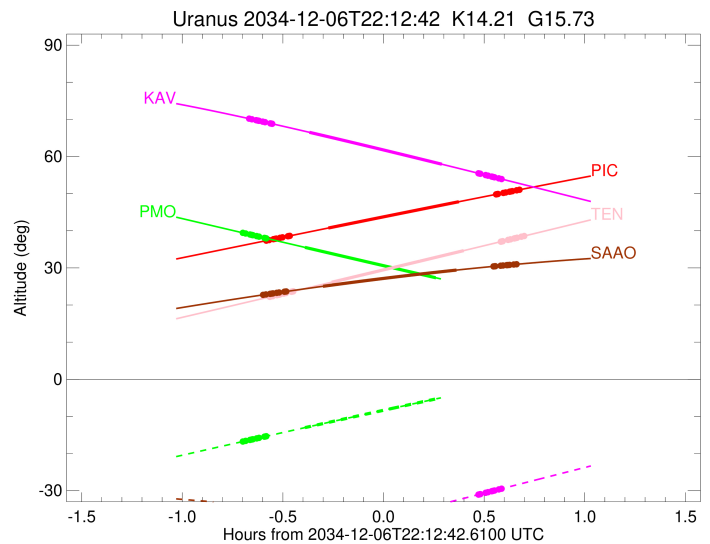
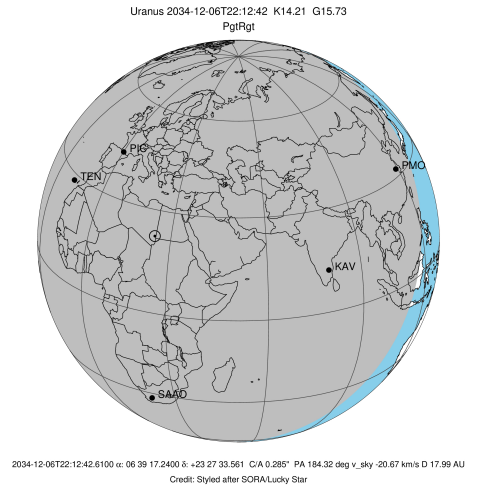


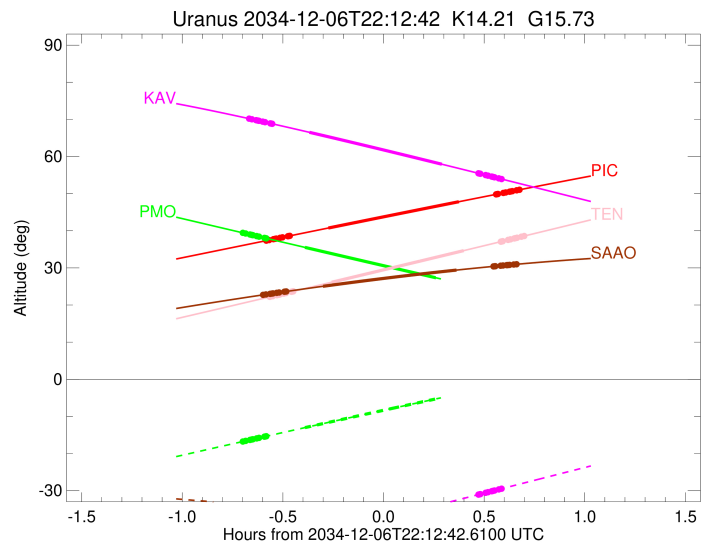
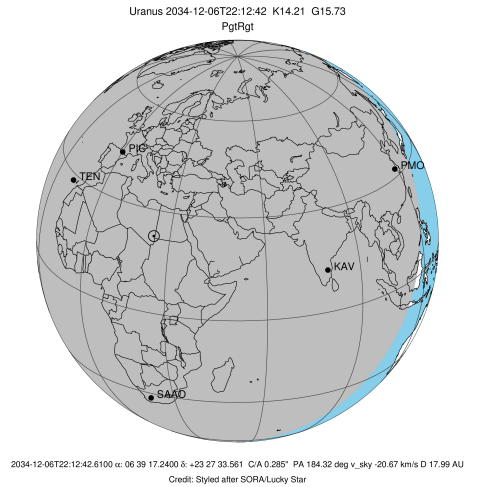


target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2034-12-06T22:15:48.570  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : PIC  
 Location : Pic du Midi  
 Latitude (deg) : 42.93656  
 E. Longitude (deg) : 0.14231  
 Altitude (km) : 2.890  
 Gaia source ID : 3382768297336033920  
 2Mass ID (if available) : 06391724+2327335  
 ICRS Star Coord at Epoch: 06h 39m 17.23998s +23:27:33.56118s  
 RUWE (>1.4 is poor) : 0.99  
 K magnitude : 14.205  
 G magnitude : 15.727  
 RP magnitude : 15.203  
 BP magnitude : 16.083  
 DUPflag : 0  
 Distance (au) : 17.993  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -20.67  
 Sun-Target sep (deg) : 155.37  
 Sun-Moon sep (deg) : 113.17  
 B (ring opening deg) : 67.24  
 PA of pole (deg) : 72.74  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.468  
 C/A sky separation (km) : 6101.2  
 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



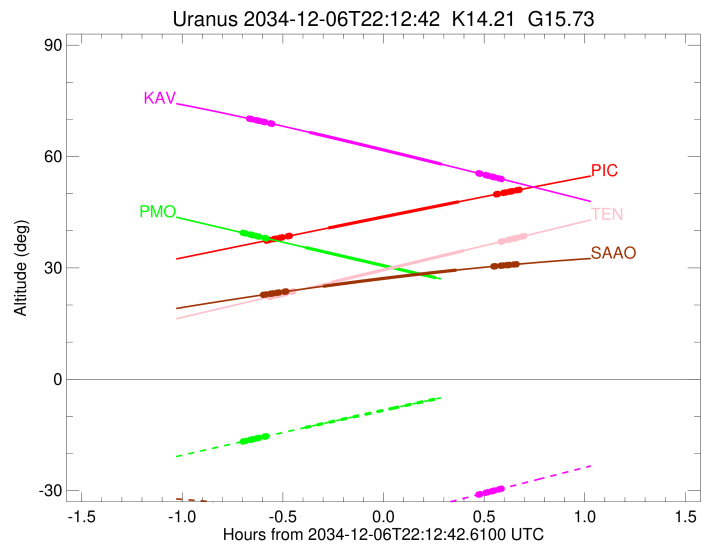
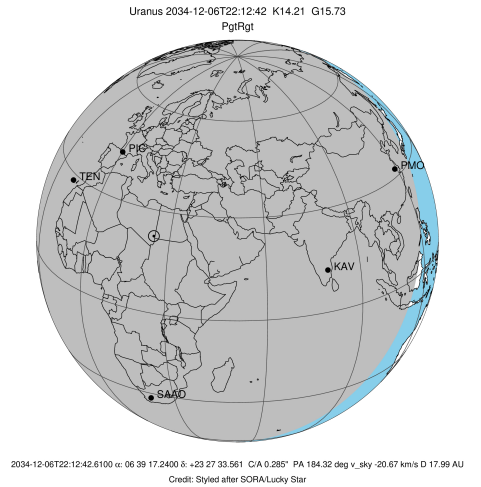
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-12-06T21:37:28.808		37.29	-55.84	51543.61	-22.19		
lambda	I	2034-12-06T21:38:37.152		37.50	-56.03	50026.71	-22.19		
delta	I	2034-12-06T21:39:54.968		37.74	-56.24	48300.35	-22.18		
gamma	I	2034-12-06T21:40:25.600		37.83	-56.32	47620.99	-22.18		
eta	I	2034-12-06T21:40:45.664		37.90	-56.38	47176.12	-22.17		
beta	I	2034-12-06T21:41:53.202		38.10	-56.56	45678.33	-22.16		
alpha	I	2034-12-06T21:42:37.823		38.24	-56.69	44687.24	-22.15		
4	I	2034-12-06T21:44:11.219		38.53	-56.94	42614.69	-22.13		
5	I	2034-12-06T21:44:32.613		38.59	-57.00	42156.17	-22.13		
6	I	2034-12-06T21:44:44.982		38.63	-57.03	41878.89	-22.13		
Uranus	I	2034-12-06T21:56:16.211		40.75	-58.87	25228.77		-18.28	-19.09
Uranus	E	2034-12-06T22:35:11.730		47.83	-64.46	25070.34		22.55	23.50
6	E	2034-12-06T22:46:13.764		49.80	-65.80	41794.95	22.21		
5	E	2034-12-06T22:46:37.035		49.87	-65.84	42314.75	22.22		
4	E	2034-12-06T22:46:47.733		49.91	-65.86	42533.38	22.21		
alpha	E	2034-12-06T22:48:27.339		50.20	-66.05	44752.20	22.24		
beta	E	2034-12-06T22:49:07.518		50.32	-66.12	45647.39	22.25		
eta	E	2034-12-06T22:50:16.143		50.52	-66.25	47176.12	22.27		
gamma	E	2034-12-06T22:50:36.593		50.58	-66.29	47631.51	22.27		
delta	E	2034-12-06T22:51:06.620		50.67	-66.34	48300.35	22.28		
lambda	E	2034-12-06T22:52:24.088		50.90	-66.48	50026.71	22.29		
epsilon	E	2034-12-06T22:52:56.239		50.99	-66.54	50743.52	22.30		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2034-12-06T22:08:49.640  
 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 : 3382768297336033920  
 2Mass ID (if available) : 06391724+2327335  
 ICRS Star Coord at Epoch: 06h 39m 17.23998s +23:27:33.56118s  
 RUWE (>1.4 is poor) : 0.99  
 K magnitude : 14.205  
 G magnitude : 15.727  
 RP magnitude : 15.203  
 BP magnitude : 16.083  
 DUPflag : 0  
 Distance (au) : 17.993  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -20.67  
 Sun-Target sep (deg) : 155.37  
 Sun-Moon sep (deg) : 113.50  
 B (ring opening deg) : 67.24  
 PA of pole (deg) : 72.74  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.477  
 C/A sky separation (km) : 6226.0  
 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



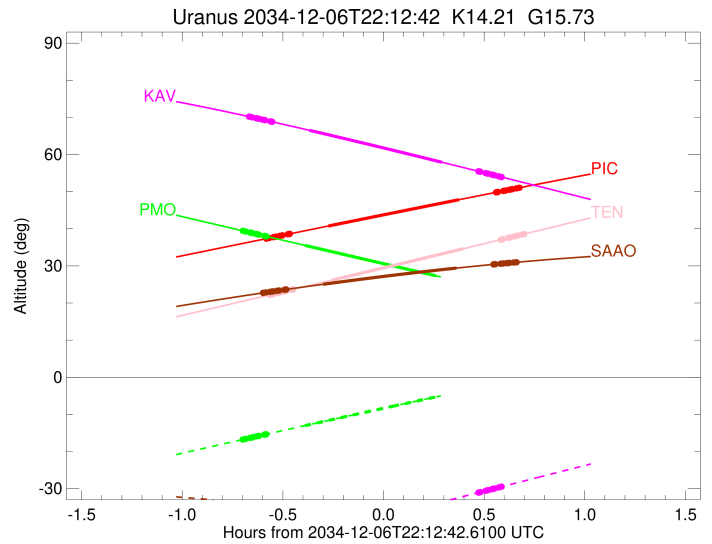
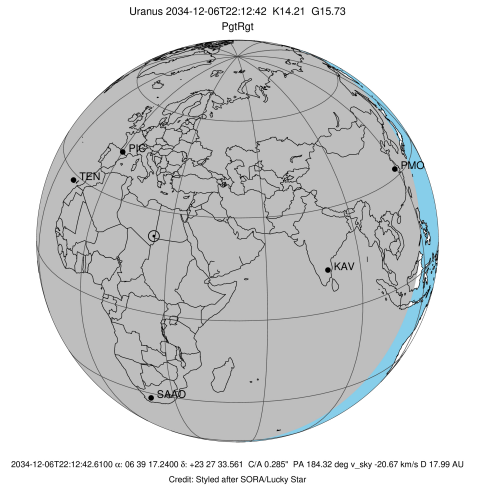
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-12-06T21:30:28.937		39.51	-16.83	51544.44	-22.23		
lambda	I	2034-12-06T21:31:37.220		39.27	-16.60	50026.71	-22.22		
delta	I	2034-12-06T21:32:54.938		38.99	-16.33	48300.35	-22.21		
gamma	I	2034-12-06T21:33:25.537		38.88	-16.23	47620.98	-22.20		
eta	I	2034-12-06T21:33:45.578		38.81	-16.16	47176.12	-22.19		
beta	I	2034-12-06T21:34:53.056		38.57	-15.93	45678.24	-22.18		
alpha	I	2034-12-06T21:35:37.644		38.42	-15.78	44687.13	-22.17		
4	I	2034-12-06T21:37:10.981		38.09	-15.47	42614.58	-22.14		
5	I	2034-12-06T21:37:32.372		38.01	-15.40	42156.06	-22.14		
6	I	2034-12-06T21:37:44.728		37.97	-15.35	41878.96	-22.14		
Uranus	I	2034-12-06T21:49:15.922		35.53	-13.03	25225.67		-18.37	-19.18
Uranus	E	2034-12-06T22:28:17.143		27.35	-5.30	25068.32		22.60	23.55
6	E	2034-12-06T22:39:23.657		25.04	-3.15x	41795.01	22.04		
5	E	2034-12-06T22:39:47.101		24.96	-3.08x	42314.62	22.05		
4	E	2034-12-06T22:39:57.908		24.92	-3.04x	42533.72	22.04		
alpha	E	2034-12-06T22:41:38.281		24.57	-2.72x	44752.25	22.07		
beta	E	2034-12-06T22:42:18.790		24.43	-2.59x	45647.59	22.08		
eta	E	2034-12-06T22:43:27.958		24.20	-2.37x	47176.12	22.09		
gamma	E	2034-12-06T22:43:48.573		24.13	-2.30x	47631.50	22.09		
delta	E	2034-12-06T22:44:18.846		24.02	-2.21x	48300.35	22.10		
lambda	E	2034-12-06T22:45:36.955		23.75	-1.96x	50026.71	22.11		
epsilon	E	2034-12-06T22:46:09.378		23.64	-1.85x	50743.58	22.11		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2034-12-06T22:17:00.700  
 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 : 3382768297336033920  
 2Mass ID (if available) : 06391724+2327335  
 ICRS Star Coord at Epoch: 06h 39m 17.23998s +23:27:33.56118s  
 RUWE (>1.4 is poor) : 0.99  
 K magnitude : 14.205  
 G magnitude : 15.727  
 RP magnitude : 15.203  
 BP magnitude : 16.083  
 DUPflag : 0  
 Distance (au) : 17.993  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -20.67  
 Sun-Target sep (deg) : 155.37  
 Sun-Moon sep (deg) : 112.92  
 B (ring opening deg) : 67.24  
 PA of pole (deg) : 72.74  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.389  
 C/A sky separation (km) : 5075.0  
 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	2034-12-06T21:38:31.221		22.14	-45.08	51545.30	-22.17		
lambda	I	2034-12-06T21:39:39.724		22.38	-45.34	50026.71	-22.17		
delta	I	2034-12-06T21:40:57.619		22.66	-45.62	48300.35	-22.16		
gamma	I	2034-12-06T21:41:28.279		22.77	-45.73	47620.98	-22.16		
eta	I	2034-12-06T21:41:48.358		22.84	-45.81	47176.12	-22.15		
beta	I	2034-12-06T21:42:55.950		23.08	-46.05	45678.11	-22.15		
alpha	I	2034-12-06T21:43:40.599		23.24	-46.22	44686.96	-22.14		
4	I	2034-12-06T21:45:14.019		23.57	-46.56	42614.39	-22.13		
5	I	2034-12-06T21:45:35.432		23.65	-46.64	42155.86	-22.13		
6	I	2034-12-06T21:45:47.780		23.69	-46.68	41879.07	-22.13		
Uranus	I	2034-12-06T21:57:14.826		26.14	-49.20	25210.71		-18.80	-19.63
Uranus	E	2034-12-06T22:36:38.035		34.66	-57.88	25076.98		22.38	23.33
6	E	2034-12-06T22:47:38.828		37.06	-60.31	41794.85	22.25		
5	E	2034-12-06T22:48:02.073		37.14	-60.39	42314.96	22.25		
4	E	2034-12-06T22:48:12.704		37.18	-60.43	42532.73	22.25		
alpha	E	2034-12-06T22:49:52.201		37.54	-60.80	44752.09	22.27		
beta	E	2034-12-06T22:50:32.318		37.69	-60.94	45647.03	22.28		
eta	E	2034-12-06T22:51:40.891		37.94	-61.19	47176.12	22.29		
gamma	E	2034-12-06T22:52:01.323		38.01	-61.27	47631.53	22.29		
delta	E	2034-12-06T22:52:31.324		38.12	-61.38	48300.35	22.30		
lambda	E	2034-12-06T22:53:48.733		38.40	-61.66	50026.71	22.31		
epsilon	E	2034-12-06T22:54:20.866		38.52	-61.78	50743.58	22.31		

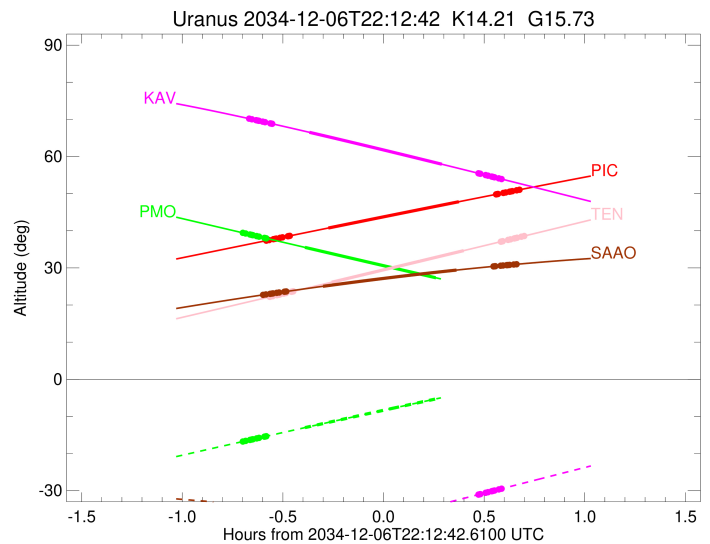
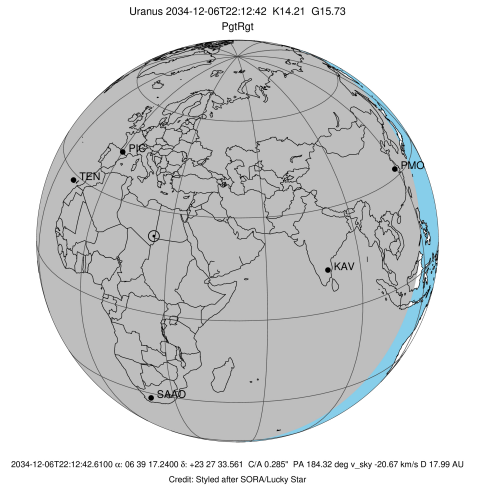
target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2034-12-06T22:10:22.600  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : KAV  
 Location : Kavalur Observatory  
 Latitude (deg) : 12.57556  
 E. Longitude (deg) : 78.83167  
 Altitude (km) : 0.722  
 Gaia source ID : 3382768297336033920  
 2Mass ID (if available) : 06391724+2327335  
 ICRS Star Coord at Epoch: 06h 39m 17.23998s +23:27:33.56118s  
 RUWE (>1.4 is poor) : 0.99  
 K magnitude : 14.205  
 G magnitude : 15.727  
 RP magnitude : 15.203  
 BP magnitude : 16.083  
 DUPflag : 0  
 Distance (au) : 17.993  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -20.67  
 Sun-Target sep (deg) : 155.37  
 Sun-Moon sep (deg) : 113.69  
 B (ring opening deg) : 67.24  
 PA of pole (deg) : 72.74  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.222  
 C/A sky separation (km) : 2893.7  
 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\_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	2034-12-06T21:32:22.108		70.26	-46.90	51549.58	-22.60		
lambda	I	2034-12-06T21:33:29.495		70.04	-46.64	50026.71	-22.60		
delta	I	2034-12-06T21:34:45.900		69.78	-46.35	48300.35	-22.59		
gamma	I	2034-12-06T21:35:15.972		69.68	-46.23	47620.96	-22.59		
eta	I	2034-12-06T21:35:35.664		69.62	-46.15	47176.12	-22.59		
beta	I	2034-12-06T21:36:41.973		69.39	-45.90	45677.44	-22.59		
alpha	I	2034-12-06T21:37:25.763		69.25	-45.73	44686.27	-22.58		
4	I	2034-12-06T21:38:57.355		68.94	-45.38	42613.43	-22.57		
5	I	2034-12-06T21:39:18.377		68.87	-45.30	42155.20	-22.58		
6	I	2034-12-06T21:39:30.437		68.83	-45.26	41879.47	-22.58		
Uranus	I	2034-12-06T21:50:36.162		66.53	-42.70	25168.00		-20.00	-20.86
Uranus	E	2034-12-06T22:30:06.302		57.93	-33.59	25092.51		21.99	22.92
6	E	2034-12-06T22:40:58.722		55.50	-31.08	41794.76	22.53		
5	E	2034-12-06T22:41:21.685		55.41	-30.99	42315.18	22.53		
4	E	2034-12-06T22:41:32.113		55.37	-30.95	42531.78	22.52		
alpha	E	2034-12-06T22:43:10.455		55.00	-30.58	44751.88	22.53		
beta	E	2034-12-06T22:43:50.090		54.85	-30.42	45646.51	22.53		
eta	E	2034-12-06T22:44:57.927		54.60	-30.16	47176.12	22.53		
gamma	E	2034-12-06T22:45:18.138		54.52	-30.09	47631.55	22.53		
delta	E	2034-12-06T22:45:47.816		54.41	-29.97	48300.35	22.54		
lambda	E	2034-12-06T22:47:04.420		54.12	-29.68	50026.71	22.54		
epsilon	E	2034-12-06T22:47:36.248		54.00	-29.55	50744.01	22.54		

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2034-12-06T22:14:33.960
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       : 3382768297336033920
2Mass ID (if available) : 06391724+2327335
ICRS Star Coord at Epoch: 06h 39m 17.23998s +23:27:33.56118s
RUWE (>1.4 is poor) : 0.99
K magnitude          : 14.205
G magnitude          : 15.727
RP magnitude         : 15.203
BP magnitude         : 16.083
DUPflag             : 0
Distance (au)        : 17.993
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -20.67
Sun-Target sep (deg) : 155.37
Sun-Moon sep (deg)   : 113.03
B (ring opening deg) : 67.24
PA of pole (deg)     : 72.74
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.119
C/A sky separation (km) : 1559.1
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall1.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall1.bsp
ural61.bsp
vgr2.ural61.bsp
peph.ural60.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	2034-12-06T21:36:31.443		22.70	-33.87	51553.74	-22.49		
lambda	I	2034-12-06T21:37:39.343		22.85	-33.92	50026.71	-22.49		
delta	I	2034-12-06T21:38:56.104		23.02	-33.99	48300.35	-22.49		
gamma	I	2034-12-06T21:39:26.312		23.09	-34.01	47620.96	-22.49		
eta	I	2034-12-06T21:39:46.091		23.13	-34.03	47176.12	-22.49		
beta	I	2034-12-06T21:40:52.733		23.28	-34.08	45676.30	-22.49		
alpha	I	2034-12-06T21:41:36.710		23.38	-34.12	44685.44	-22.49		
4	I	2034-12-06T21:43:08.711		23.58	-34.19	42611.59	-22.49		
5	I	2034-12-06T21:43:29.812		23.62	-34.21	42154.82	-22.50		
6	I	2034-12-06T21:43:41.900		23.65	-34.21	41879.74	-22.49		
Uranus	I	2034-12-06T21:54:40.736		25.04	-34.65	25108.77		-21.57	-22.49
Uranus	E	2034-12-06T22:34:28.052		29.41	-35.20	25150.02		20.48	21.37
6	E	2034-12-06T22:45:27.396		30.40	-35.06	41794.90	22.56		
5	E	2034-12-06T22:45:50.301		30.44	-35.05	42315.06	22.56		
4	E	2034-12-06T22:46:00.552		30.45	-35.05	42529.52	22.55		
alpha	E	2034-12-06T22:47:38.818		30.59	-35.02	44751.03	22.56		
beta	E	2034-12-06T22:48:18.353		30.65	-35.00	45645.14	22.56		
eta	E	2034-12-06T22:49:26.164		30.74	-34.98	47176.12	22.57		
gamma	E	2034-12-06T22:49:46.348		30.77	-34.97	47631.58	22.57		
delta	E	2034-12-06T22:50:15.984		30.81	-34.96	48300.35	22.57		
lambda	E	2034-12-06T22:51:32.481		30.91	-34.93	50026.71	22.57		
epsilon	E	2034-12-06T22:52:04.429		30.95	-34.92	50747.76	22.57		