

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2030-12-27T05:28:00.500
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3415540448287688448
 2Mass ID (if available) : 05153870+2308275

Uranus 2030-12-27T05:28:00 K13.33 G15.74 PgtRgt

ICRS Star Coord at Epoch: 05h 15m 38.69364s +23:08:27.60933s

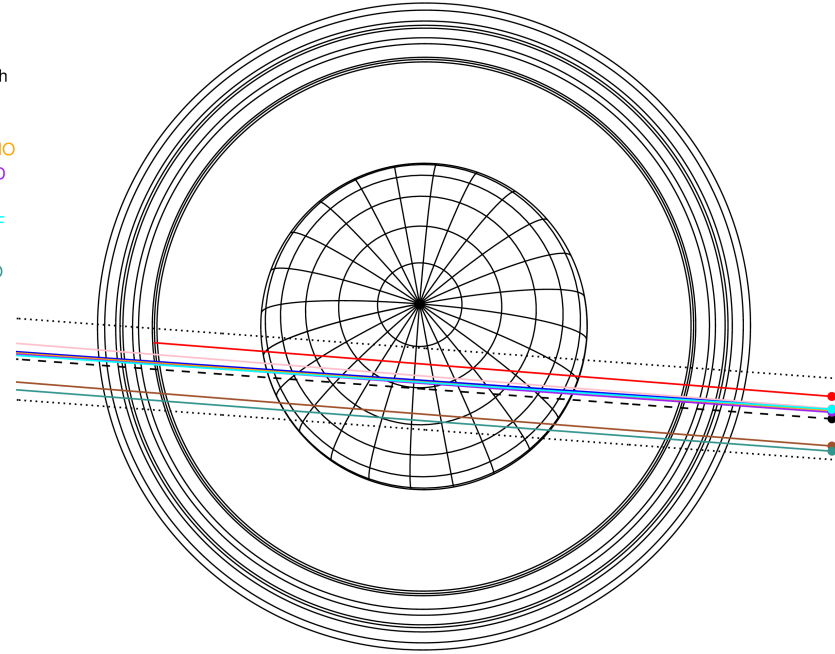
RUWE (>1.4 is poor) : 1.00
 K magnitude : 13.331
 G magnitude : 15.735
 RP magnitude : 14.964
 BP magnitude : 16.369
 DUPflag : 0
 Distance (au) : 18.202
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.41
 Sun-Target sep (deg) : 164.75
 Sun-Moon sep (deg) : 129.57
 B (ring opening deg) : 81.89
 PA of pole (deg) : 11.02

Uranus 2030-12-27T05:28:00 K13.33 G15.74
 PgtRgt



2030-12-27T05:28:00.5000 ra: 05 15 38.6936 s: +23 08 27.609 C/A 0.733° PA 355.81 deg v_sky -22.41 km/s D 18.20 AU
 Credit: Styled after SORA/Lucky Star

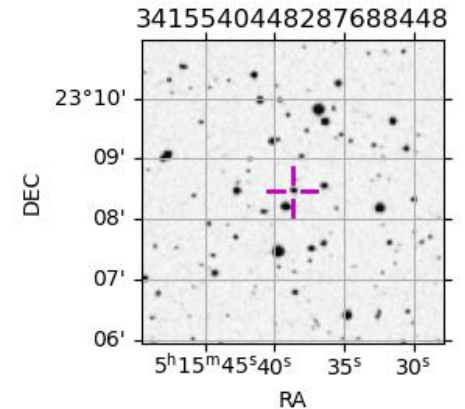
Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO



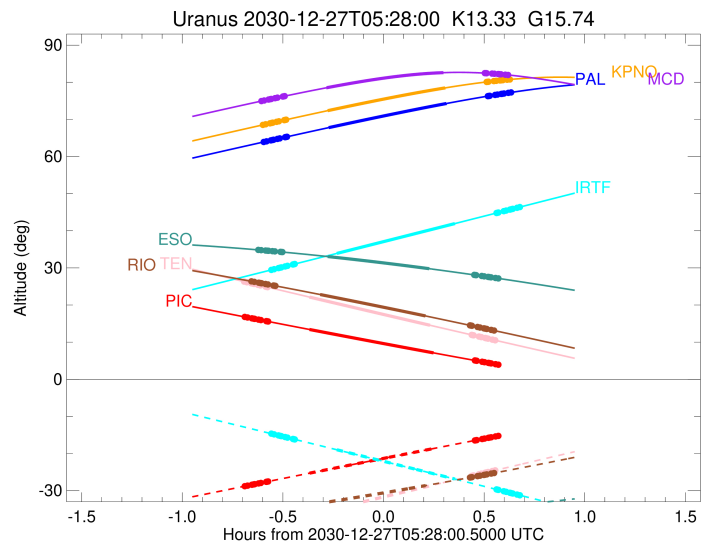
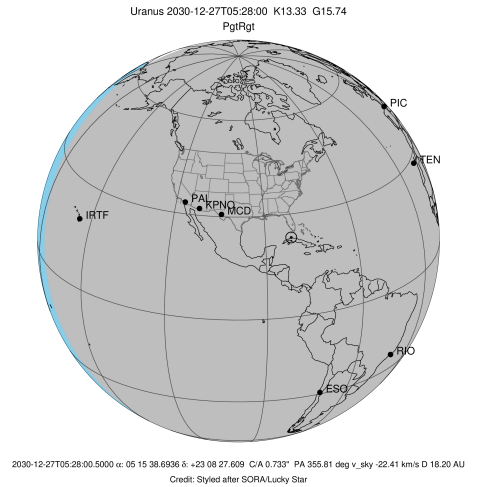
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

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	+++++	+ +	++	DEC 27 04:46 - DEC 27 05:55	PieRie
PAL	Palomar Mt (200")	33.4	243.1	+++++	+ +	+++++	DEC 27 04:52 - DEC 27 06:06	PieRie
PNO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++	+ +	+++++	DEC 27 04:52 - DEC 27 06:05	PieRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++	+ +	+++++	DEC 27 04:51 - DEC 27 06:05	PieRie
TEN	Teide Obs./Tenerife	28.3	343.5	+++++	+ +	+++++	DEC 27 04:46 - DEC 27 06:01	PieRie
IRTF	Mauna Kea/IRTF	19.8	204.5	+++++	+ +	+++++	DEC 27 04:54 - DEC 27 06:08	PieRie
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8	+++++	+ +	+++++	DEC 27 04:48 - DEC 27 06:01	PieRie
ESO	European Southern Obs	-29.3	289.3	+++++	+ +	+++++	DEC 27 04:50 - DEC 27 06:02	PieRie
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

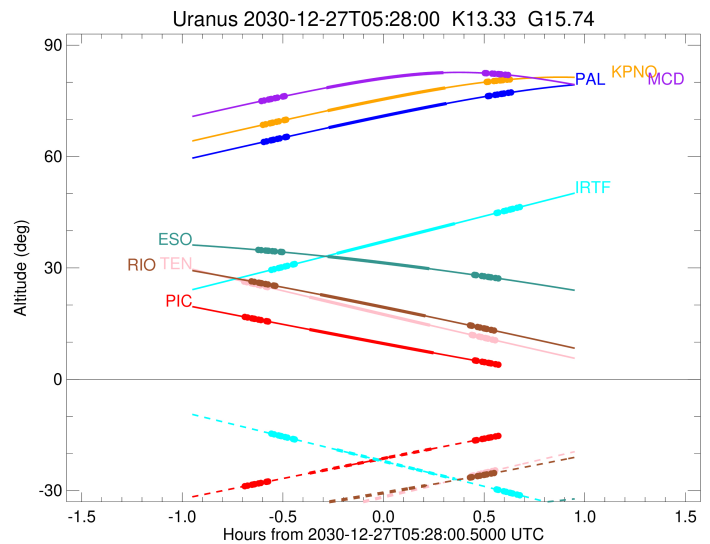
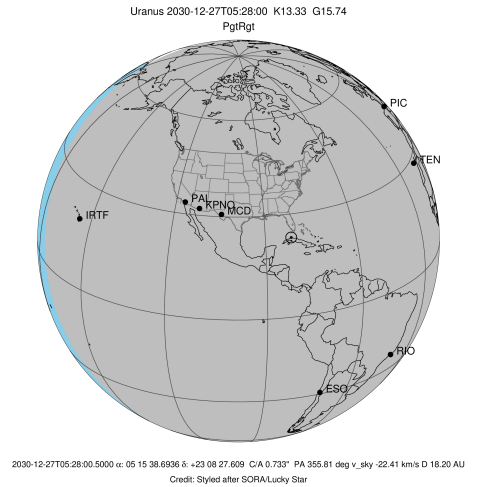


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2030-12-27T05:24:22.560
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 3415540448287688448
 2Mass ID (if available) : 05153870+2308275
 ICRS Star Coord at Epoch: 05h 15m 38.69364s +23:08:27.60933s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 13.331
 G magnitude : 15.735
 RP magnitude : 14.964
 BP magnitude : 16.369
 DUPflag : 0
 Distance (au) : 18.202
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.41
 Sun-Target sep (deg) : 164.75
 Sun-Moon sep (deg) : 129.25
 B (ring opening deg) : 81.89
 PA of pole (deg) : 11.02
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.445
 C/A sky separation (km) : 5874.0
 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



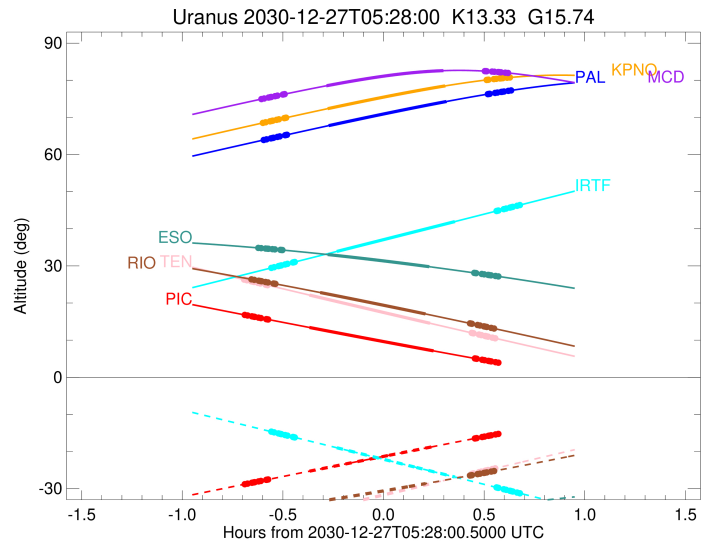
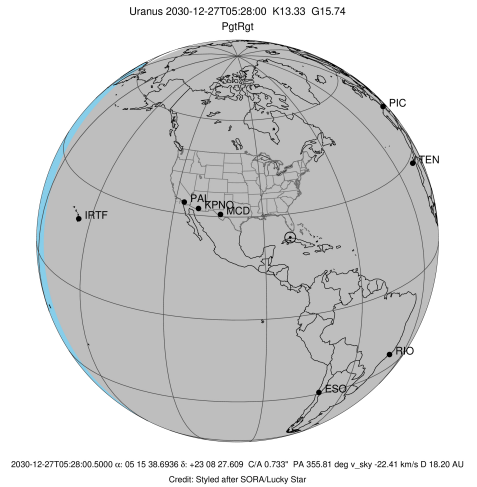
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2030-12-27T04:46:56.516		16.74	-28.75	50759.57	-22.30		
lambda	I	2030-12-27T04:47:29.391		16.64	-28.65	50026.71	-22.29		
delta	I	2030-12-27T04:48:46.869		16.42	-28.42	48300.35	-22.28		
gamma	I	2030-12-27T04:49:17.372		16.33	-28.32	47620.98	-22.27		
eta	I	2030-12-27T04:49:37.350		16.27	-28.26	47176.12	-22.27		
beta	I	2030-12-27T04:50:44.502		16.07	-28.06	45681.23	-22.25		
alpha	I	2030-12-27T04:51:27.891		15.94	-27.93	44715.66	-22.24		
4	I	2030-12-27T04:53:05.126		15.66	-27.63	42556.07	-22.22		
5	I	2030-12-27T04:53:17.745		15.62	-27.59	42272.17	-22.22		
6	I	2030-12-27T04:53:35.642		15.57	-27.54	41878.58	-22.21		
Uranus	I	2030-12-27T05:05:58.073		13.41	-25.29	25421.26		-3.91	-4.09
Uranus	E	2030-12-27T05:42:54.767		7.11	-18.66	25558.07		0.32	0.33
6	E	2030-12-27T05:55:12.759		5.08	-16.49	41800.29	22.11		
5	E	2030-12-27T05:55:31.729		5.03	-16.43	42218.70	22.12		
4	E	2030-12-27T05:55:48.801		4.98x	-16.38	42597.48	22.12		
alpha	E	2030-12-27T05:57:25.195		4.72x	-16.10	44730.06	22.14		
beta	E	2030-12-27T05:58:06.360		4.60x	-15.98	45641.61	22.15		
eta	E	2030-12-27T05:59:15.630		4.42x	-15.78	47176.12	22.16		
gamma	E	2030-12-27T05:59:36.182		4.36x	-15.72	47631.52	22.16		
delta	E	2030-12-27T06:00:06.362		4.28x	-15.63	48300.35	22.16		
lambda	E	2030-12-27T06:01:24.235		4.07x	-15.40	50026.71	22.17		
epsilon	E	2030-12-27T06:02:33.132		3.88x	-15.20	51554.71	22.18		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2030-12-27T05:29:09.670
 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 : 3415540448287688448
 2Mass ID (if available) : 05153870+2308275
 ICRS Star Coord at Epoch: 05h 15m 38.69364s +23:08:27.60933s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 13.331
 G magnitude : 15.735
 RP magnitude : 14.964
 BP magnitude : 16.369
 DUPflag : 0
 Distance (au) : 18.202
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.41
 Sun-Target sep (deg) : 164.75
 Sun-Moon sep (deg) : 130.46
 B (ring opening deg) : 81.89
 PA of pole (deg) : 11.02
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.639
 C/A sky separation (km) : 8433.4
 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



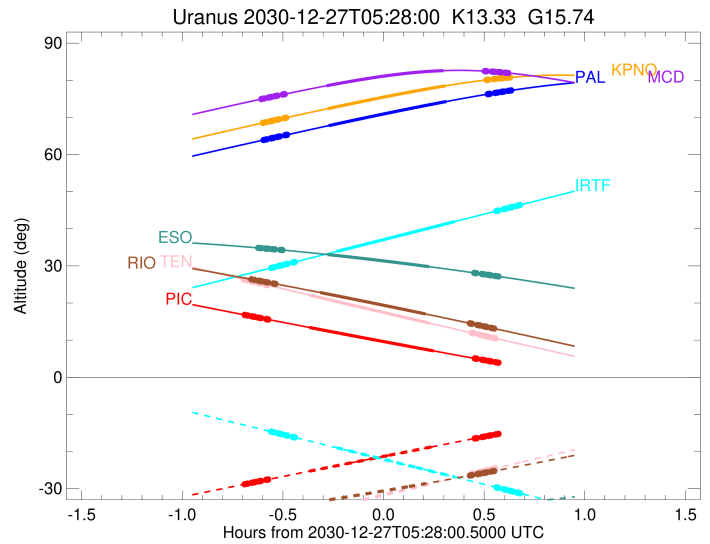
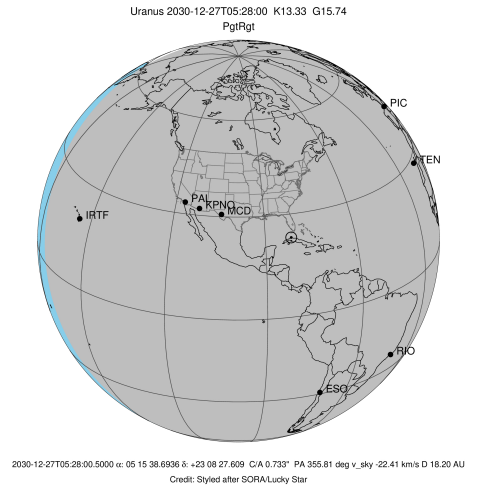
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2030-12-27T04:52:35.525		63.98	-50.36	50764.59	-22.45		
lambda	I	2030-12-27T04:53:08.411		64.09	-50.48	50026.71	-22.43		
delta	I	2030-12-27T04:54:25.408		64.35	-50.74	48300.35	-22.41		
gamma	I	2030-12-27T04:54:55.730		64.45	-50.85	47621.02	-22.40		
eta	I	2030-12-27T04:55:15.596		64.52	-50.92	47176.12	-22.39		
beta	I	2030-12-27T04:56:22.384		64.75	-51.15	45681.18	-22.37		
alpha	I	2030-12-27T04:57:05.476		64.89	-51.30	44717.32	-22.35		
4	I	2030-12-27T04:58:42.266		65.21	-51.64	42558.31	-22.31		
5	I	2030-12-27T04:58:54.753		65.26	-51.68	42275.85	-22.31		
6	I	2030-12-27T04:59:12.751		65.32	-51.74	41879.05	-22.29		
Uranus	I	2030-12-27T05:11:38.929		67.78	-54.34	25371.25		-4.57	-4.79
Uranus	E	2030-12-27T05:46:48.619		74.29	-61.60	25555.76		-0.60	-0.63
6	E	2030-12-27T05:59:05.864		76.27	-64.09	41801.88	22.32		
5	E	2030-12-27T05:59:24.809		76.32	-64.16	42224.31	22.33		
4	E	2030-12-27T05:59:41.609		76.36	-64.21	42600.01	22.34		
alpha	E	2030-12-27T06:01:16.987		76.59	-64.53	44732.19	22.38		
beta	E	2030-12-27T06:01:57.622		76.69	-64.67	45641.97	22.40		
eta	E	2030-12-27T06:03:06.077		76.86	-64.90	47176.12	22.42		
gamma	E	2030-12-27T06:03:26.381		76.91	-64.97	47631.46	22.43		
delta	E	2030-12-27T06:03:56.194		76.98	-65.07	48300.35	22.44		
lambda	E	2030-12-27T06:05:13.078		77.15	-65.32	50026.71	22.47		
epsilon	E	2030-12-27T06:06:21.085		77.31	-65.55	51555.29	22.49		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2030-12-27T05:28:50.630
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : KPNO
 Location : Kitt Peak Natl Obs
 Latitude (deg) : 31.96333
 E. Longitude (deg) : 248.40000
 Altitude (km) : 2.120
 Gaia source ID : 3415540448287688448
 2Mass ID (if available) : 05153870+2308275
 ICRS Star Coord at Epoch: 05h 15m 38.69364s +23:08:27.60933s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 13.331
 G magnitude : 15.735
 RP magnitude : 14.964
 BP magnitude : 16.369
 DUPflag : 0
 Distance (au) : 18.202
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.41
 Sun-Target sep (deg) : 164.75
 Sun-Moon sep (deg) : 130.43
 B (ring opening deg) : 81.89
 PA of pole (deg) : 11.02
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.656
 C/A sky separation (km) : 8666.6
 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



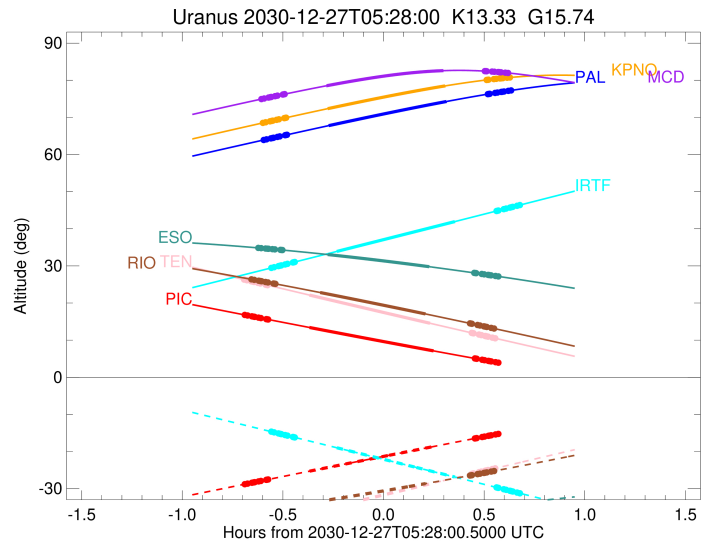
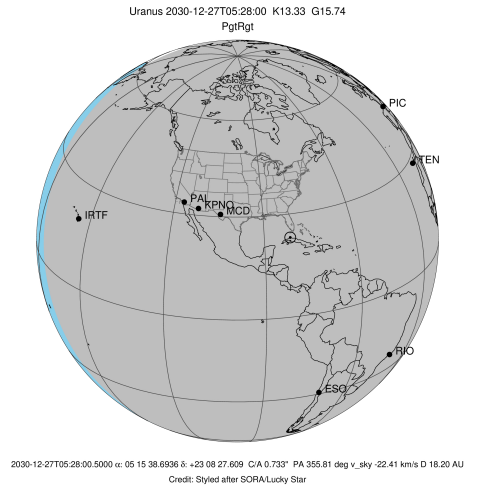
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2030-12-27T04:52:20.080		68.58	-54.82	50765.26	-22.45		
lambda	I	2030-12-27T04:52:52.992		68.69	-54.94	50026.71	-22.43		
delta	I	2030-12-27T04:54:09.986		68.95	-55.21	48300.35	-22.41		
gamma	I	2030-12-27T04:54:40.308		69.05	-55.32	47621.02	-22.40		
eta	I	2030-12-27T04:55:00.174		69.12	-55.39	47176.12	-22.39		
beta	I	2030-12-27T04:56:06.967		69.35	-55.62	45681.17	-22.36		
alpha	I	2030-12-27T04:56:50.056		69.49	-55.78	44717.51	-22.35		
4	I	2030-12-27T04:58:26.864		69.81	-56.12	42558.58	-22.30		
5	I	2030-12-27T04:58:39.346		69.85	-56.16	42276.28	-22.30		
6	I	2030-12-27T04:58:57.369		69.91	-56.22	41879.09	-22.28		
Uranus	I	2030-12-27T05:11:24.606		72.37	-58.85	25365.62		-4.64	-4.86
Uranus	E	2030-12-27T05:46:25.211		78.49	-66.16	25554.91		-0.67	-0.70
6	E	2030-12-27T05:58:43.595		80.09	-68.67	41802.01	22.30		
5	E	2030-12-27T05:59:02.564		80.12	-68.73	42224.72	22.32		
4	E	2030-12-27T05:59:19.367		80.16	-68.79	42600.19	22.33		
alpha	E	2030-12-27T06:00:54.799		80.32	-69.11	44732.33	22.37		
beta	E	2030-12-27T06:01:35.451		80.39	-69.25	45641.99	22.39		
eta	E	2030-12-27T06:02:43.938		80.50	-69.48	47176.12	22.41		
gamma	E	2030-12-27T06:03:04.250		80.53	-69.54	47631.46	22.42		
delta	E	2030-12-27T06:03:34.076		80.57	-69.64	48300.35	22.43		
lambda	E	2030-12-27T06:04:50.989		80.69	-69.90	50026.71	22.46		
epsilon	E	2030-12-27T06:05:59.019		80.78	-70.13	51555.27	22.48		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2030-12-27T05:28:20.890
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : MCD
 Location : McDonald Obs. 2.7m
 Latitude (deg) : 30.67158
 E. Longitude (deg) : 255.97844
 Altitude (km) : 2.075
 Gaia source ID : 3415540448287688448
 2Mass ID (if available) : 05153870+2308275
 ICRS Star Coord at Epoch: 05h 15m 38.69364s +23:08:27.60933s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 13.331
 G magnitude : 15.735
 RP magnitude : 14.964
 BP magnitude : 16.369
 DUPflag : 0
 Distance (au) : 18.202
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.41
 Sun-Target sep (deg) : 164.75
 Sun-Moon sep (deg) : 130.38
 B (ring opening deg) : 81.89
 PA of pole (deg) : 11.02
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.674
 C/A sky separation (km) : 8900.6
 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_itrff93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



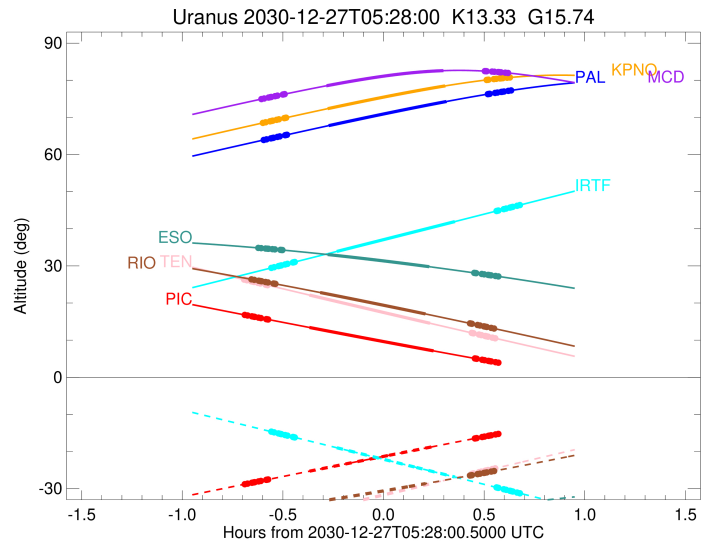
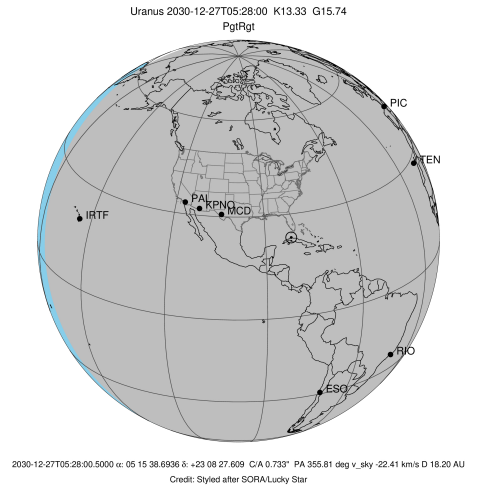
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2030-12-27T04:51:54.013		74.99	-61.31	50765.98	-22.46		
lambda	I	2030-12-27T04:52:26.953		75.10	-61.42	50026.71	-22.44		
delta	I	2030-12-27T04:53:43.939		75.35	-61.70	48300.35	-22.41		
gamma	I	2030-12-27T04:54:14.260		75.45	-61.81	47621.02	-22.40		
eta	I	2030-12-27T04:54:34.126		75.51	-61.88	47176.12	-22.39		
beta	I	2030-12-27T04:55:40.923		75.72	-62.12	45681.16	-22.36		
alpha	I	2030-12-27T04:56:24.006		75.86	-62.27	44717.72	-22.35		
4	I	2030-12-27T04:58:00.832		76.17	-62.61	42558.86	-22.30		
5	I	2030-12-27T04:58:13.308		76.21	-62.66	42276.72	-22.29		
6	I	2030-12-27T04:58:31.358		76.26	-62.72	41879.14	-22.28		
Uranus	I	2030-12-27T05:10:59.697		78.52	-65.37	25359.74		-4.71	-4.94
Uranus	E	2030-12-27T05:45:51.076		82.60	-72.62	25553.99		-0.74	-0.78
6	E	2030-12-27T05:58:10.754		82.47	-75.07	41802.12	22.28		
5	E	2030-12-27T05:58:29.751		82.46	-75.13	42225.11	22.30		
4	E	2030-12-27T05:58:46.560		82.44	-75.18	42600.36	22.31		
alpha	E	2030-12-27T06:00:22.066		82.35	-75.49	44732.47	22.35		
beta	E	2030-12-27T06:01:02.741		82.30	-75.62	45642.02	22.37		
eta	E	2030-12-27T06:02:11.274		82.22	-75.84	47176.12	22.40		
gamma	E	2030-12-27T06:02:31.599		82.19	-75.91	47631.45	22.41		
delta	E	2030-12-27T06:03:01.443		82.16	-76.00	48300.35	22.42		
lambda	E	2030-12-27T06:04:18.402		82.05	-76.24	50026.71	22.45		
epsilon	E	2030-12-27T06:05:26.467		81.95	-76.46	51555.26	22.47		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2030-12-27T05:23:48.340
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : TEN
 Location : Teide Obs./Tenerife
 Latitude (deg) : 28.30050
 E. Longitude (deg) : 343.48909
 Altitude (km) : 2.395
 Gaia source ID : 3415540448287688448
 2Mass ID (if available) : 05153870+2308275
 ICRS Star Coord at Epoch: 05h 15m 38.69364s +23:08:27.60933s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 13.331
 G magnitude : 15.735
 RP magnitude : 14.964
 BP magnitude : 16.369
 DUPflag : 0
 Distance (au) : 18.202
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.41
 Sun-Target sep (deg) : 164.75
 Sun-Moon sep (deg) : 129.25
 B (ring opening deg) : 81.89
 PA of pole (deg) : 11.02
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.586
 C/A sky separation (km) : 7741.7
 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



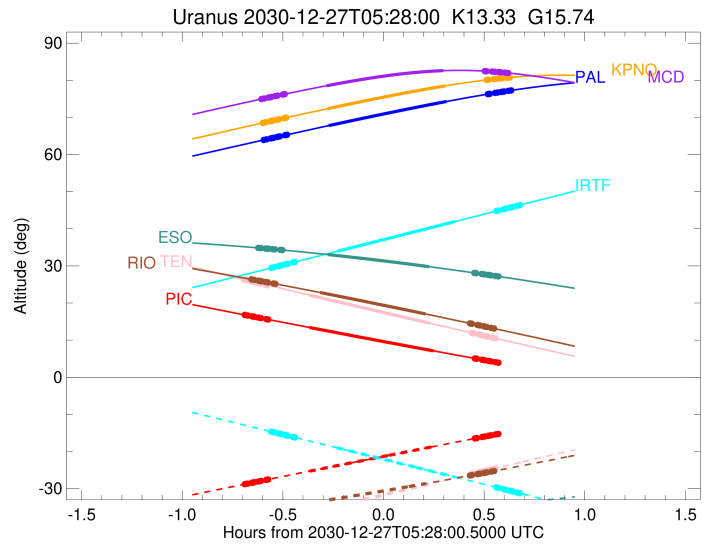
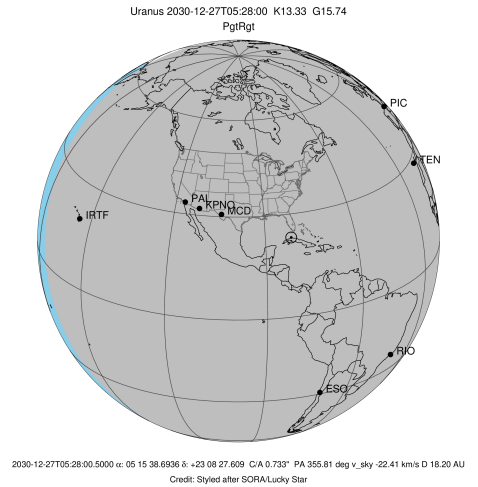
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2030-12-27T04:46:45.559		26.25	-40.66	50764.12	-22.31		
lambda	I	2030-12-27T04:47:18.635		26.13	-40.54	50026.71	-22.29		
delta	I	2030-12-27T04:48:36.124		25.85	-40.26	48300.35	-22.27		
gamma	I	2030-12-27T04:49:06.640		25.74	-40.14	47621.01	-22.26		
eta	I	2030-12-27T04:49:26.632		25.67	-40.07	47176.12	-22.25		
beta	I	2030-12-27T04:50:33.841		25.43	-39.83	45681.19	-22.23		
alpha	I	2030-12-27T04:51:17.213		25.28	-39.67	44717.12	-22.21		
4	I	2030-12-27T04:52:54.602		24.93	-39.32	42558.02	-22.18		
5	I	2030-12-27T04:53:07.175		24.88	-39.27	42275.39	-22.17		
6	I	2030-12-27T04:53:25.261		24.82	-39.20	41878.99	-22.16		
Uranus	I	2030-12-27T05:05:54.371		22.15	-36.48	25381.30		-4.45	-4.66
Uranus	E	2030-12-27T05:41:52.154		14.55	-28.71	25558.26		-0.29	-0.30
6	E	2030-12-27T05:54:16.208		11.96	-26.05	41801.26	22.05		
5	E	2030-12-27T05:54:35.331		11.90	-25.98	42222.20	22.06		
4	E	2030-12-27T05:54:52.382		11.84	-25.92	42599.08	22.06		
alpha	E	2030-12-27T05:56:28.986		11.50	-25.57	44731.38	22.10		
beta	E	2030-12-27T05:57:10.181		11.36	-25.42	45641.82	22.11		
eta	E	2030-12-27T05:58:19.554		11.12	-25.18	47176.12	22.13		
gamma	E	2030-12-27T05:58:40.133		11.05	-25.10	47631.49	22.13		
delta	E	2030-12-27T05:59:10.350		10.95	-25.00	48300.35	22.14		
lambda	E	2030-12-27T06:00:28.297		10.68	-24.72	50026.71	22.16		
epsilon	E	2030-12-27T06:01:37.260		10.44	-24.47	51555.23	22.17		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2030-12-27T05:31:37.800
 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 : 3415540448287688448
 2Mass ID (if available) : 05153870+2308275
 ICRS Star Coord at Epoch: 05h 15m 38.69364s +23:08:27.60933s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 13.331
 G magnitude : 15.735
 RP magnitude : 14.964
 BP magnitude : 16.369
 DUPflag : 0
 Distance (au) : 18.202
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.41
 Sun-Target sep (deg) : 164.75
 Sun-Moon sep (deg) : 130.54
 B (ring opening deg) : 81.89
 PA of pole (deg) : 11.02
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.663
 C/A sky separation (km) : 8750.5
 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



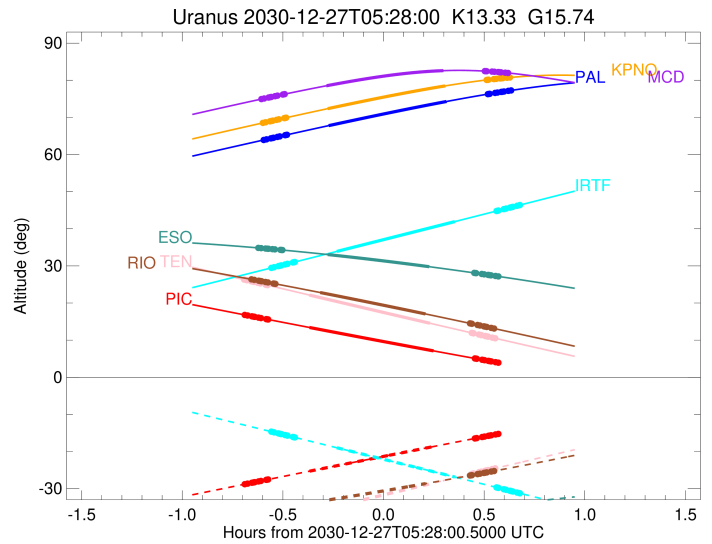
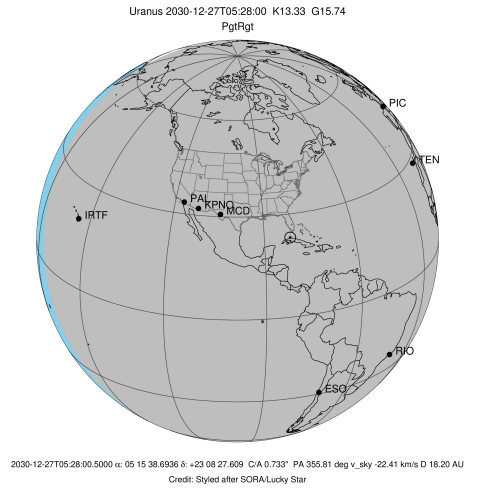
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2030-12-27T04:54:51.575		29.53	-14.72	50764.95	-22.26		
lambda	I	2030-12-27T04:55:24.759		29.65	-14.84	50026.71	-22.24		
delta	I	2030-12-27T04:56:42.417		29.95	-15.13	48300.35	-22.22		
gamma	I	2030-12-27T04:57:13.000		30.06	-15.24	47621.02	-22.21		
eta	I	2030-12-27T04:57:33.037		30.14	-15.32	47176.12	-22.20		
beta	I	2030-12-27T04:58:40.403		30.39	-15.56	45681.18	-22.17		
alpha	I	2030-12-27T04:59:23.864		30.56	-15.72	44717.44	-22.16		
4	I	2030-12-27T05:01:01.498		30.93	-16.09	42558.49	-22.12		
5	I	2030-12-27T05:01:14.088		30.97	-16.13	42276.14	-22.11		
6	I	2030-12-27T05:01:32.259		31.04	-16.20	41879.08	-22.10		
Uranus	I	2030-12-27T05:14:05.842		33.90	-18.99	25366.01		-4.64	-4.86
Uranus	E	2030-12-27T05:49:17.366		41.94	-26.87	25554.09		-0.73	-0.77
6	E	2030-12-27T06:01:40.215		44.78	-29.67	41802.16	22.19		
5	E	2030-12-27T06:01:59.299		44.85	-29.74	42225.24	22.20		
4	E	2030-12-27T06:02:16.181		44.92	-29.80	42600.42	22.21		
alpha	E	2030-12-27T06:03:52.110		45.28	-30.16	44732.54	22.26		
beta	E	2030-12-27T06:04:32.963		45.44	-30.32	45642.03	22.27		
eta	E	2030-12-27T06:05:41.796		45.70	-30.58	47176.12	22.30		
gamma	E	2030-12-27T06:06:02.210		45.78	-30.65	47631.45	22.31		
delta	E	2030-12-27T06:06:32.184		45.90	-30.77	48300.35	22.32		
lambda	E	2030-12-27T06:07:49.476		46.19	-31.06	50026.71	22.35		
epsilon	E	2030-12-27T06:08:57.832		46.45	-31.32	51555.24	22.37		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2030-12-27T05:24:42.440
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : RIO
 Location : Rio de Janeiro
 Latitude (deg) : -22.89506
 E. Longitude (deg) : 316.77708
 Altitude (km) : 0.033
 Gaia source ID : 3415540448287688448
 2Mass ID (if available) : 05153870+2308275
 ICRS Star Coord at Epoch: 05h 15m 38.69364s +23:08:27.60933s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 13.331
 G magnitude : 15.735
 RP magnitude : 14.964
 BP magnitude : 16.369
 DUPflag : 0
 Distance (au) : 18.202
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.41
 Sun-Target sep (deg) : 164.75
 Sun-Moon sep (deg) : 129.33
 B (ring opening deg) : 81.89
 PA of pole (deg) : 11.02
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.038
 C/A sky separation (km) : 13699.9
 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_itrff93_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	2030-12-27T04:48:55.047		26.33	-36.09	50781.94	-21.90		
lambda	I	2030-12-27T04:49:29.594		26.23	-36.02	50026.71	-21.85		
delta	I	2030-12-27T04:50:48.736		26.01	-35.85	48300.35	-21.78		
gamma	I	2030-12-27T04:51:19.943		25.92	-35.79	47621.15	-21.75		
eta	I	2030-12-27T04:51:40.414		25.86	-35.74	47176.12	-21.73		
beta	I	2030-12-27T04:52:49.320		25.67	-35.59	45680.84	-21.66		
alpha	I	2030-12-27T04:53:33.622		25.54	-35.50	44721.76	-21.62		
4	I	2030-12-27T04:55:13.851		25.26	-35.28	42564.41	-21.50		
5	I	2030-12-27T04:55:26.634		25.22	-35.25	42285.03	-21.48		
6	I	2030-12-27T04:55:45.793		25.16	-35.21	41879.71	-21.45		
Uranus	I	2030-12-27T05:09:08.246		22.83	-33.39	25233.31		-6.05	-6.34
Uranus	E	2030-12-27T05:40:32.093		17.06	-28.64	25508.55		-2.36	-2.47
6	E	2030-12-27T05:53:45.564		14.53	-26.48	41805.06	21.36		
5	E	2030-12-27T05:54:05.620		14.47	-26.42	42234.09	21.40		
4	E	2030-12-27T05:54:22.938		14.41	-26.37	42604.04	21.41		
alpha	E	2030-12-27T05:56:02.246		14.09	-26.10	44735.64	21.52		
beta	E	2030-12-27T05:56:44.358		13.95	-25.98	45642.75	21.56		
eta	E	2030-12-27T05:57:55.357		13.72	-25.78	47176.12	21.63		
gamma	E	2030-12-27T05:58:16.391		13.66	-25.72	47631.31	21.65		
delta	E	2030-12-27T05:58:47.275		13.55	-25.63	48300.35	21.68		
lambda	E	2030-12-27T06:00:06.798		13.30	-25.41	50026.71	21.74		
epsilon	E	2030-12-27T06:01:16.924		13.07	-25.21	51553.09	21.79		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2030-12-27T05:26:23.350
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : ESO
 Location : European Southern Obs. (3.6m)
 Latitude (deg) : -29.26097
 E. Longitude (deg) : 289.26831
 Altitude (km) : 2.400
 Gaia source ID : 3415540448287688448
 2Mass ID (if available) : 05153870+2308275
 ICRS Star Coord at Epoch: 05h 15m 38.69364s +23:08:27.60933s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 13.331
 G magnitude : 15.735
 RP magnitude : 14.964
 BP magnitude : 16.369
 DUPflag : 0
 Distance (au) : 18.202
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.41
 Sun-Target sep (deg) : 164.75
 Sun-Moon sep (deg) : 129.69
 B (ring opening deg) : 81.89
 PA of pole (deg) : 11.02
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.115
 C/A sky separation (km) : 14724.7
 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_itrff93_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	2030-12-27T04:50:57.984		34.82	-37.56	50785.08	-21.84		
lambda	I	2030-12-27T04:51:32.777		34.78	-37.55	50026.71	-21.78		
delta	I	2030-12-27T04:52:52.178		34.68	-37.54	48300.35	-21.70		
gamma	I	2030-12-27T04:53:23.496		34.63	-37.53	47621.18	-21.67		
eta	I	2030-12-27T04:53:44.046		34.61	-37.53	47176.12	-21.65		
beta	I	2030-12-27T04:54:53.238		34.51	-37.52	45680.75	-21.57		
alpha	I	2030-12-27T04:55:37.703		34.45	-37.51	44722.48	-21.52		
4	I	2030-12-27T04:57:18.440		34.32	-37.48	42565.42	-21.38		
5	I	2030-12-27T04:57:31.271		34.30	-37.48	42286.45	-21.36		
6	I	2030-12-27T04:57:50.618		34.27	-37.48	41879.74	-21.32		
Uranus	I	2030-12-27T05:11:25.318		33.05	-37.17	25207.02		-6.30	-6.59
Uranus	E	2030-12-27T05:41:37.170		29.79	-35.77	25490.12		-2.76	-2.89
6	E	2030-12-27T05:55:01.299		28.12	-34.86	41805.89	21.27		
5	E	2030-12-27T05:55:21.497		28.08	-34.83	42236.42	21.31		
4	E	2030-12-27T05:55:38.825		28.04	-34.81	42604.93	21.33		
alpha	E	2030-12-27T05:57:18.440		27.82	-34.69	44736.44	21.47		
beta	E	2030-12-27T05:58:00.631		27.73	-34.63	45642.98	21.51		
eta	E	2030-12-27T05:59:11.763		27.58	-34.54	47176.12	21.59		
gamma	E	2030-12-27T05:59:32.830		27.53	-34.51	47631.27	21.62		
delta	E	2030-12-27T06:00:03.760		27.46	-34.47	48300.35	21.65		
lambda	E	2030-12-27T06:01:23.366		27.29	-34.37	50026.71	21.72		
epsilon	E	2030-12-27T06:02:33.478		27.13	-34.27	51551.96	21.78		