+2323351  
 ICRS Star Coord at Epoch: 06h 42m 46.74692s +23:23:35.04597s  
 RUWE (>1.4 is poor) : 1.08  
 K magnitude : 14.535  
 G magnitude : 16.059  
 RP magnitude : 15.548  
 BP magnitude : 16.389  
 DUPflag : 0  
 Distance (au) : 18.272  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -11.93  
 Sun-Target sep (deg) : 127.98  
 Sun-Moon sep (deg) : 123.11  
 B (ring opening deg) : 66.49  
 PA of pole (deg) : 73.78  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 1.289  
 C/A sky separation (km) : 17086.5  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk  
 URKALLvl.spk  
 ural11.bsp  
 IAU\_URANUS\_for\_RINGFIT.tpc  
 vgr2.ural11.bsp  
 ural61.bsp  
 vgr2.ural61.bsp  
 peph.ural60.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	2034-11-10T13:48:38.093		14.12	-41.64	51520.22	-12.34		
lambda	I	2034-11-10T13:50:39.429		14.45	-41.63	50026.71	-12.29		
delta	I	2034-11-10T13:53:00.261		14.84	-41.62	48300.35	-12.23		
gamma	I	2034-11-10T13:53:55.833		15.00	-41.62	47621.43	-12.20		
eta	I	2034-11-10T13:54:32.344		15.10	-41.61	47176.12	-12.19		
beta	I	2034-11-10T13:56:35.172		15.43	-41.59	45681.08	-12.13		
alpha	I	2034-11-10T13:57:56.892		15.65	-41.58	44696.82	-12.08		
4	I	2034-11-10T14:00:50.188		16.12	-41.53	42613.75	-11.98		
5	I	2034-11-10T14:01:26.865		16.22	-41.52	42182.26	-11.96		
6	I	2034-11-10T14:01:53.871		16.30	-41.52	41863.36	-11.95		
Uranus	I	2034-11-10T14:23:41.962		19.71	-40.86	25128.59		-21.87	-22.80
Uranus	E	2034-11-10T15:14:31.585		26.71	-37.31	25461.85		10.09	10.56
6	E	2034-11-10T15:38:07.439		29.40	-34.82	41844.96	12.08		
5	E	2034-11-10T15:38:38.933		29.45	-34.76	42225.15	12.09		
4	E	2034-11-10T15:39:07.291		29.50	-34.70	42554.14	12.12		
alpha	E	2034-11-10T15:42:04.752		29.81	-34.36	44715.30	12.22		
beta	E	2034-11-10T15:43:20.732		29.94	-34.21	45645.14	12.27		
eta	E	2034-11-10T15:45:25.037		30.15	-33.96	47176.12	12.34		
gamma	E	2034-11-10T15:46:01.658		30.21	-33.88	47628.38	12.36		
delta	E	2034-11-10T15:46:55.970		30.30	-33.77	48300.35	12.39		
lambda	E	2034-11-10T15:49:14.987		30.52	-33.49	50026.71	12.45		
epsilon	E	2034-11-10T15:50:30.033		30.64	-33.33	50962.25	12.51		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2034-11-10T14:48:35.940  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : MSO  
 Location : Mt. Stromlo Observatory  
 Latitude (deg) : -35.32000  
 E. Longitude (deg) : 149.00833  
 Altitude (km) : 0.770  
 Gaia source ID : 3379730655944579328  
 2Mass ID (if available) : 06424674+2323351  
 ICRS Star Coord at Epoch: 06h 42m 46.74692s +23:23:35.04597s  
 RUWE (>1.4 is poor) : 1.08  
 K magnitude : 14.535  
 G magnitude : 16.059  
 RP magnitude : 15.548  
 BP magnitude : 16.389  
 DUPflag : 0  
 Distance (au) : 18.272  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -11.93  
 Sun-Target sep (deg) : 127.98  
 Sun-Moon sep (deg) : 123.08  
 B (ring opening deg) : 66.49  
 PA of pole (deg) : 73.78  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 1.308  
 C/A sky separation (km) : 17337.3  
 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	2034-11-10T13:48:27.813		11.50	-37.61	51521.13	-12.31		
lambda	I	2034-11-10T13:50:29.569		11.82	-37.60	50026.71	-12.25		
delta	I	2034-11-10T13:52:50.825		12.19	-37.59	48300.35	-12.19		
gamma	I	2034-11-10T13:53:46.572		12.33	-37.59	47621.41	-12.17		
eta	I	2034-11-10T13:54:23.198		12.43	-37.58	47176.12	-12.15		
beta	I	2034-11-10T13:56:26.436		12.74	-37.57	45681.07	-12.09		
alpha	I	2034-11-10T13:57:48.455		12.95	-37.55	44696.65	-12.04		
4	I	2034-11-10T14:00:42.374		13.40	-37.52	42613.86	-11.94		
5	I	2034-11-10T14:01:19.227		13.49	-37.51	42181.85	-11.91		
6	I	2034-11-10T14:01:46.288		13.56	-37.50	41863.59	-11.90		
Uranus	I	2034-11-10T14:23:44.606		16.81	-36.91	25133.10		-21.75	-22.67
Uranus	E	2034-11-10T15:14:00.780		23.29	-33.75	25466.93		9.82	10.28
6	E	2034-11-10T15:37:49.041		25.82	-31.45	41845.23	12.03		
5	E	2034-11-10T15:38:20.606		25.87	-31.40	42224.63	12.03		
4	E	2034-11-10T15:38:49.146		25.91	-31.35	42554.41	12.07		
alpha	E	2034-11-10T15:41:47.294		26.20	-31.03	44715.09	12.18		
beta	E	2034-11-10T15:43:03.590		26.32	-30.89	45645.21	12.23		
eta	E	2034-11-10T15:45:08.354		26.51	-30.66	47176.12	12.30		
gamma	E	2034-11-10T15:45:45.106		26.57	-30.59	47628.35	12.31		
delta	E	2034-11-10T15:46:39.613		26.65	-30.49	48300.35	12.34		
lambda	E	2034-11-10T15:48:59.108		26.86	-30.23	50026.71	12.41		
epsilon	E	2034-11-10T15:50:14.552		26.97	-30.08	50964.09	12.47		