

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-04-12T23:26:20.690
 Event type : PtRgt
 : Uranus occs: topocentric, not geocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3425391037385691904
 2Mass ID (if available) : 06085607+2341387

ICRS Star Coord at Epoch: 06h 08m 56.07139s +23:41:38.34196s

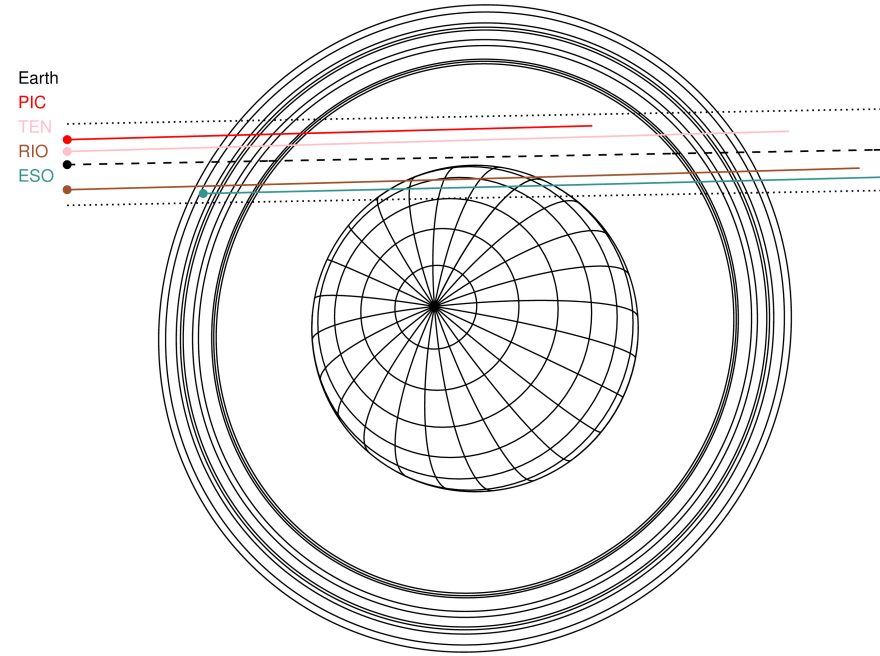
RUWE (>1.4 is poor) : 1.87
 K magnitude : 14.565
 G magnitude : 17.708
 RP magnitude : 16.661
 BP magnitude : 18.521
 DUPflag : 0
 Distance (au) : 19.264
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 16.85
 Sun-Target sep (deg) : 69.40
 Sun-Moon sep (deg) : 146.83
 B (ring opening deg) : 73.57
 PA of pole (deg) : 61.48

#	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



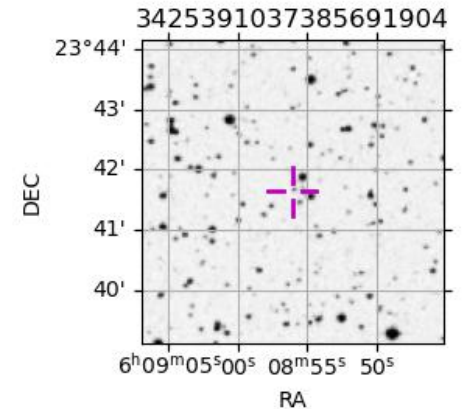
2034-04-12T23:26:20.6900 ex: 06 08 56.0714 s: +23 41 38.342 C/A 1.927 PA 181.05 deg v_sky +16.85 km/s D 19.26 AU
 Credit: Styled after SORA/Lucky Star

Uranus 2034-04-12T23:26:20 K14.56 G17.71 PtRgt

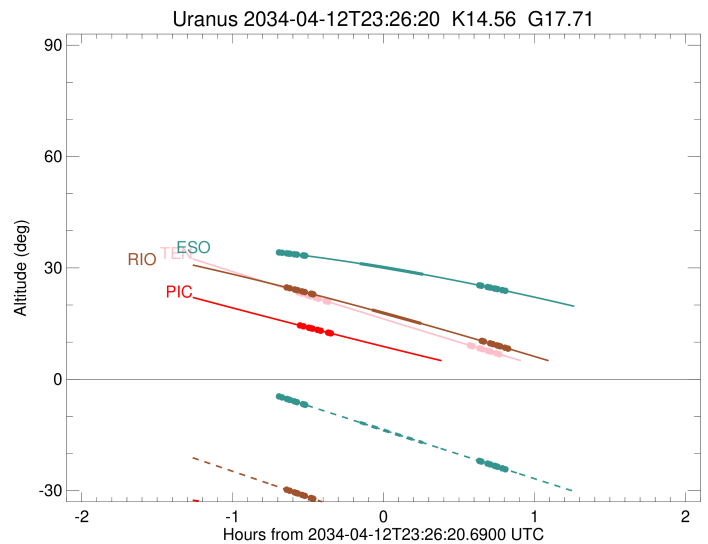
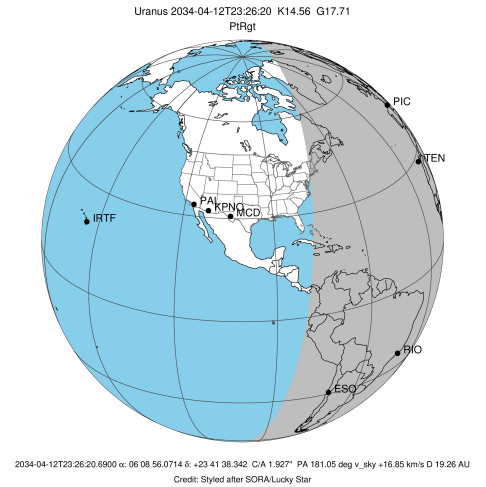


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++++			APR 12 22:53 - APR 12 23:05	PnnRin
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 12 22:52 - APR 13 00:12	PnnRie
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 12 22:48 - APR 13 00:16	PieRie
ESO	European Southern Obs	-29.3	289.3	+++++++	+ +	+++++++	APR 12 22:47 - APR 13 00:15	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 : 2034-04-12T23:30:32.750
 Event type : PtRgt
 : Uranus occs: topocentric, not geocentric
 : 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 : 3425391037385691904
 2Mass ID (if available) : 06085607+2341387
 ICRS Star Coord at Epoch: 06h 08m 56.07139s +23:41:38.34196s
 RUWE (>1.4 is poor) : 1.87
 K magnitude : 14.565
 G magnitude : 17.708
 RP magnitude : 16.661
 BP magnitude : 18.521
 DUPflag : 0
 Distance (au) : 19.264
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 16.85
 Sun-Target sep (deg) : 69.40
 Sun-Moon sep (deg) : 146.42
 B (ring opening deg) : 73.57
 PA of pole (deg) : 61.48
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.237
 C/A sky separation (km) : 31250.6
 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

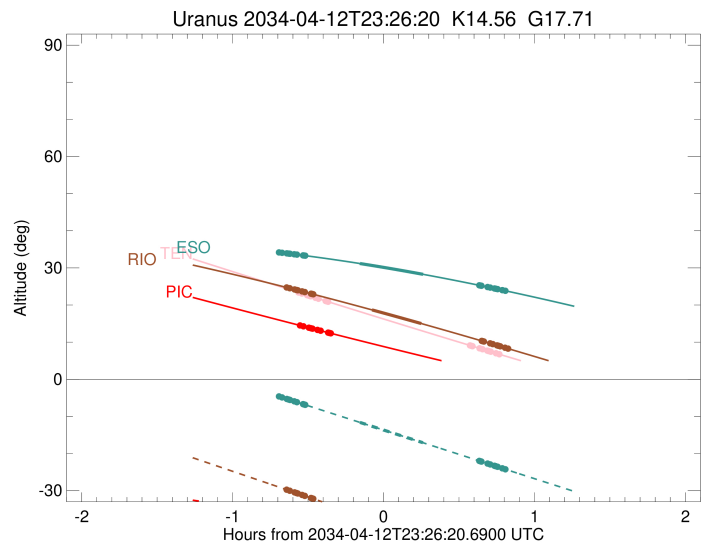
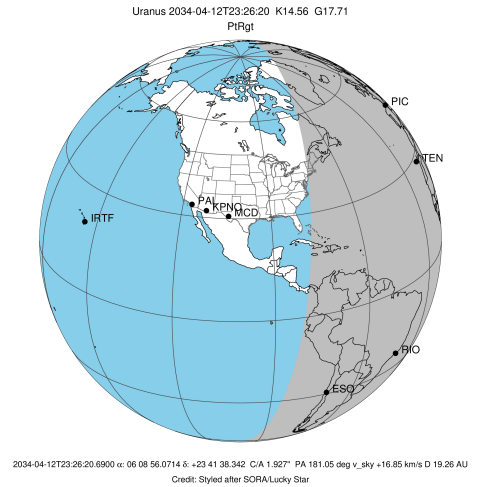


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-04-12T22:53:21.760		14.46	-36.09	50988.27	-13.73		
lambda	I	2034-04-12T22:54:32.619		14.26	-36.16	50026.71	-13.49		
delta	I	2034-04-12T22:56:42.160		13.88	-36.30	48300.35	-13.16		
gamma	I	2034-04-12T22:57:33.256		13.73	-36.35	47631.42	-13.02		
eta	I	2034-04-12T22:58:08.353		13.63	-36.38	47176.12	-12.92		
beta	I	2034-04-12T23:00:08.448		13.29	-36.50	45645.87	-12.56		
alpha	I	2034-04-12T23:01:24.773		13.07	-36.57	44696.80	-12.32		
4	I	2034-04-12T23:04:17.442		12.57	-36.73	42616.35	-11.69		
5	I	2034-04-12T23:04:55.303		12.46	-36.77	42182.69	-11.52		
6	I	2034-04-12T23:05:24.323		12.38	-36.79	41850.85	-11.43		

No planet occultations

6	E	2034-04-12T23:57:50.446		3.64x	-38.26	41878.98	11.49		
5	E	2034-04-12T23:58:15.487		3.58x	-38.26	42168.32	11.58		
4	E	2034-04-12T23:58:50.475		3.48x	-38.26	42579.94	11.76		
alpha	E	2034-04-13T00:01:49.630		3.01x	-38.26	44744.66	12.40		
beta	E	2034-04-13T00:03:01.903		2.81x	-38.26	45648.78	12.64		
eta	E	2034-04-13T00:05:00.891		2.50x	-38.25	47176.12	13.01		
gamma	E	2034-04-13T00:05:35.396		2.41x	-38.25	47626.91	13.12		
delta	E	2034-04-13T00:06:26.467		2.27x	-38.24	48300.35	13.26		
lambda	E	2034-04-13T00:08:35.034		1.93x	-38.22	50026.71	13.59		
epsilon	E	2034-04-13T00:10:26.039		1.64x	-38.21	51550.31	13.84		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-04-12T23:31:32.490
 Event type : PtRgt
 : Uranus occs: topocentric, not geocentric
 : 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 : 3425391037385691904
 2Mass ID (if available) : 06085607+2341387
 ICRS Star Coord at Epoch: 06h 08m 56.07139s +23:41:38.34196s
 RUWE (>1.4 is poor) : 1.87
 K magnitude : 14.565
 G magnitude : 17.708
 RP magnitude : 16.661
 BP magnitude : 18.521
 DUPflag : 0
 Distance (au) : 19.264
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 16.85
 Sun-Target sep (deg) : 69.40
 Sun-Moon sep (deg) : 146.34
 B (ring opening deg) : 73.57
 PA of pole (deg) : 61.48
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.111
 C/A sky separation (km) : 29497.7
 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_itrfr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

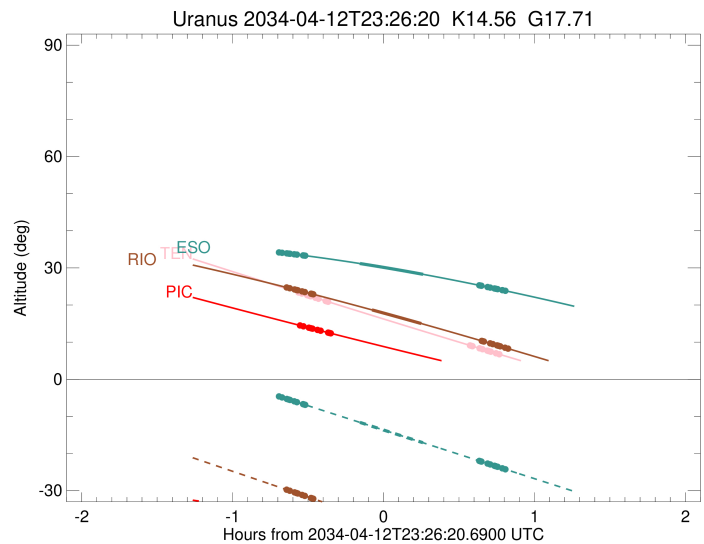
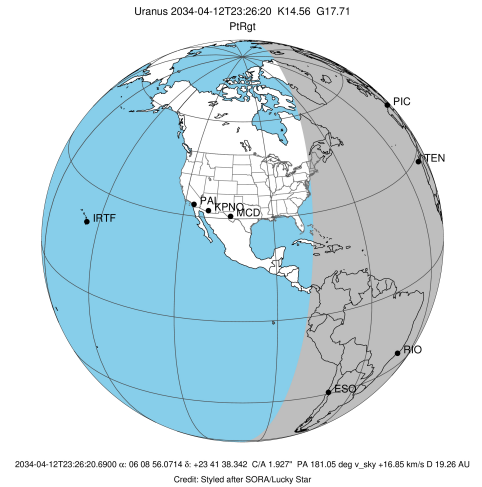


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-04-12T22:52:47.724		23.34	-40.78	50971.75	-14.08		
lambda	I	2034-04-12T22:53:55.517		23.09	-40.96	50026.71	-13.87		
delta	I	2034-04-12T22:56:01.217		22.65	-41.29	48300.35	-13.59		
gamma	I	2034-04-12T22:56:50.646		22.47	-41.42	47631.35	-13.48		
eta	I	2034-04-12T22:57:24.534		22.35	-41.51	47176.12	-13.39		
beta	I	2034-04-12T22:59:20.071		21.94	-41.80	45646.60	-13.08		
alpha	I	2034-04-12T23:00:33.382		21.68	-41.99	44695.38	-12.88		
4	I	2034-04-12T23:03:17.547		21.10	-42.41	42616.00	-12.36		
5	I	2034-04-12T23:03:52.900		20.98	-42.50	42186.63	-12.21		
6	I	2034-04-12T23:04:20.776		20.88	-42.57	41848.25	-12.14		

No planet occultations

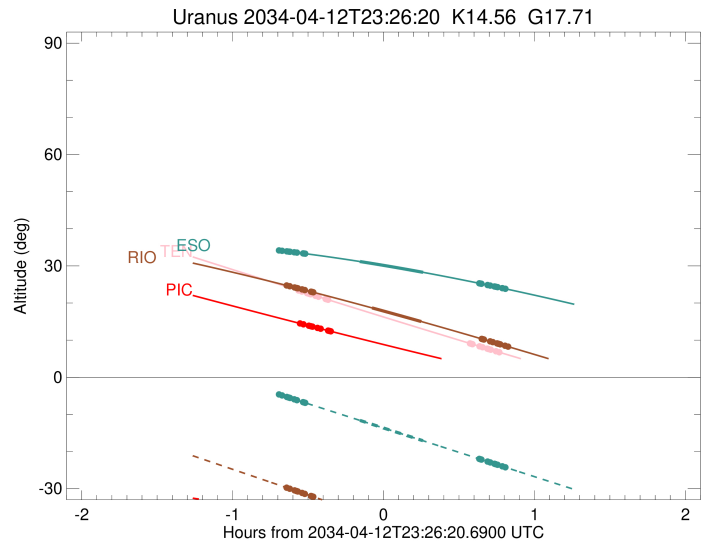
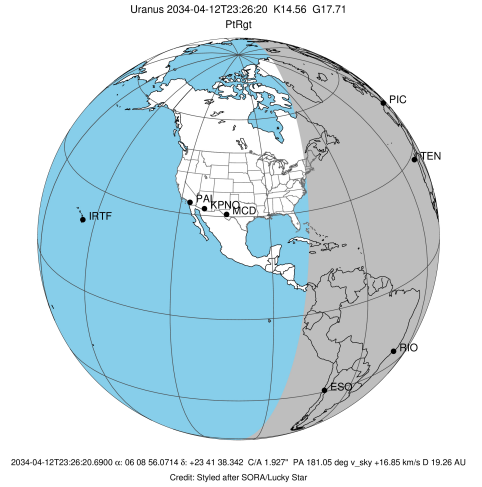
6	E	2034-04-13T00:00:45.460		9.11	-49.61	41878.42	12.23		
5	E	2034-04-13T00:01:09.284		9.03	-49.65	42171.07	12.30		
4	E	2034-04-13T00:01:41.784		8.92	-49.70	42577.35	12.45		
alpha	E	2034-04-13T00:04:32.227		8.34	-49.96	44745.76	12.99		
beta	E	2034-04-13T00:05:41.360		8.10	-50.06	45649.59	13.19		
eta	E	2034-04-13T00:07:35.634		7.71	-50.23	47176.12	13.51		
gamma	E	2034-04-13T00:08:08.879		7.60	-50.28	47626.66	13.60		
delta	E	2034-04-13T00:08:58.212		7.43	-50.35	48300.35	13.72		
lambda	E	2034-04-13T00:11:02.743		7.01	-50.52	50026.71	14.00		
epsilon	E	2034-04-13T00:12:50.815		6.64	-50.66	51552.57	14.22		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-04-12T23:31:08.590
 Event type : PtRgt
 : Uranus occs: topocentric, not geocentric
 : 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 : 3425391037385691904
 2Mass ID (if available) : 06085607+2341387
 ICRS Star Coord at Epoch: 06h 08m 56.07139s +23:41:38.34196s
 RUWE (>1.4 is poor) : 1.87
 K magnitude : 14.565
 G magnitude : 17.708
 RP magnitude : 16.661
 BP magnitude : 18.521
 DUPflag : 0
 Distance (au) : 19.264
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 16.85
 Sun-Target sep (deg) : 69.40
 Sun-Moon sep (deg) : 146.31
 B (ring opening deg) : 73.57
 PA of pole (deg) : 61.48
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.677
 C/A sky separation (km) : 23426.1
 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	2034-04-12T22:48:06.530		24.69	-29.81	50922.71	-15.17		
lambda	I	2034-04-12T22:49:05.926		24.52	-30.04	50026.71	-15.05		
delta	I	2034-04-12T22:51:01.240		24.19	-30.48	48300.35	-14.89		
gamma	I	2034-04-12T22:51:46.284		24.06	-30.65	47631.05	-14.83		
eta	I	2034-04-12T22:52:17.018		23.97	-30.77	47176.12	-14.78		
beta	I	2034-04-12T22:54:00.939		23.67	-31.17	45649.08	-14.61		
alpha	I	2034-04-12T22:55:06.830		23.48	-31.42	44691.50	-14.50		
4	I	2034-04-12T22:57:31.023		23.06	-31.97	42613.92	-14.22		
5	I	2034-04-12T22:58:00.431		22.97	-32.09	42199.44	-14.13		
6	I	2034-04-12T22:58:25.936		22.90	-32.18	41840.27	-14.10		
Uranus	I	2034-04-12T23:21:46.296		18.69	-37.55	25222.02		12.85	13.44
Uranus	E	2034-04-12T23:41:21.713		15.01	-42.03	25551.76		1.85	1.94
6	E	2034-04-13T00:05:26.158		10.33	-47.49	41875.65	14.21		
5	E	2034-04-13T00:05:47.606		10.26	-47.57	42181.33	14.24		
4	E	2034-04-13T00:06:14.307		10.17	-47.67	42568.92	14.33		
alpha	E	2034-04-13T00:08:44.822		9.68	-48.24	44748.82	14.62		
beta	E	2034-04-13T00:09:46.517		9.47	-48.47	45652.48	14.74		
eta	E	2034-04-13T00:11:29.243		9.13	-48.86	47176.12	14.91		
gamma	E	2034-04-13T00:11:59.348		9.03	-48.97	47625.83	14.96		
delta	E	2034-04-13T00:12:44.326		8.88	-49.14	48300.35	15.03		
lambda	E	2034-04-13T00:14:38.542		8.50	-49.57	50026.71	15.20		
epsilon	E	2034-04-13T00:16:18.690		8.17	-49.94	51555.17	15.33		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-04-12T23:29:05.220
 Event type : PtRgt
 : Uranus occs: topocentric, not geocentric
 : 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 : 3425391037385691904
 2Mass ID (if available) : 06085607+2341387
 ICRS Star Coord at Epoch: 06h 08m 56.07139s +23:41:38.34196s
 RUWE (>1.4 is poor) : 1.87
 K magnitude : 14.565
 G magnitude : 17.708
 RP magnitude : 16.661
 BP magnitude : 18.521
 DUPflag : 0
 Distance (au) : 19.264
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 16.85
 Sun-Target sep (deg) : 69.40
 Sun-Moon sep (deg) : 146.65
 B (ring opening deg) : 73.57
 PA of pole (deg) : 61.48
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.582
 C/A sky separation (km) : 22108.7
 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_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	2034-04-12T22:45:04.097		34.15	-4.68x	50914.25	-15.31		
lambda	I	2034-04-12T22:46:02.370		34.07	-4.89x	50026.71	-15.20		
delta	I	2034-04-12T22:47:56.465		33.92	-5.30	48300.35	-15.06		
gamma	I	2034-04-12T22:48:40.994		33.85	-5.47	47630.98	-15.00		
eta	I	2034-04-12T22:49:11.352		33.81	-5.58	47176.12	-14.96		
beta	I	2034-04-12T22:50:53.884		33.67	-5.95	45649.57	-14.81		
alpha	I	2034-04-12T22:51:58.913		33.58	-6.18	44690.88	-14.72		
4	I	2034-04-12T22:54:20.758		33.37	-6.69	42613.38	-14.47		
5	I	2034-04-12T22:54:49.392		33.33	-6.80	42201.91	-14.40		
6	I	2034-04-12T22:55:14.691		33.30	-6.89	41838.81	-14.37		
Uranus	I	2034-04-12T23:16:56.736		31.18	-11.61	25164.91		13.94	14.57
Uranus	E	2034-04-12T23:42:01.733		28.27	-17.09	25559.00		-0.06	-0.07
6	E	2034-04-13T00:04:27.740		25.31	-21.99	41874.87	14.45		
5	E	2034-04-13T00:04:49.070		25.26	-22.07	42183.82	14.47		
4	E	2034-04-13T00:05:15.037		25.20	-22.17	42567.09	14.55		
alpha	E	2034-04-13T00:07:43.666		24.85	-22.71	44749.38	14.80		
beta	E	2034-04-13T00:08:44.671		24.70	-22.93	45653.16	14.90		
eta	E	2034-04-13T00:10:26.320		24.46	-23.30	47176.12	15.05		
gamma	E	2034-04-13T00:10:56.143		24.39	-23.41	47625.65	15.09		
delta	E	2034-04-13T00:11:40.754		24.29	-23.57	48300.35	15.15		
lambda	E	2034-04-13T00:13:34.135		24.01	-23.98	50026.71	15.30		
epsilon	E	2034-04-13T00:15:13.651		23.77	-24.35	51554.63	15.41		