

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2033-09-01T13:51:44.480
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3377578155777699072
 2Mass ID (if available) : 06213497+2334570

Uranus 2033-09-01T13:51:44 K14.89 G18.84 PgtRgt

ICRS Star Coord at Epoch: 06h 21m 34.99556s +23:34:56.35981s

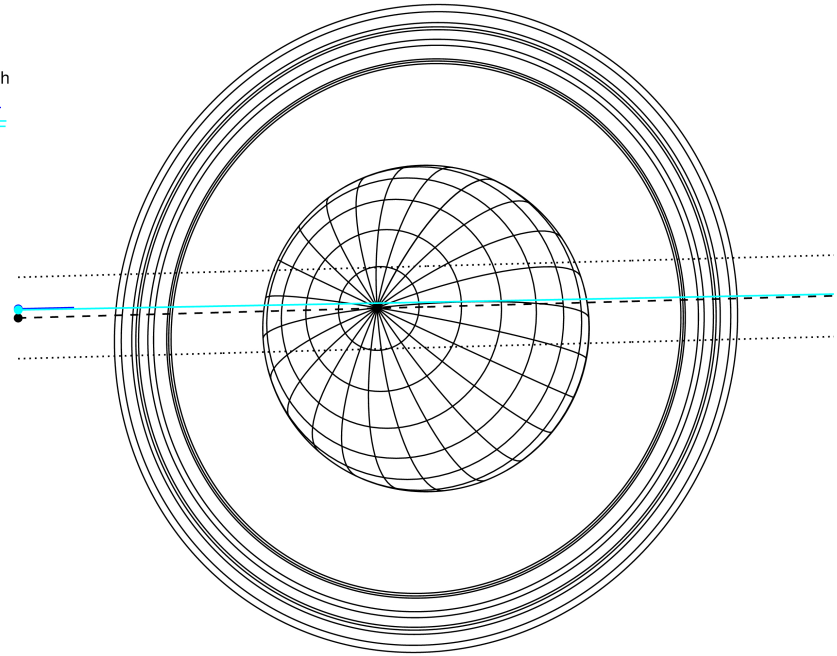
RUWE (>1.4 is poor) : 1.06
 K magnitude : 14.888
 G magnitude : 18.838
 RP magnitude : 17.519
 BP magnitude : 20.236
 DUPflag : 0
 Distance (au) : 19.394
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 19.42
 Sun-Target sep (deg) : 64.04
 Sun-Moon sep (deg) : 147.84
 B (ring opening deg) : 71.01
 PA of pole (deg) : 67.01

#	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



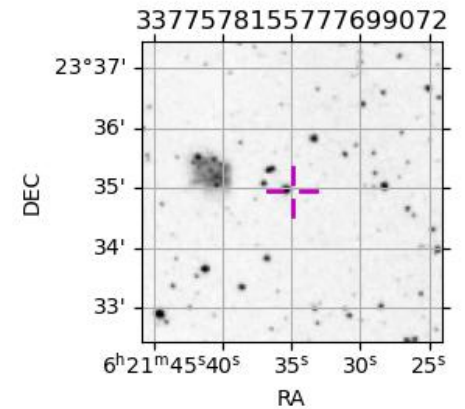
2033-09-01T13:51:44.4800 ex: 06 21 34.9956 s: +23 34 56.360 C/A 0.245° PA 181.56 deg v_sky +19.42 km/s D 19.39 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PAL
 IRTF

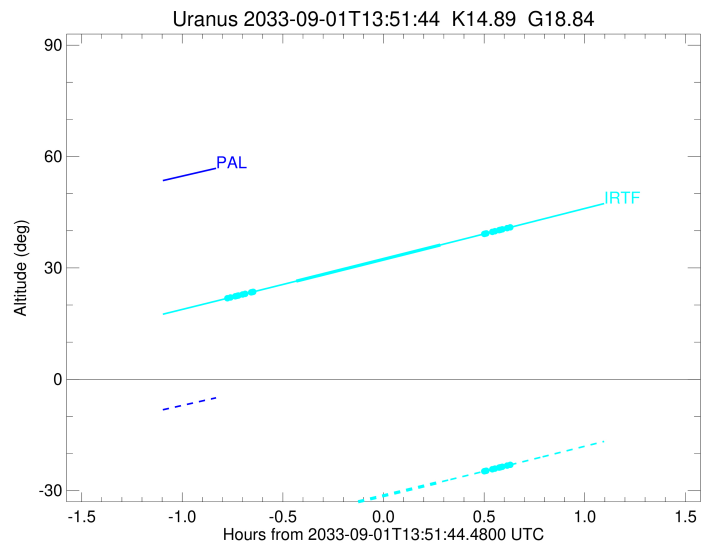
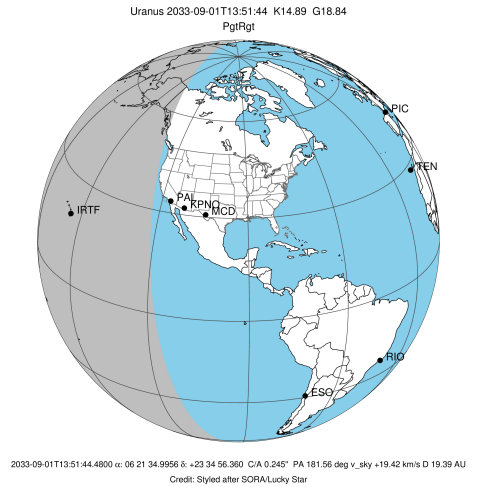


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
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					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+++++	+ +	+++++	SEP 01 13:05 - SEP 01 14:29	PieRie
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8					PnnRnn
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					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2033-09-01T13:47:07.900
 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 : 3377578155777699072
 2Mass ID (if available) : 06213497+2334570
 ICRS Star Coord at Epoch: 06h 21m 34.99556s +23:34:56.35981s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 14.888
 G magnitude : 18.838
 RP magnitude : 17.519
 BP magnitude : 20.236
 DUPflag : 0
 Distance (au) : 19.394
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 19.42
 Sun-Target sep (deg) : 64.04
 Sun-Moon sep (deg) : 147.47
 B (ring opening deg) : 71.01
 PA of pole (deg) : 67.01
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.293
 C/A sky separation (km) : 4114.8
 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



b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2033-09-01T13:05:12.492		21.83	-41.15	51149.32	-20.18		
lambda	I	2033-09-01T13:06:08.169		22.03	-40.96	50026.71	-20.16		
delta	I	2033-09-01T13:07:33.821		22.35	-40.67	48300.35	-20.15		
gamma	I	2033-09-01T13:08:07.230		22.48	-40.56	47627.17	-20.15		
eta	I	2033-09-01T13:08:29.619		22.56	-40.48	47176.12	-20.15		
beta	I	2033-09-01T13:09:43.917		22.84	-40.23	45680.99	-20.14		
alpha	I	2033-09-01T13:10:30.728		23.02	-40.07	44733.38	-20.13		
4	I	2033-09-01T13:12:18.852		23.42	-39.70	42568.50	-20.12		
5	I	2033-09-01T13:12:38.272		23.49	-39.63	42167.40	-20.12		
6	I	2033-09-01T13:12:52.301		23.55	-39.58	41879.09	-20.11		
Uranus	I	2033-09-01T13:25:42.764		26.43	-36.92	25068.20		18.35	19.16
Uranus	E	2033-09-01T14:08:42.469		36.18	-27.67	25191.83		-15.74	-16.45
6	E	2033-09-01T14:21:44.026		39.14	-24.79	41797.65	19.96		
5	E	2033-09-01T14:22:09.379		39.24	-24.69	42309.71	19.97		
4	E	2033-09-01T14:22:21.844		39.29	-24.65	42565.14	19.97		
alpha	E	2033-09-01T14:24:09.113		39.70	-24.25	44698.28	19.97		
beta	E	2033-09-01T14:24:56.084		39.87	-24.08	45641.06	19.98		
eta	E	2033-09-01T14:26:12.973		40.17	-23.79	47176.12	19.98		
gamma	E	2033-09-01T14:26:35.502		40.25	-23.71	47626.28	19.98		
delta	E	2033-09-01T14:27:09.235		40.38	-23.58	48300.35	19.98		
lambda	E	2033-09-01T14:28:35.620		40.71	-23.26	50026.71	19.99		
epsilon	E	2033-09-01T14:29:34.753		40.93	-23.04	51208.57	20.00		