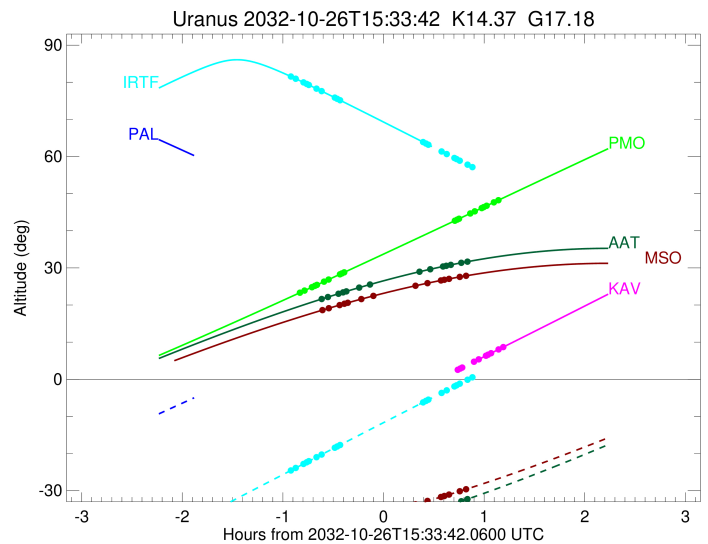
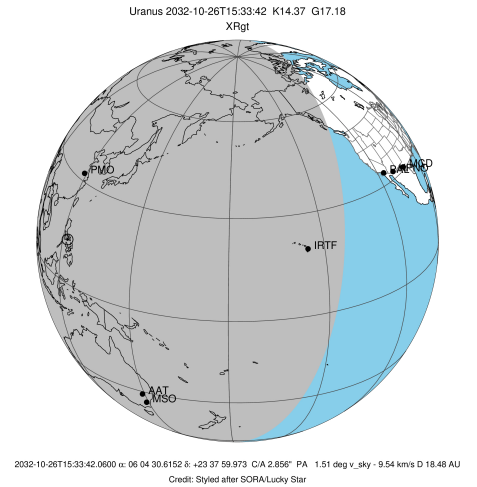


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-10-26T15:41:16.160
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 3426136643706870144
 2Mass ID (if available) : 06043061+2338000
 ICRS Star Coord at Epoch: 06h 04m 30.61516s +23:37:59.97343s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 14.368
 G magnitude : 17.183
 RP magnitude : 16.345
 BP magnitude : 17.940
 DUPflag : 0
 Distance (au) : 18.480
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -9.54
 Sun-Target sep (deg) : 122.28
 Sun-Moon sep (deg) : 39.51
 B (ring opening deg) : 74.48
 PA of pole (deg) : 59.48
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.723
 C/A sky separation (km) : 36490.1
 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

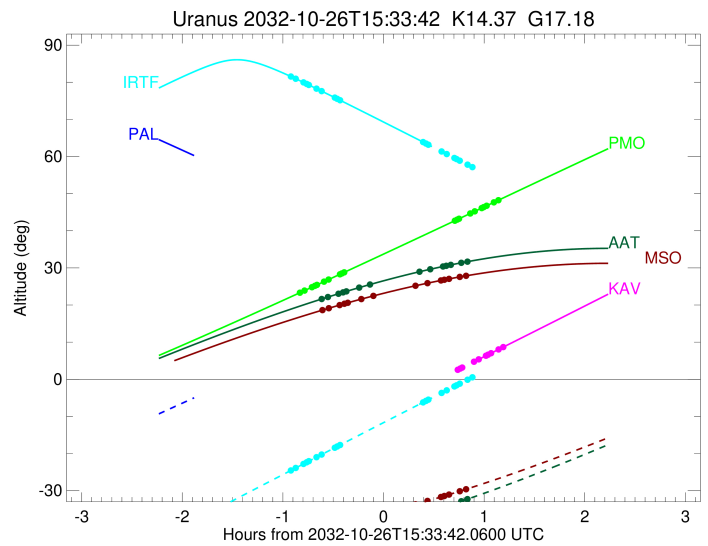
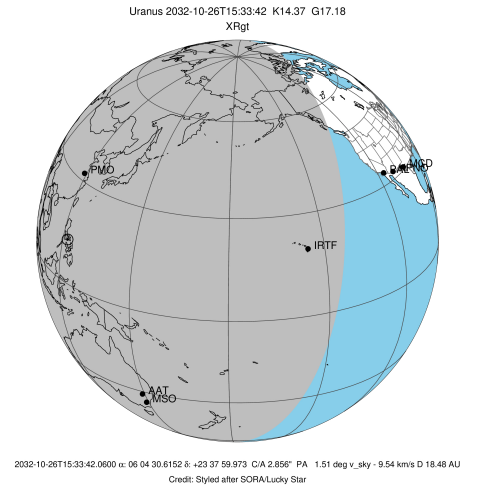


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-10-26T14:43:29.678		23.25	-65.73	51310.02	-6.80		
lambda	I	2032-10-26T14:46:39.419		23.90	-66.17	50026.71	-6.67		
delta	I	2032-10-26T14:51:03.996		24.81	-66.76	48300.35	-6.38		
gamma	I	2032-10-26T14:52:50.101		25.18	-66.99	47630.33	-6.25		
eta	I	2032-10-26T14:54:03.282		25.43	-67.14	47176.12	-6.16		
beta	I	2032-10-26T14:58:13.119		26.29	-67.65	45677.64	-5.84		
alpha	I	2032-10-26T15:00:54.859		26.85	-67.96	44749.00	-5.60		
4	I	2032-10-26T15:07:51.852		28.30	-68.71	42548.46	-4.95		
5	I	2032-10-26T15:08:41.028		28.47	-68.79	42308.73	-4.86		
6	I	2032-10-26T15:10:21.535		28.82	-68.96	41839.21	-4.66		

No planet occultations

6	E	2032-10-26T16:16:03.468		42.67	-69.87	41803.00	4.72		
5	E	2032-10-26T16:17:46.833		43.04	-69.75	42300.24	4.92		
4	E	2032-10-26T16:18:46.099		43.25	-69.67	42593.83	5.01		
alpha	E	2032-10-26T16:25:27.033		44.67	-69.10	44743.24	5.69		
beta	E	2032-10-26T16:28:07.796		45.24	-68.84	45677.04	5.93		
eta	E	2032-10-26T16:32:13.392		46.11	-68.43	47176.12	6.27		
gamma	E	2032-10-26T16:33:25.279		46.36	-68.30	47630.42	6.37		
delta	E	2032-10-26T16:35:09.417		46.73	-68.11	48300.35	6.50		
lambda	E	2032-10-26T16:39:28.844		47.65	-67.60	50026.71	6.81		
epsilon	E	2032-10-26T16:41:19.148		48.04	-67.38	50784.08	6.95		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-10-26T15:30:25.520
 Event type : XRgt
 : No Uranus occs
 : 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 : 3426136643706870144
 2Mass ID (if available) : 06043061+2338000
 ICRS Star Coord at Epoch: 06h 04m 30.61516s +23:37:59.97343s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 14.368
 G magnitude : 17.183
 RP magnitude : 16.345
 BP magnitude : 17.940
 DUPflag : 0
 Distance (au) : 18.480
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -9.54
 Sun-Target sep (deg) : 122.28
 Sun-Moon sep (deg) : 38.91
 B (ring opening deg) : 74.48
 PA of pole (deg) : 59.48
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.881
 C/A sky separation (km) : 38619.0
 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

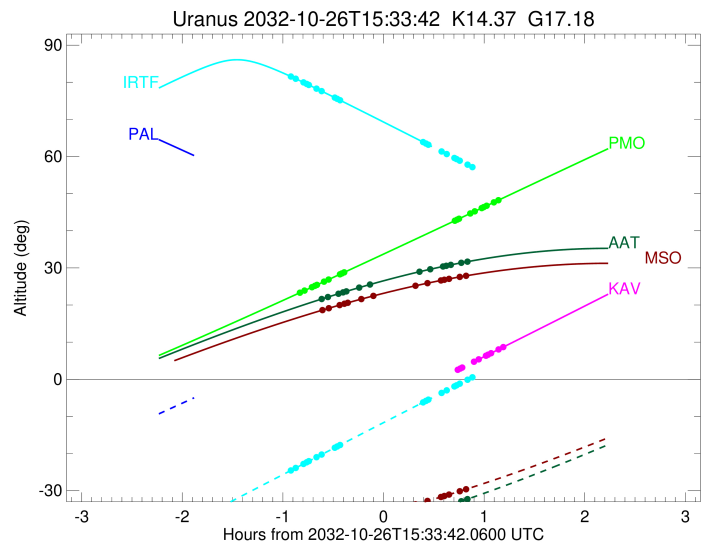
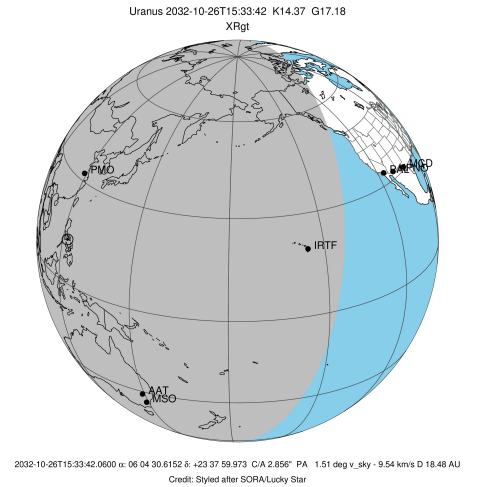


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-10-26T14:38:11.210		81.61	-24.63	51278.71	-6.56		
lambda	I	2032-10-26T14:41:23.746		80.95	-23.88	50026.71	-6.38		
delta	I	2032-10-26T14:46:02.137		79.96	-22.80	48300.35	-6.01		
gamma	I	2032-10-26T14:47:55.044		79.56	-22.36	47630.63	-5.85		
eta	I	2032-10-26T14:49:13.520		79.28	-22.05	47176.12	-5.73		
beta	I	2032-10-26T14:53:44.828		78.29	-20.99	45678.74	-5.30		
alpha	I	2032-10-26T14:56:44.380		77.63	-20.29	44750.45	-5.00		
4	I	2032-10-26T15:04:47.853		75.84	-18.41	42553.79	-4.08		
5	I	2032-10-26T15:05:48.809		75.61	-18.18	42312.33	-3.95		
6	I	2032-10-26T15:07:56.755		75.14	-17.68	41833.13	-3.66		

No planet occultations

6	E	2032-10-26T15:57:04.309		63.95	-6.28	41805.74	3.66		
5	E	2032-10-26T15:59:16.036		63.45	-5.77	42304.34	3.94		
4	E	2032-10-26T16:00:27.880		63.17	-5.50	42590.20	4.07		
alpha	E	2032-10-26T16:08:22.277		61.36	-3.67x	44744.78	4.98		
beta	E	2032-10-26T16:11:23.965		60.66	-2.98x	45677.78	5.29		
eta	E	2032-10-26T16:15:56.135		59.62	-1.94x	47176.12	5.72		
gamma	E	2032-10-26T16:17:14.851		59.32	-1.64x	47630.59	5.83		
delta	E	2032-10-26T16:19:08.136		58.89	-1.20x	48300.35	5.99		
lambda	E	2032-10-26T16:23:47.505		57.82	-0.14x	50026.71	6.36		
epsilon	E	2032-10-26T16:25:46.412		57.36	0.31x	50791.70	6.53		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-10-26T15:43:13.300
 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 : 3426136643706870144
 2Mass ID (if available) : 06043061+2338000
 ICRS Star Coord at Epoch: 06h 04m 30.61516s +23:37:59.97343s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 14.368
 G magnitude : 17.183
 RP magnitude : 16.345
 BP magnitude : 17.940
 DUPflag : 0
 Distance (au) : 18.480
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -9.54
 Sun-Target sep (deg) : 122.28
 Sun-Moon sep (deg) : 39.25
 B (ring opening deg) : 74.48
 PA of pole (deg) : 59.48
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.749
 C/A sky separation (km) : 36838.8
 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

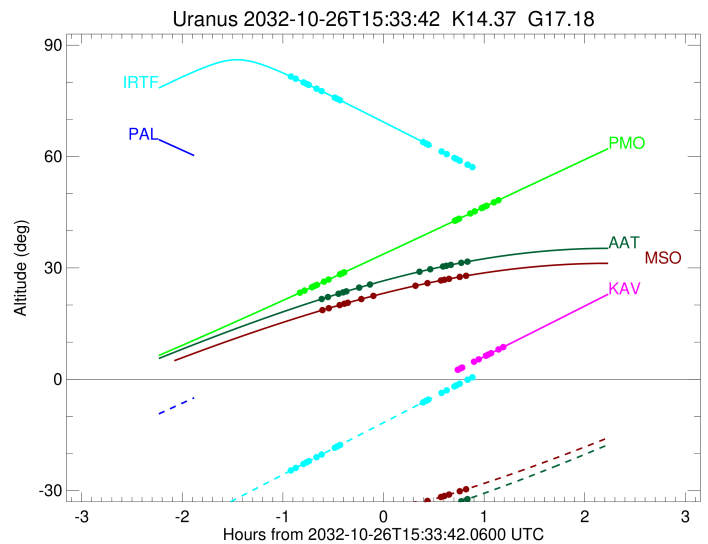
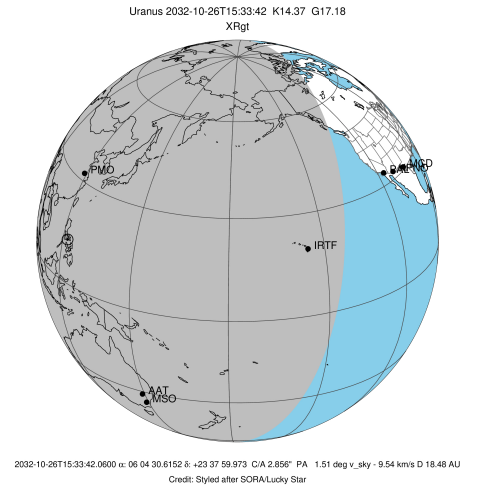


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-10-26T14:44:27.908	-17.91x	-35.45	51307.68	-6.54			
lambda	I	2032-10-26T14:47:45.125	-17.21x	-36.25	50026.71	-6.40			
delta	I	2032-10-26T14:52:21.041	-16.23x	-37.37	48300.35	-6.11			
gamma	I	2032-10-26T14:54:11.853	-15.84x	-37.81	47630.36	-5.98			
eta	I	2032-10-26T14:55:28.353	-15.57x	-38.12	47176.12	-5.89			
beta	I	2032-10-26T14:59:49.943	-14.63x	-39.18	45677.74	-5.56			
alpha	I	2032-10-26T15:02:39.751	-14.02x	-39.87	44749.15	-5.33			
4	I	2032-10-26T15:09:59.822	-12.44x	-41.65	42548.96	-4.66			
5	I	2032-10-26T15:10:52.085	-12.26x	-41.86	42309.14	-4.57			
6	I	2032-10-26T15:12:39.241	-11.87x	-42.29	41838.61	-4.38			

No planet occultations

6	E	2032-10-26T16:17:47.281	2.51x	-58.13	41803.63	4.44			
5	E	2032-10-26T16:19:37.060	2.92x	-58.57	42301.33	4.64			
4	E	2032-10-26T16:20:39.406	3.15x	-58.83	42592.91	4.74			
alpha	E	2032-10-26T16:27:41.231	4.73x	-60.54	44743.71	5.44			
beta	E	2032-10-26T16:30:29.235	5.36	-61.22	45677.28	5.68			
eta	E	2032-10-26T16:34:45.143	6.33	-62.26	47176.12	6.03			
gamma	E	2032-10-26T16:35:59.915	6.61	-62.56	47630.48	6.12			
delta	E	2032-10-26T16:37:48.102	7.01	-63.00	48300.35	6.26			
lambda	E	2032-10-26T16:42:17.144	8.03	-64.09	50026.71	6.57			
epsilon	E	2032-10-26T16:44:11.800	8.46	-64.56	50787.10	6.72			

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-10-26T15:37:59.300
 Event type : XRgt
 : No Uranus occs
 : 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 : 3426136643706870144
 2Mass ID (if available) : 06043061+2338000
 ICRS Star Coord at Epoch: 06h 04m 30.61516s +23:37:59.97343s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 14.368
 G magnitude : 17.183
 RP magnitude : 16.345
 BP magnitude : 17.940
 DUPflag : 0
 Distance (au) : 18.480
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -9.54
 Sun-Target sep (deg) : 122.28
 Sun-Moon sep (deg) : 39.13
 B (ring opening deg) : 74.48
 PA of pole (deg) : 59.48
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.235
 C/A sky separation (km) : 43355.1
 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

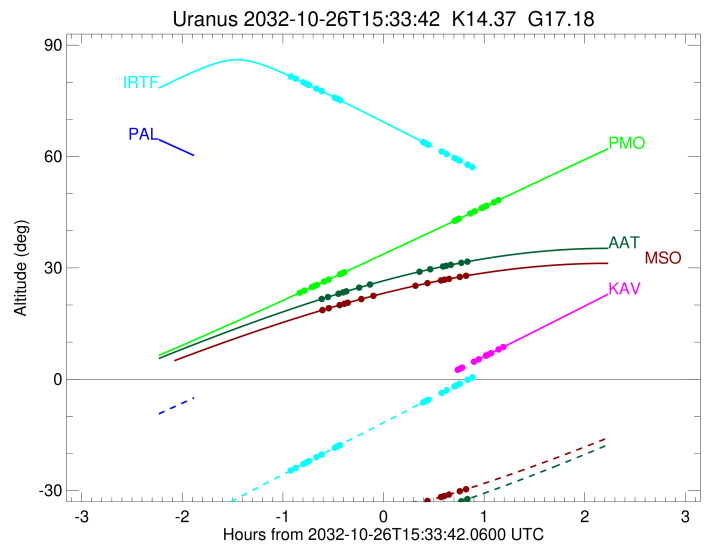
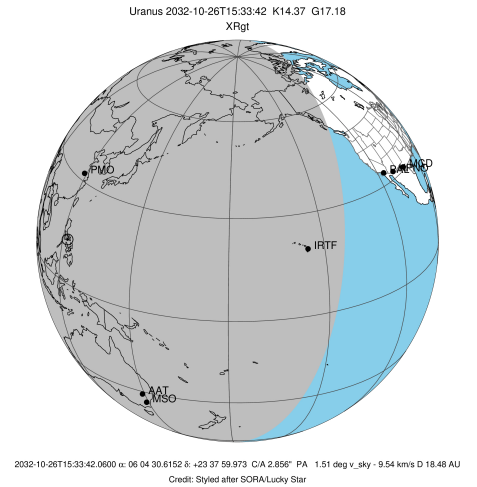


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-10-26T14:56:39.283		21.59	-43.10	51220.46	-5.14		
lambda	I	2032-10-26T15:00:36.392		22.16	-42.76	50026.71	-4.86		
delta	I	2032-10-26T15:06:55.651		23.04	-42.17	48300.35	-4.24		
gamma	I	2032-10-26T15:09:39.115		23.41	-41.91	47631.13	-3.95		
eta	I	2032-10-26T15:11:37.563		23.68	-41.71	47176.12	-3.73		
beta	I	2032-10-26T15:19:11.315		24.69	-40.92	45680.58	-2.85		
alpha	I	2032-10-26T15:25:28.712		25.50	-40.23	44752.39	-2.05		

No planet occultations

alpha	E	2032-10-26T15:55:18.781		28.99	-36.47	44750.24	2.05		
beta	E	2032-10-26T16:01:36.222		29.64	-35.59	45680.22	2.86		
eta	E	2032-10-26T16:09:07.220		30.38	-34.51	47176.12	3.76		
gamma	E	2032-10-26T16:11:04.823		30.56	-34.22	47631.16	3.98		
delta	E	2032-10-26T16:13:47.013		30.81	-33.82	48300.35	4.27		
lambda	E	2032-10-26T16:20:02.922		31.37	-32.86	50026.71	4.90		
epsilon	E	2032-10-26T16:22:42.919		31.59	-32.45	50831.24	5.20		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-10-26T15:37:46.690
 Event type : XRgt
 : No Uranus occs
 : 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 : 3426136643706870144
 2Mass ID (if available) : 06043061+2338000
 ICRS Star Coord at Epoch: 06h 04m 30.61516s +23:37:59.97343s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 14.368
 G magnitude : 17.183
 RP magnitude : 16.345
 BP magnitude : 17.940
 DUPflag : 0
 Distance (au) : 18.480
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -9.54
 Sun-Target sep (deg) : 122.28
 Sun-Moon sep (deg) : 39.08
 B (ring opening deg) : 74.48
 PA of pole (deg) : 59.48
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.254
 C/A sky separation (km) : 43608.9
 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



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	2032-10-26T14:57:07.322		18.61	-39.36	51216.36	-5.05		
lambda	I	2032-10-26T15:01:08.210		19.14	-39.05	50026.71	-4.76		
delta	I	2032-10-26T15:07:36.975		19.99	-38.50	48300.35	-4.11		
gamma	I	2032-10-26T15:10:25.725		20.35	-38.25	47631.17	-3.81		
eta	I	2032-10-26T15:12:28.648		20.61	-38.07	47176.12	-3.59		
beta	I	2032-10-26T15:20:27.569		21.60	-37.31	45680.68	-2.64		
alpha	I	2032-10-26T15:27:28.511		22.44	-36.59	44752.42	-1.74		

No planet occultations

alpha	E	2032-10-26T15:52:56.300		25.20	-33.66	44750.59	1.75		
beta	E	2032-10-26T15:59:57.337		25.89	-32.77	45680.35	2.66		
eta	E	2032-10-26T16:07:53.579		26.62	-31.72	47176.12	3.61		
gamma	E	2032-10-26T16:09:55.681		26.80	-31.45	47631.19	3.84		
delta	E	2032-10-26T16:12:43.190		27.04	-31.07	48300.35	4.15		
lambda	E	2032-10-26T16:19:08.697		27.57	-30.17	50026.71	4.80		
epsilon	E	2032-10-26T16:21:52.434		27.79	-29.78	50833.70	5.10		