

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-04-08T20:10:50.370
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3425401349601820800
 2Mass ID (if available) : 06082645+2341450

Uranus 2034-04-08T20:10:50 K13.72 G15.99 PgtRgt

ICRS Star Coord at Epoch: 06h 08m 26.45758s +23:41:44.97921s

RUWE (>1.4 is poor) : 0.95
 K magnitude : 13.725
 G magnitude : 15.990
 RP magnitude : 15.248
 BP magnitude : 16.582
 DUPflag : 0
 Distance (au) : 19.198
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 14.90
 Sun-Target sep (deg) : 73.34
 Sun-Moon sep (deg) : 160.75
 B (ring opening deg) : 73.67
 PA of pole (deg) : 61.24

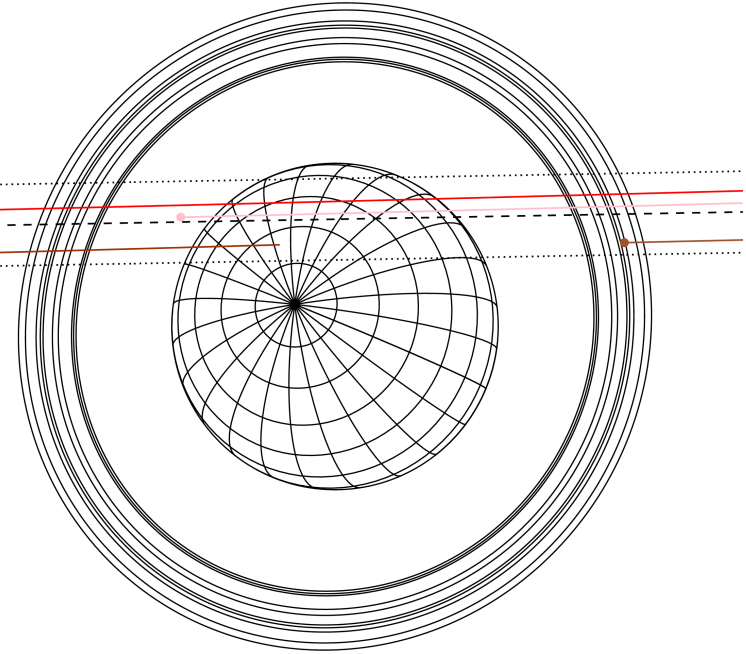
Uranus 2034-04-08T20:10:50 K13.72 G15.99
 PgtRgt



2034-04-08T20:10:50.3700 ex: 06 08 26.4576 s: +23 41 44.979 C/A 1.213° PA 181.03 deg v_sky +14.90 km/s D 19.20 AU
 Credit: Styled after SORA/Lucky Star

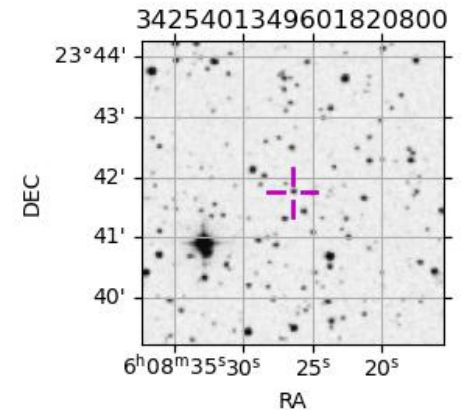
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

Earth
 PIC
 TEN
 RIO
 SAAO

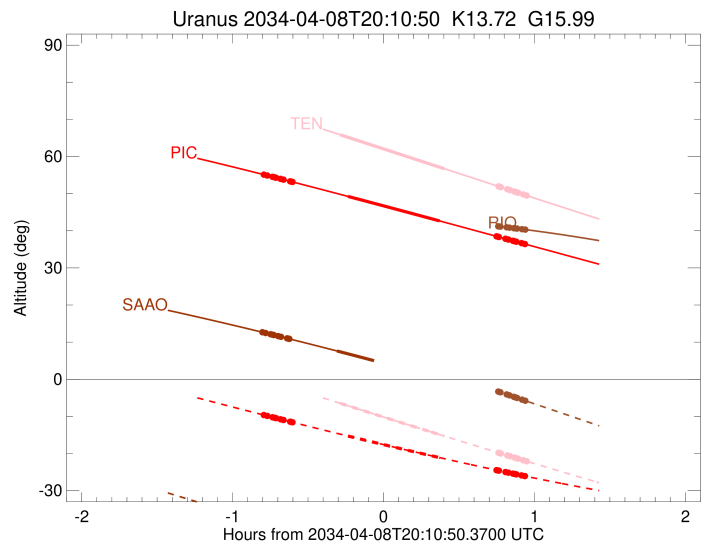
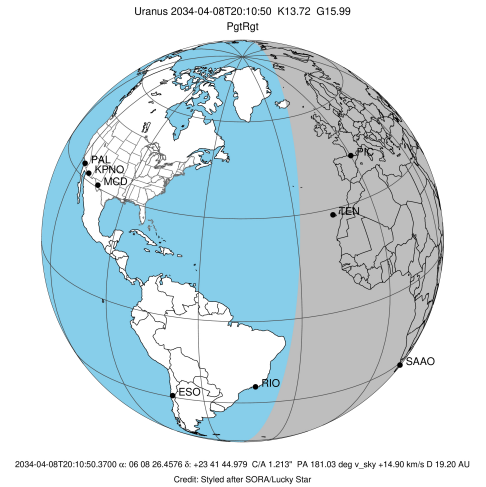


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++	+ +	+++++	APR 08 19:23 - APR 08 21:07	PieRie
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 08 19:53 - APR 08 21:08	PieRne
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 08 21:03 - APR 08 21:07	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 08 19:23 - APR 08 19:52	PinRin
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



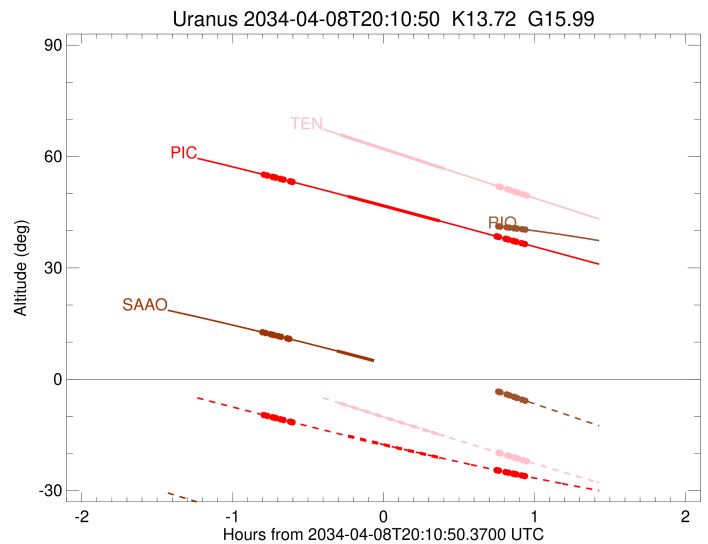
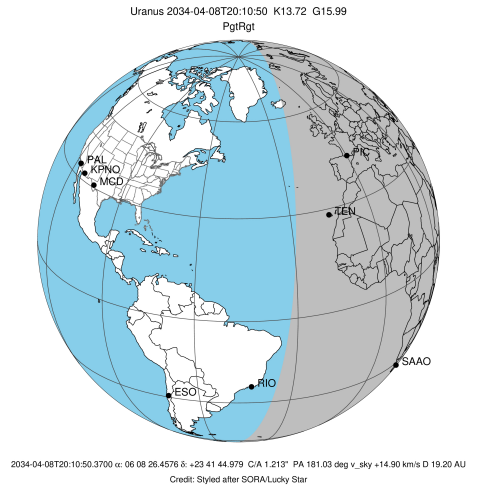
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-04-08T20:14:31.250
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 3425401349601820800
 2Mass ID (if available) : 06082645+2341450
 ICRS Star Coord at Epoch: 06h 08m 26.45758s +23:41:44.97921s
 RUWE (>1.4 is poor) : 0.95
 K magnitude : 13.725
 G magnitude : 15.990
 RP magnitude : 15.248
 BP magnitude : 16.582
 DUPflag : 0
 Distance (au) : 19.198
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 14.90
 Sun-Target sep (deg) : 73.34
 Sun-Moon sep (deg) : 161.50
 B (ring opening deg) : 73.67
 PA of pole (deg) : 61.24
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.406
 C/A sky separation (km) : 19578.3
 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_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	2034-04-08T19:23:38.065		55.06	-9.70	50866.03	-13.92		
lambda	I	2034-04-08T19:24:38.595		54.89	-9.87	50026.71	-13.85		
delta	I	2034-04-08T19:26:43.690		54.53	-10.23	48300.35	-13.75		
gamma	I	2034-04-08T19:27:32.465		54.39	-10.37	47630.44	-13.72		
eta	I	2034-04-08T19:28:05.623		54.30	-10.47	47176.12	-13.69		
beta	I	2034-04-08T19:29:57.288		53.98	-10.79	45653.29	-13.59		
alpha	I	2034-04-08T19:31:08.634		53.77	-10.99	44687.19	-13.53		
4	I	2034-04-08T19:33:42.778		53.32	-11.43	42607.70	-13.36		
5	I	2034-04-08T19:34:11.962		53.24	-11.51	42222.23	-13.31		
6	I	2034-04-08T19:34:41.728		53.15	-11.60	41827.32	-13.29		
Uranus	I	2034-04-08T19:56:41.983		49.26	-15.29	25087.84		15.21	15.89
Uranus	E	2034-04-08T20:33:07.461		42.66	-21.10	25543.07		-2.73	-2.86
6	E	2034-04-08T20:55:48.865		38.49	-24.49	41877.12	13.40		
5	E	2034-04-08T20:56:11.167		38.43	-24.54	42176.54	13.42		
4	E	2034-04-08T20:56:40.197		38.34	-24.61	42572.54	13.47		
alpha	E	2034-04-08T20:59:20.493		37.84	-25.00	44747.90	13.64		
beta	E	2034-04-08T21:00:26.736		37.64	-25.15	45651.61	13.69		
eta	E	2034-04-08T21:02:17.467		37.30	-25.42	47176.12	13.81		
gamma	E	2034-04-08T21:02:49.999		37.20	-25.49	47626.01	13.84		
delta	E	2034-04-08T21:03:38.638		37.05	-25.61	48300.35	13.88		
lambda	E	2034-04-08T21:05:42.527		36.67	-25.90	50026.71	13.98		
epsilon	E	2034-04-08T21:07:31.533		36.34	-26.15	51555.27	14.06		

```

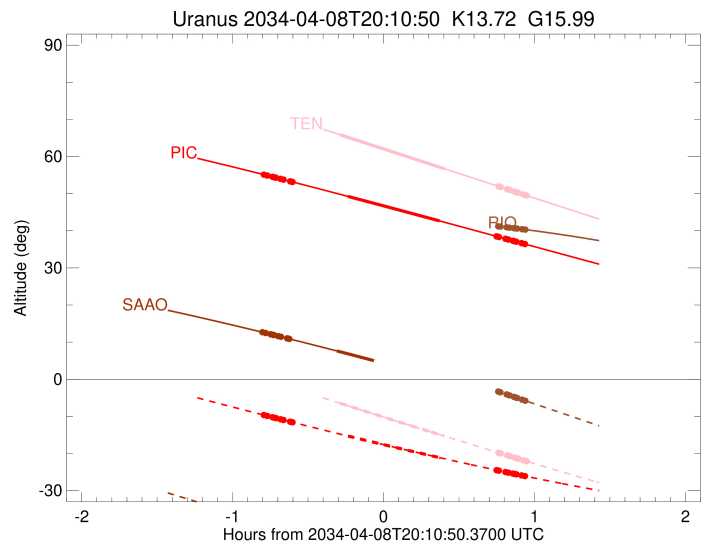
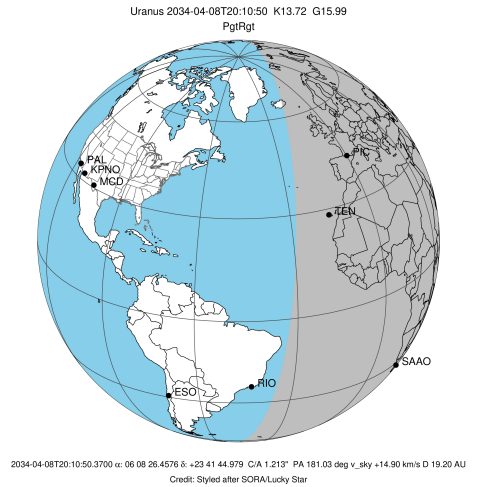
target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2034-04-08T20:13:58.820
Event type          : PgtRgt
: Uranus occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code       : TEN
Location            : Teide Obs./Tenerife
Latitude (deg)      : 28.30050
E. Longitude (deg)  : 343.48909
Altitude (km)       : 2.395
Gaia source ID      : 3425401349601820800
2Mass ID (if available) : 06082645+2341450
ICRS Star Coord at Epoch: 06h 08m 26.45758s +23:41:44.97921s
RUWE (>1.4 is poor) : 0.95
K magnitude          : 13.725
G magnitude          : 15.990
RP magnitude         : 15.248
BP magnitude         : 16.582
DUPflag             : 0
Distance (au)       : 19.198
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : 14.90
Sun-Target sep (deg) : 73.34
Sun-Moon sep (deg)  : 161.41
B (ring opening deg) : 73.67
PA of pole (deg)    : 61.24
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.270
C/A sky separation (km) : 17684.6
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_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	2034-04-08T19:21:46.469		72.84	0.43x	50854.92	-14.03		
lambda	I	2034-04-08T19:22:45.671		72.63	0.21x	50026.71	-13.97		
delta	I	2034-04-08T19:24:49.536		72.18	-0.24x	48300.35	-13.90		
gamma	I	2034-04-08T19:25:37.793		72.00	-0.41x	47630.30	-13.87		
eta	I	2034-04-08T19:26:10.565		71.88	-0.53x	47176.12	-13.85		
beta	I	2034-04-08T19:28:00.794		71.48	-0.93x	45654.13	-13.77		
alpha	I	2034-04-08T19:29:11.286		71.23	-1.19x	44686.63	-13.72		
4	I	2034-04-08T19:31:43.117		70.67	-1.74x	42606.33	-13.59		
5	I	2034-04-08T19:32:11.356		70.57	-1.84x	42226.17	-13.55		
6	I	2034-04-08T19:32:41.036		70.46	-1.95x	41825.26	-13.54		
Uranus	I	2034-04-08T19:53:39.092		65.86	-6.49	25053.86		15.78	16.49
Uranus	E	2034-04-08T20:35:00.792		56.72	-15.30	25517.06		-4.43	-4.64
6	E	2034-04-08T20:56:36.548		51.95	-19.80	41876.31	13.64		
5	E	2034-04-08T20:56:58.746		51.87	-19.88	42179.43	13.65		
4	E	2034-04-08T20:57:26.913		51.76	-19.98	42570.24	13.69		
alpha	E	2034-04-08T21:00:05.054		51.18	-20.52	44748.67	13.83		
beta	E	2034-04-08T21:01:10.461		50.94	-20.74	45652.45	13.88		
eta	E	2034-04-08T21:02:59.860		50.54	-21.12	47176.12	13.96		
gamma	E	2034-04-08T21:03:32.033		50.42	-21.23	47625.77	13.99		
delta	E	2034-04-08T21:04:20.203		50.24	-21.39	48300.35	14.02		
lambda	E	2034-04-08T21:06:22.984		49.79	-21.81	50026.71	14.10		
epsilon	E	2034-04-08T21:08:11.116		49.40	-22.18	51554.76	14.16		

```

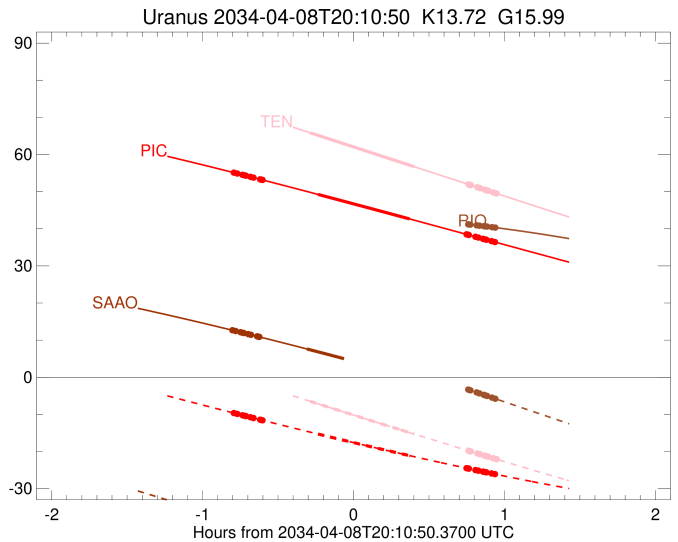
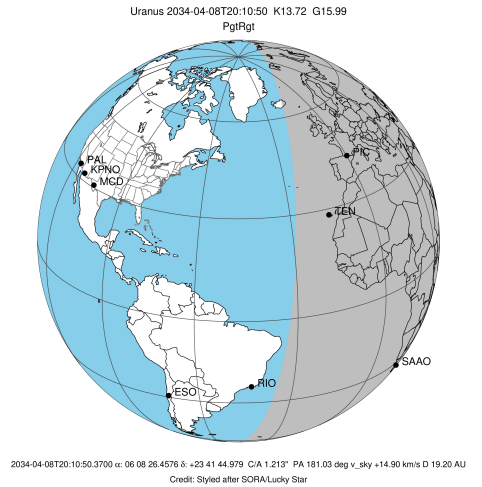
target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2034-04-08T20:11:24.450
Event type           : PgtRgt
: Ring occs: geocentric, topocentric
Observer code        : RIO
Location             : Rio de Janeiro
Latitude (deg)       : -22.89506
E. Longitude (deg)   : 316.77708
Altitude (km)        : 0.033
Gaia source ID       : 3425401349601820800
2Mass ID (if available) : 06082645+2341450
ICRS Star Coord at Epoch: 06h 08m 26.45758s +23:41:44.97921s
RUWE (>1.4 is poor) : 0.95
K magnitude           : 13.725
G magnitude           : 15.990
RP magnitude          : 15.248
BP magnitude          : 16.582
DUPflag              : 0
Distance (au)         : 19.198
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : 14.90
Sun-Target sep (deg) : 73.34
Sun-Moon sep (deg)   : 160.84
B (ring opening deg) : 73.67
PA of pole (deg)     : 61.24
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.875
C/A sky separation (km) : 12189.9
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	2034-04-08T19:16:52.408		42.65	19.15x	50826.38	-14.50		
lambda	I	2034-04-08T19:17:47.668		42.69	18.95x	50026.71	-14.46		
delta	I	2034-04-08T19:19:47.168		42.78	18.51x	48300.35	-14.43		
gamma	I	2034-04-08T19:20:33.659		42.81	18.34x	47629.86	-14.42		
eta	I	2034-04-08T19:21:05.148		42.84	18.22x	47176.12	-14.40		
beta	I	2034-04-08T19:22:50.778		42.91	17.83x	45656.51	-14.37		
alpha	I	2034-04-08T19:23:58.545		42.95	17.58x	44685.43	-14.35		
4	I	2034-04-08T19:26:23.589		43.04	17.04x	42602.16	-14.29		
5	I	2034-04-08T19:26:49.229		43.06	16.95x	42237.08	-14.26		
6	I	2034-04-08T19:27:18.545		43.08	16.84x	41819.78	-14.26		
Uranus	I	2034-04-08T19:46:15.050		43.51	12.62x	25019.92		16.33	17.06
Uranus	E	2034-04-08T20:37:03.232		42.43	1.12x	25409.01		-8.43	-8.82
6	E	2034-04-08T20:56:29.206		41.19	-3.32x	41873.43	14.30		
5	E	2034-04-08T20:56:51.216		41.16	-3.41x	42188.40	14.30		
4	E	2034-04-08T20:57:17.043		41.13	-3.50x	42563.75	14.33		
alpha	E	2034-04-08T20:59:49.091		40.93	-4.08x	44750.51	14.39		
beta	E	2034-04-08T21:00:52.073		40.85	-4.33x	45654.93	14.41		
eta	E	2034-04-08T21:02:37.438		40.71	-4.73x	47176.12	14.45		
gamma	E	2034-04-08T21:03:08.493		40.66	-4.85x	47625.11	14.46		
delta	E	2034-04-08T21:03:55.157		40.60	-5.03	48300.35	14.48		
lambda	E	2034-04-08T21:05:54.246		40.43	-5.48	50026.71	14.51		
epsilon	E	2034-04-08T21:07:39.055		40.28	-5.88	51549.47	14.55		

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch             : 2034-04-08T20:16:25.820
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       : 3425401349601820800
2Mass ID (if available) : 06082645+2341450
ICRS Star Coord at Epoch: 06h 08m 26.45758s +23:41:44.97921s
RUWE (>1.4 is poor) : 0.95
K magnitude           : 13.725
G magnitude           : 15.990
RP magnitude          : 15.248
BP magnitude          : 16.582
DUPflag               : 0
Distance (au)        : 19.198
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : 14.90
Sun-Target sep (deg) : 73.34
Sun-Moon sep (deg)   : 161.27
B (ring opening deg) : 73.67
PA of pole (deg)     : 61.24
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.936
C/A sky separation (km) : 13032.5
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_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	2034-04-08T19:23:05.022		12.61	-38.41	50828.34	-14.63		
lambda	I	2034-04-08T19:23:59.907		12.45	-38.59	50026.71	-14.60		
delta	I	2034-04-08T19:25:58.314		12.13	-38.99	48300.35	-14.56		
gamma	I	2034-04-08T19:26:44.382		12.00	-39.14	47629.90	-14.55		
eta	I	2034-04-08T19:27:15.590		11.91	-39.25	47176.12	-14.54		
beta	I	2034-04-08T19:29:00.297		11.62	-39.60	45656.31	-14.49		
alpha	I	2034-04-08T19:30:07.451		11.43	-39.82	44685.51	-14.47		
4	I	2034-04-08T19:32:31.243		11.03	-40.30	42602.56	-14.41		
5	I	2034-04-08T19:32:56.780		10.96	-40.39	42236.10	-14.38		
6	I	2034-04-08T19:33:25.757		10.88	-40.48	41820.26	-14.38		
Uranus	I	2034-04-08T19:52:17.707		7.63	-44.20	25020.01		16.33	17.06
Uranus	E	2034-04-08T20:41:01.722		-1.24x	-53.18	25430.82		-7.78	-8.15
6	E	2034-04-08T21:00:17.225		-4.91x	-56.36	41874.06	14.54		
5	E	2034-04-08T21:00:38.698		-4.98x	-56.41	42186.55	14.55		
4	E	2034-04-08T21:01:04.303		-5.06x	-56.48	42565.02	14.57		
alpha	E	2034-04-08T21:03:33.638		-5.54x	-56.87	44750.18	14.65		
beta	E	2034-04-08T21:04:35.483		-5.74x	-57.03	45654.42	14.68		
eta	E	2034-04-08T21:06:18.963		-6.07x	-57.29	47176.12	14.72		
gamma	E	2034-04-08T21:06:49.452		-6.17x	-57.37	47625.24	14.74		
delta	E	2034-04-08T21:07:35.233		-6.32x	-57.48	48300.35	14.76		
lambda	E	2034-04-08T21:09:32.051		-6.69x	-57.78	50026.71	14.80		
epsilon	E	2034-04-08T21:11:14.919		-7.03x	-58.03	51551.04	14.84		