

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-04-04T19:59:28.450
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3379627306147808000
 2Mass ID (if available) : 06461873+2323376

ICRS Star Coord at Epoch: 06h 46m 18.75722s +23:23:37.50558s

RUWE (>1.4 is poor) : 1.19
 K magnitude : 8.915
 G magnitude : 11.020
 RP magnitude : 10.371
 BP magnitude : 11.504
 DUPflag : 0
 Distance (au) : 18.863
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 8.78
 Sun-Target sep (deg) : 85.49
 Sun-Moon sep (deg) : 15.69
 B (ring opening deg) : 65.71
 PA of pole (deg) : 74.62

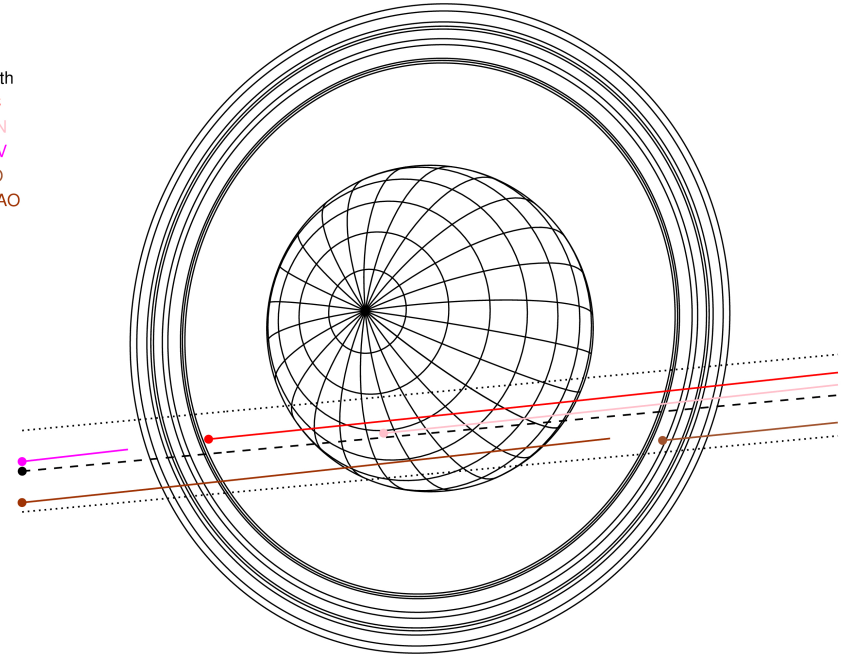
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2036-04-04T19:59:28.4500 a: 06 46 18.75722 s: +23 23 37.506 C/A 1.183° PA 5.33 deg v_sky + 8.78 km/s D 18.86 AU
 Credit: Styled after SORA/Lucky Star

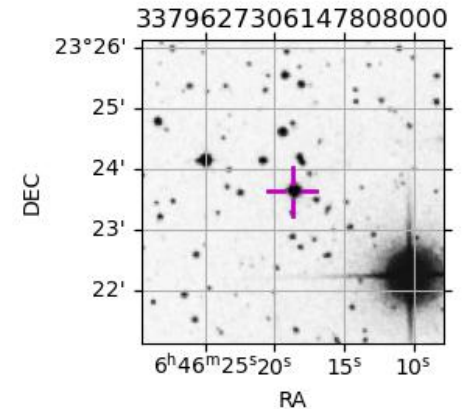
Uranus 2036-04-04T19:59:28 K8.91 G11.02 PgtRgt

Earth
 PIC
 TEN
 KAV
 RIO
 SAAO

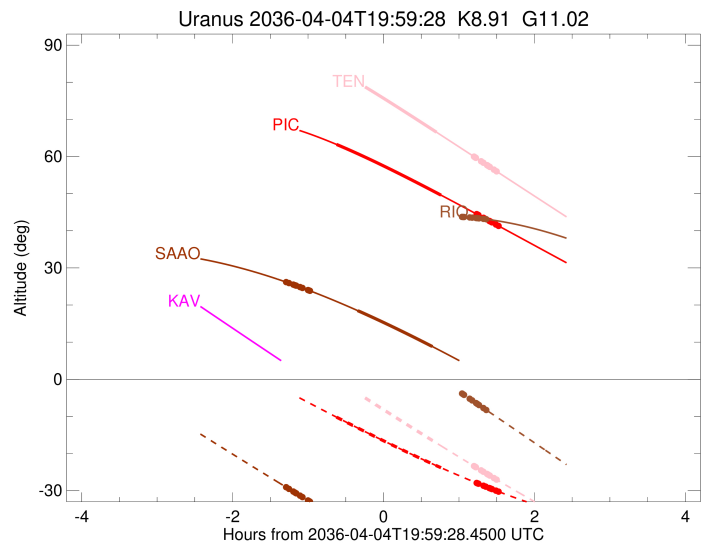
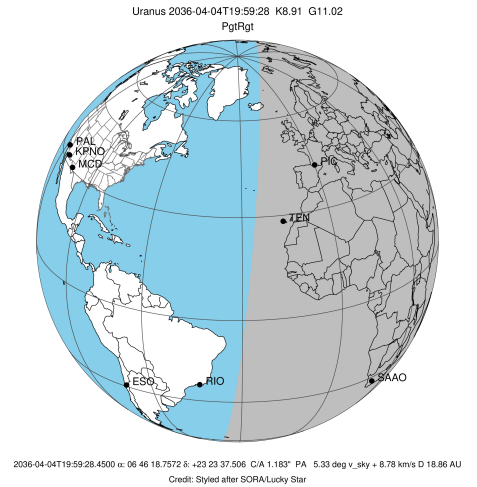


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1		+	+++++	APR 04 19:22 - APR 04 21:31	PieRne
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		+	+++++	APR 04 20:41 - APR 04 21:29	PneRne
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			+++++	APR 04 21:07 - APR 04 21:21	PnnRne
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	+++++	+		APR 04 18:42 - APR 04 20:38	PieRin
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn

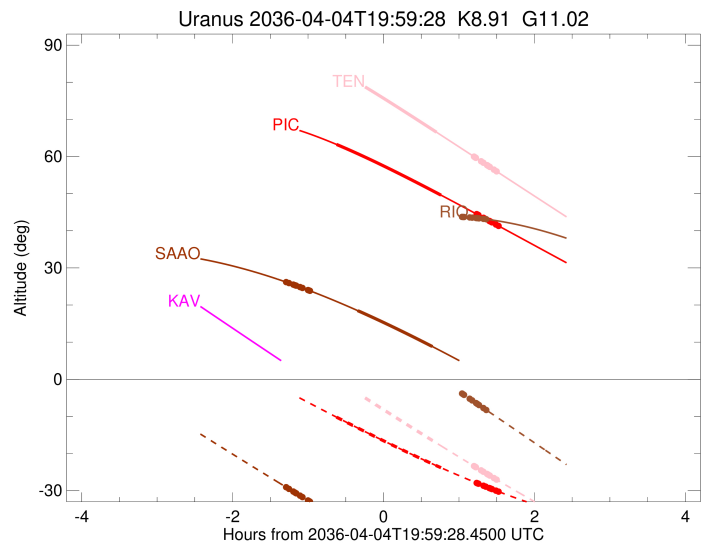
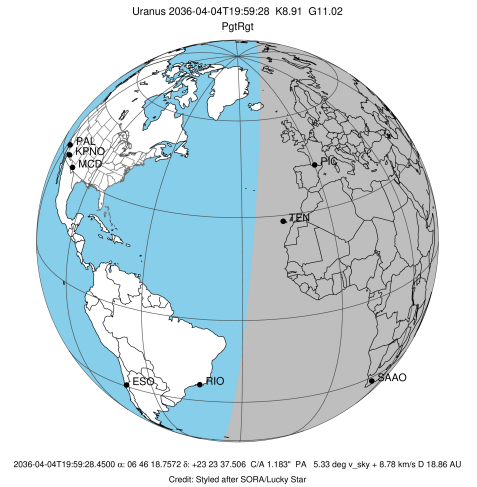


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-04-04T20:04:07.520
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 3379627306147808000
 2Mass ID (if available) : 06461873+2323376
 ICRS Star Coord at Epoch: 06h 46m 18.75722s +23:23:37.50558s
 RUWE (>1.4 is poor) : 1.19
 K magnitude : 8.915
 G magnitude : 11.020
 RP magnitude : 10.371
 BP magnitude : 11.504
 DUPflag : 0
 Distance (au) : 18.863
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 8.78
 Sun-Target sep (deg) : 85.49
 Sun-Moon sep (deg) : 15.66
 B (ring opening deg) : 65.71
 PA of pole (deg) : 74.62
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.000
 C/A sky separation (km) : 13682.6
 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



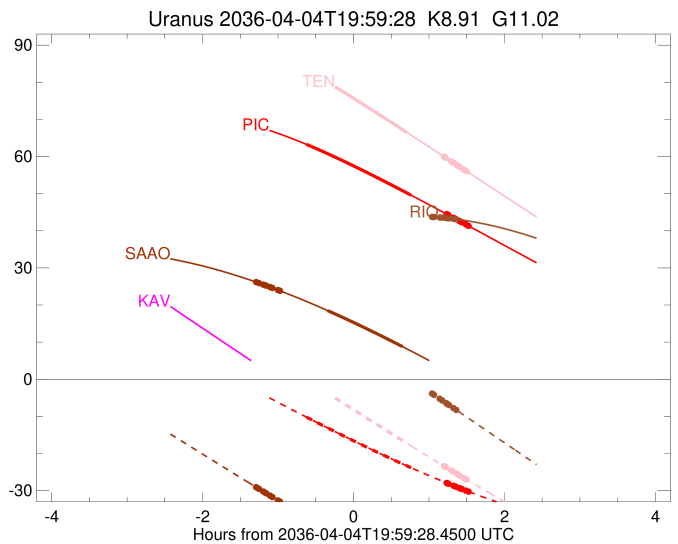
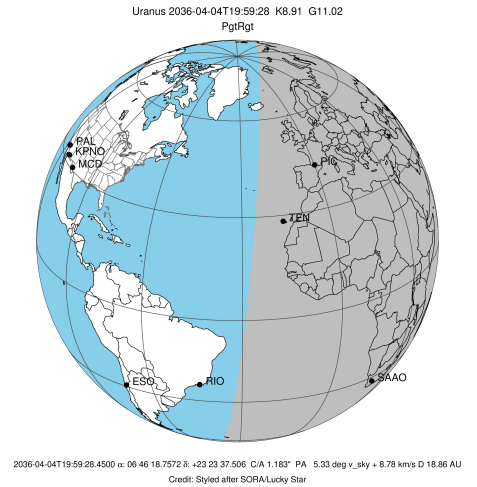
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-04-04T18:33:08.683		68.92	-1.50x	51089.39	-8.80		
lambda	I	2036-04-04T18:35:09.776		68.75	-1.86x	50026.71	-8.77		
delta	I	2036-04-04T18:38:26.922		68.46	-2.45x	48300.35	-8.74		
gamma	I	2036-04-04T18:39:44.292		68.35	-2.69x	47624.19	-8.73		
eta	I	2036-04-04T18:40:35.614		68.27	-2.84x	47176.12	-8.73		
beta	I	2036-04-04T18:43:29.933		67.99	-3.36x	45655.79	-8.70		
alpha	I	2036-04-04T18:45:15.319		67.81	-3.68x	44738.57	-8.68		
4	I	2036-04-04T18:49:21.505		67.39	-4.41x	42616.38	-8.64		
5	I	2036-04-04T18:50:14.241		67.29	-4.57x	42157.05	-8.63		
6	I	2036-04-04T18:50:49.904		67.23	-4.68x	41860.77	-8.63		
Uranus	I	2036-04-04T19:22:03.738		63.27	-10.19	25387.44		14.02	14.65
Uranus	E	2036-04-04T20:45:15.006		49.59	-23.84	25092.28		-23.76	-24.76
6	E	2036-04-04T21:13:29.484		44.50	-27.93	41840.94	8.80		
5	E	2036-04-04T21:14:22.063		44.34	-28.05	42284.43	8.80		
4	E	2036-04-04T21:14:49.390		44.26	-28.11	42538.16	8.82		
alpha	E	2036-04-04T21:18:53.015		43.52	-28.67	44686.20	8.87		
beta	E	2036-04-04T21:20:44.664		43.18	-28.92	45676.69	8.89		
eta	E	2036-04-04T21:23:32.877		42.67	-29.30	47176.12	8.92		
gamma	E	2036-04-04T21:24:23.785		42.51	-29.41	47630.71	8.93		
delta	E	2036-04-04T21:25:38.679		42.28	-29.57	48300.35	8.95		
lambda	E	2036-04-04T21:28:51.259		41.69	-30.00	50026.71	8.98		
epsilon	E	2036-04-04T21:31:24.492		41.23	-30.33	51404.70	9.02		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-04-04T20:02:31.910
 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 : 3379627306147808000
 2Mass ID (if available) : 06461873+2323376
 ICRS Star Coord at Epoch: 06h 46m 18.75722s +23:23:37.50558s
 RUWE (>1.4 is poor) : 1.19
 K magnitude : 8.915
 G magnitude : 11.020
 RP magnitude : 10.371
 BP magnitude : 11.504
 DUPflag : 0
 Distance (au) : 18.863
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 8.78
 Sun-Target sep (deg) : 85.49
 Sun-Moon sep (deg) : 15.76
 B (ring opening deg) : 65.71
 PA of pole (deg) : 74.62
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.138
 C/A sky separation (km) : 15567.3
 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_itrf93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



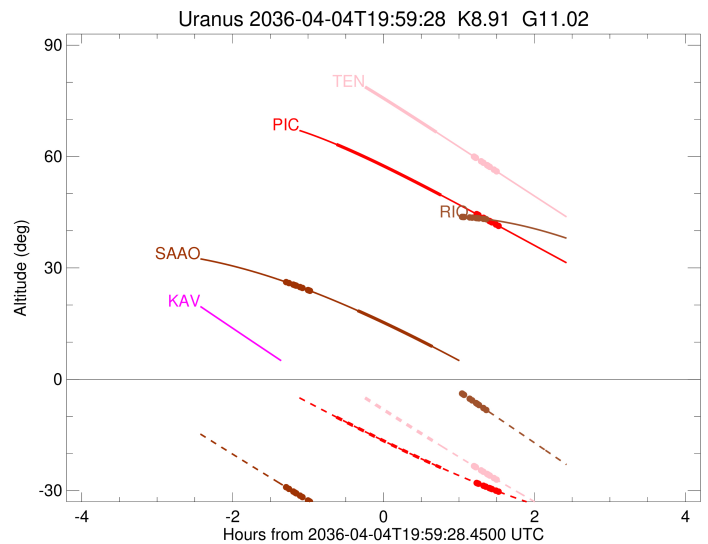
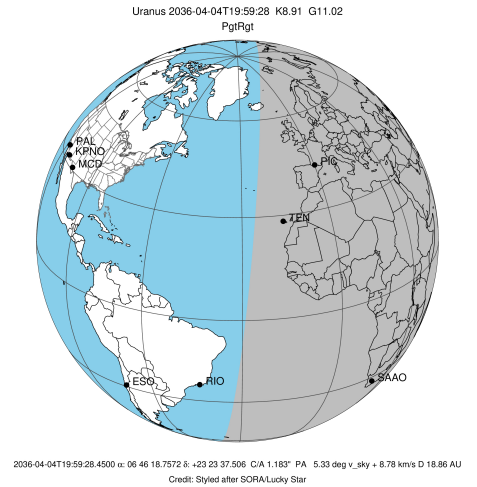
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-04-04T18:31:18.869		82.00	11.11x	51103.79	-8.62		
lambda	I	2036-04-04T18:33:24.243		82.37	10.65x	50026.71	-8.58		
delta	I	2036-04-04T18:36:45.814		82.95	9.91x	48300.35	-8.55		
gamma	I	2036-04-04T18:38:04.966		83.16	9.62x	47624.38	-8.53		
eta	I	2036-04-04T18:38:57.529		83.30	9.42x	47176.12	-8.52		
beta	I	2036-04-04T18:41:56.030		83.75	8.77x	45656.59	-8.49		
alpha	I	2036-04-04T18:43:44.335		84.01	8.37x	44737.40	-8.46		
4	I	2036-04-04T18:47:57.001		84.53	7.44x	42616.52	-8.41		
5	I	2036-04-04T18:48:51.416		84.63	7.24x	42156.28	-8.39		
6	I	2036-04-04T18:49:27.719		84.69	7.11x	41862.37	-8.39		
Uranus	I	2036-04-04T19:22:28.783		82.99	-0.14x	25426.84		12.26	12.82
Uranus	E	2036-04-04T20:41:37.226		66.55	-17.18	25113.42		-23.17	-24.15
6	E	2036-04-04T21:11:23.279		59.99	-23.38	41843.04	8.51		
5	E	2036-04-04T21:12:17.031		59.79	-23.56	42281.26	8.51		
4	E	2036-04-04T21:12:45.786		59.68	-23.66	42539.70	8.53		
alpha	E	2036-04-04T21:16:57.046		58.76	-24.51	44685.76	8.60		
beta	E	2036-04-04T21:18:52.328		58.33	-24.91	45677.25	8.63		
eta	E	2036-04-04T21:21:45.598		57.69	-25.49	47176.12	8.67		
gamma	E	2036-04-04T21:22:38.033		57.50	-25.67	47630.83	8.68		
delta	E	2036-04-04T21:23:55.112		57.22	-25.93	48300.35	8.69		
lambda	E	2036-04-04T21:27:13.209		56.49	-26.60	50026.71	8.73		
epsilon	E	2036-04-04T21:29:52.104		55.90	-27.13	51416.99	8.78		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-04-04T19:57:59.850
 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 : 3379627306147808000
 2Mass ID (if available) : 06461873+2323376
 ICRS Star Coord at Epoch: 06h 46m 18.75722s +23:23:37.50558s
 RUWE (>1.4 is poor) : 1.19
 K magnitude : 8.915
 G magnitude : 11.020
 RP magnitude : 10.371
 BP magnitude : 11.504
 DUPflag : 0
 Distance (au) : 18.863
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 8.78
 Sun-Target sep (deg) : 85.49
 Sun-Moon sep (deg) : 15.88
 B (ring opening deg) : 65.71
 PA of pole (deg) : 74.62
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.533
 C/A sky separation (km) : 20966.0
 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_itrf93_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	2036-04-04T18:30:03.802		33.17	30.17x	51146.39	-8.30		
lambda	I	2036-04-04T18:32:19.485		33.49	29.69x	50026.71	-8.23		
delta	I	2036-04-04T18:35:50.065		33.98	28.93x	48300.35	-8.16		
gamma	I	2036-04-04T18:37:12.943		34.17	28.64x	47624.97	-8.14		
eta	I	2036-04-04T18:38:08.187		34.30	28.44x	47176.12	-8.11		
beta	I	2036-04-04T18:41:15.812		34.72	27.76x	45659.00	-8.04		
alpha	I	2036-04-04T18:43:11.014		34.98	27.35x	44733.73	-7.99		
4	I	2036-04-04T18:47:39.010		35.57	26.38x	42616.39	-7.88		
5	I	2036-04-04T18:48:37.517		35.69	26.17x	42154.95	-7.84		
6	I	2036-04-04T18:49:15.293		35.77	26.03x	41866.80	-7.83		
Uranus	I	2036-04-04T19:28:53.912		40.18	17.29x	25529.27		5.76	6.03
Uranus	E	2036-04-04T20:26:02.579		43.63	4.37x	25232.91		-19.60	-20.45
6	E	2036-04-04T21:01:53.603		43.74	-3.84x	41849.39	7.83		
5	E	2036-04-04T21:02:49.767		43.72	-4.05x	42270.83	7.84		
4	E	2036-04-04T21:03:22.845		43.71	-4.18x	42544.92	7.87		
alpha	E	2036-04-04T21:07:53.114		43.59	-5.21	44684.86	7.99		
beta	E	2036-04-04T21:09:57.332		43.53	-5.69	45678.75	8.04		
eta	E	2036-04-04T21:13:02.669		43.44	-6.40	47176.12	8.11		
gamma	E	2036-04-04T21:13:58.700		43.40	-6.62	47631.15	8.13		
delta	E	2036-04-04T21:15:20.857		43.35	-6.93	48300.35	8.16		
lambda	E	2036-04-04T21:18:51.538		43.22	-7.74	50026.71	8.23		
epsilon	E	2036-04-04T21:21:44.233		43.09	-8.40	51452.08	8.30		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-04-04T20:09:15.400
 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 : 3379627306147808000
 2Mass ID (if available) : 06461873+2323376
 ICRS Star Coord at Epoch: 06h 46m 18.75722s +23:23:37.50558s
 RUWE (>1.4 is poor) : 1.19
 K magnitude : 8.915
 G magnitude : 11.020
 RP magnitude : 10.371
 BP magnitude : 11.504
 DUPflag : 0
 Distance (au) : 18.863
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 8.78
 Sun-Target sep (deg) : 85.49
 Sun-Moon sep (deg) : 14.97
 B (ring opening deg) : 65.71
 PA of pole (deg) : 74.62
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.479
 C/A sky separation (km) : 20236.4
 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_itrf93_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	2036-04-04T18:42:05.163		26.18	-29.07	51147.34	-8.40		
lambda	I	2036-04-04T18:44:19.283		25.91	-29.54	50026.71	-8.34		
delta	I	2036-04-04T18:47:47.013		25.49	-30.25	48300.35	-8.28		
gamma	I	2036-04-04T18:49:08.682		25.33	-30.53	47624.97	-8.26		
eta	I	2036-04-04T18:50:03.093		25.22	-30.72	47176.12	-8.24		
beta	I	2036-04-04T18:53:07.718		24.83	-31.35	45659.00	-8.18		
alpha	I	2036-04-04T18:55:00.938		24.60	-31.74	44733.76	-8.14		
4	I	2036-04-04T18:59:23.906		24.04	-32.64	42616.40	-8.04		
5	I	2036-04-04T19:00:21.228		23.91	-32.84	42154.96	-8.01		
6	I	2036-04-04T19:00:58.241		23.83	-32.96	41866.72	-8.00		
Uranus	I	2036-04-04T19:38:54.099		18.50	-40.58	25521.70		6.46	6.76
Uranus	E	2036-04-04T20:38:23.918		8.80	-51.61	25204.44		-20.49	-21.38
6	E	2036-04-04T21:11:53.729		2.80x	-56.92	41848.04	8.22		
5	E	2036-04-04T21:12:47.700		2.64x	-57.05	42273.17	8.23		
4	E	2036-04-04T21:13:18.800		2.54x	-57.12	42543.74	8.26		
alpha	E	2036-04-04T21:17:36.594		1.75x	-57.73	44685.00	8.38		
beta	E	2036-04-04T21:19:34.956		1.38x	-58.00	45678.45	8.43		
eta	E	2036-04-04T21:22:31.722		0.84x	-58.39	47176.12	8.50		
gamma	E	2036-04-04T21:23:25.153		0.67x	-58.51	47631.08	8.53		
delta	E	2036-04-04T21:24:43.521		0.43x	-58.68	48300.35	8.55		
lambda	E	2036-04-04T21:28:04.489		-0.20x	-59.11	50026.71	8.62		
epsilon	E	2036-04-04T21:30:48.350		-0.72x	-59.45	51444.38	8.70		