

target : Saturn  
 target radius (km) : 60268.00  
 C/A epoch : 2049-11-23T07:25:43.290  
 Event type : PgRgt  
 : Saturn occs: geocentric, not topocentric  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 6771986334175542528  
 2Mass ID (if available) : 19384957-2139211

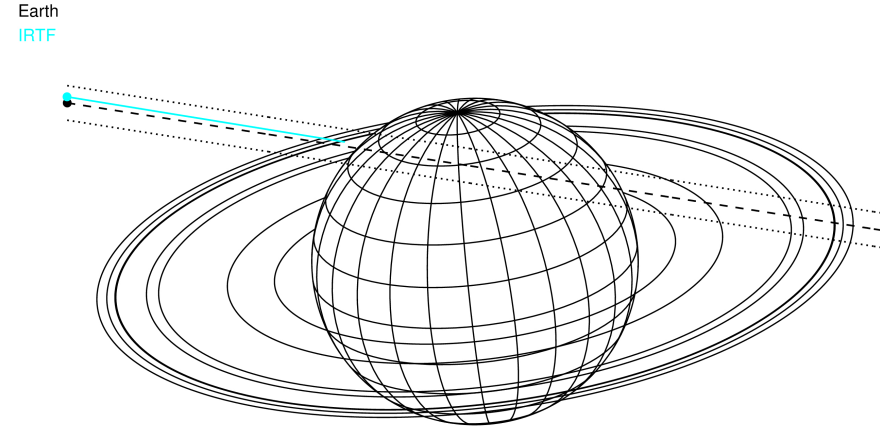
Saturn 2049-11-23T07:25:43 K9.75 G12.57 PgRgt

ICRS Star Coord at Epoch: 19h 38m 49.44620s -21:39:19.65600s

RUWE (>1.4 is poor) : 1.08  
 K magnitude : 9.753  
 G magnitude : 12.575  
 RP magnitude : 11.670  
 BP magnitude : 13.426  
 DUPflag : 0  
 Distance (au) : 10.566  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 27.92  
 Sun-Target sep (deg) : 52.12  
 Sun-Moon sep (deg) : 76.55  
 B (ring opening deg) : 23.29  
 PA of pole (deg) : 6.81



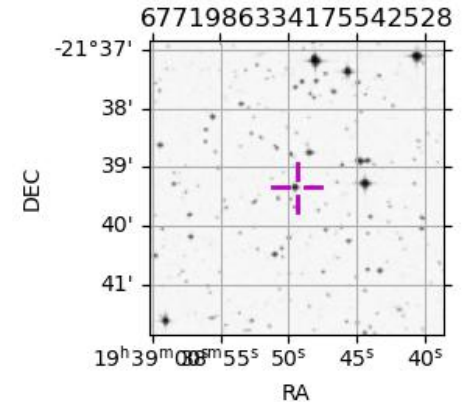
2049-11-23T07:25:43.2900 α: 19 38 49.4462 δ: -21 39 19.656 C/A 4.515° PA 171.11 deg v\_sky +27.92 km/s D 10.57 AU  
 Credit: Styled after SORA/Lucky Star



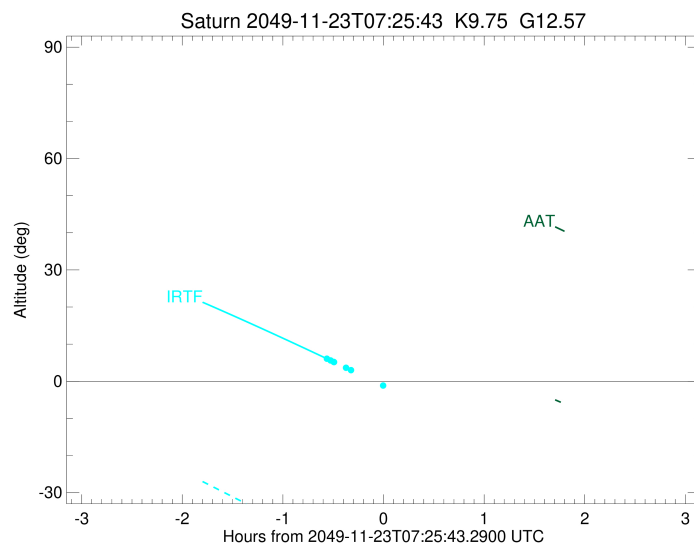
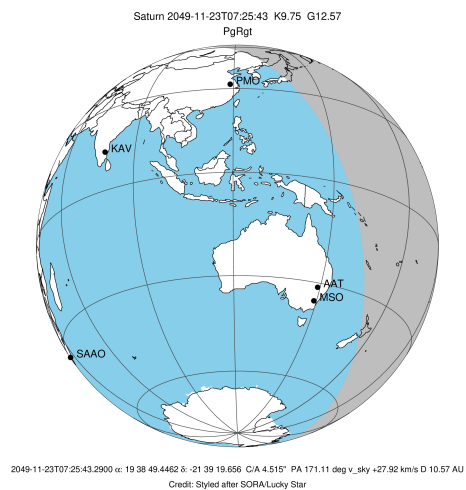
#	a(km)	ring
1	74490.6	C (IER)
2	91984.7	B (IER)
3	117571.2	B (OER)
4	122050.4	A (IER)
5	133423.3	Encke (IEG)
6	133744.9	Encke (OEG)
7	136774.4	A (OER)
8	140461.0	F ring

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	OEncode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (20	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl	32.0	248.4					PnnRnn
MCD	McDonald Obs.	30.7	256.0					PnnRnn
TEN	Teide Obs./Ten	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+			NOV 23 06:51 - NOV 23 06:56	PnnRin
KAV	Kavalur Observ	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8					PnnRnn
ESO	European South	-29.3	289.3					PnnRnn
AAT	Siding Spring	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Ob	-35.3	149.0					PnnRnn



target : Saturn  
 target radius (km) : 60268.00  
 C/A epoch : 2049-11-23T07:29:34.870  
 Event type : PgRgt  
 : Saturn occs: geocentric, not 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 : 6771986334175542528  
 2Mass ID (if available) : 19384957-2139211  
 ICRS Star Coord at Epoch: 19h 38m 49.44620s -21:39:19.65600s  
 RUWE (>1.4 is poor) : 1.08  
 K magnitude : 9.753  
 G magnitude : 12.575  
 RP magnitude : 11.670  
 BP magnitude : 13.426  
 DUPflag : 0  
 Distance (au) : 10.566  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 27.92  
 Sun-Target sep (deg) : 52.12  
 Sun-Moon sep (deg) : 76.75  
 B (ring opening deg) : 23.29  
 PA of pole (deg) : 6.81  
 Pole direction: RA (deg): 40.60000  
 Dec (deg): 83.50000  
 C/A sky separation (") : 4.677  
 C/A sky separation (km) : 35843.0  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk  
 URKALLvl.spk  
 Saturn\_ring\_plane.tf  
 sat378.bsp  
 sat286.bsp  
 vgr1.sat286.bsp  
 vgr2.sat286.bsp  
 HST1081HSPephemUTC.bsp  
 pfb10000r.bsp  
 cassini.bsp  
 earthstns\_itrf93\_040916.bsp  
 earth\_200101\_990628\_predict.bpc  
 earth\_720101\_070426.bpc  
 cpck28Mar2008.tpc  
 pck.sat440.tpc  
 IAU\_SATURN\_for\_RINGFIT.tpc  
 naif0012.tls  
 earth\_flat\_IAU.spk



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2049-11-23T06:51:58.972		6.07	-44.10	140461.00	-27.73		
A (OER)	I	2049-11-23T06:54:12.672		5.60	-44.62	136774.40	-27.41		
Encke (OEG)	I	2049-11-23T06:56:03.762		5.20	-45.05	133744.89	-27.13		
Encke (IEG)	I	2049-11-23T06:56:15.624		5.16	-45.09	133423.31	-27.09		
A (IER)	I	2049-11-23T07:03:25.384	b	3.62x	-46.76	122050.38	-25.77		
B (OER)	I	2049-11-23T07:06:21.377	b	2.99x	-47.44	117571.16	-25.12		
B (IER)	I	2049-11-23T07:25:35.113	b	-1.17x	-51.91	91984.69	-18.44		
Saturn	I	2049-11-23T07:01:01.878		4.14x	-46.20	59701.24		47.11	52.59
Saturn	E	2049-11-23T07:58:24.330		-8.39x	-59.57	60156.61		18.84	22.70
B (IER)	E	2049-11-23T08:17:01.008		-12.54x	-63.92	91984.69	18.58		
B (OER)	E	2049-11-23T08:36:04.845		-16.81x	-68.37	117571.16	25.34		
A (IER)	E	2049-11-23T08:38:59.275		-17.47x	-69.06	122050.38	26.00		
Encke (IEG)	E	2049-11-23T08:46:05.186		-19.07x	-70.72	133423.31	27.34		
Encke (OEG)	E	2049-11-23T08:46:16.940		-19.11x	-70.76	133744.89	27.38		
A (OER)	E	2049-11-23T08:48:07.015		-19.53x	-71.19	136774.40	27.67		
F ring	E	2049-11-23T08:50:19.479		-20.03x	-71.71	140461.00	27.99		