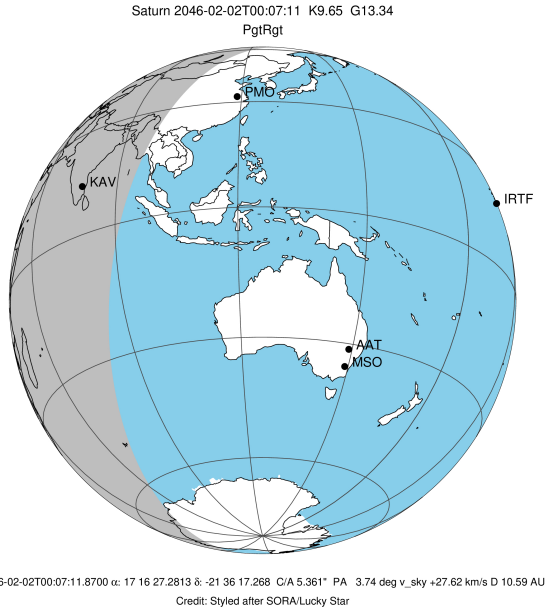
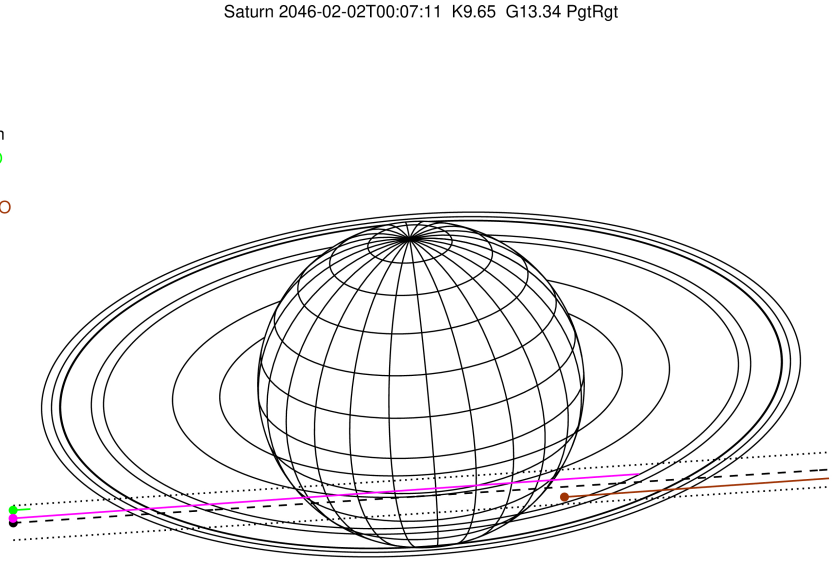
Stellar occultation prediction by rfrench@wellesley.edu Sat Jun 24 19:46:12 2023

target : Saturn
target radius (km) : 60268.00
C/A epoch : 2046-02-02T00:07:11.870
Event type : PgtRgt
: Saturn occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Gaia source ID : 4115763981793858048
2Mass ID (if available) : 17162727-2136170

ICRS Star Coord at Epoch: 17h 16m 27.28129s -21:36:17.26816s
RUWE (>1.4 is poor) : 0.95
K magnitude : 9.653
G magnitude : 13.344
RP magnitude : 12.321
BP magnitude : 14.424
DUPflag : 0
Distance (au) : 10.590
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 27.62
Sun-Target sep (deg) : 52.78
Sun-Moon sep (deg) : 10.10
B (ring opening deg) : 26.63
PA of pole (deg) : 4.53

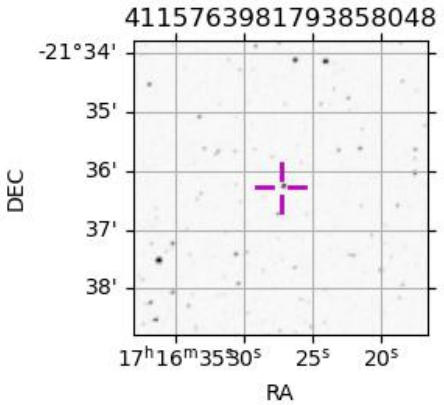
#	a(km)	ring
1	74490.6	C (IER)
2	91984.7	B (IER)
3	117571.2	B (OER)
4	122050.4	A (IER)
5	133423.3	Encke (IEG)
6	133744.9	Encke (OEG)
7	136774.4	A (OER)
8	140461.0	F ring





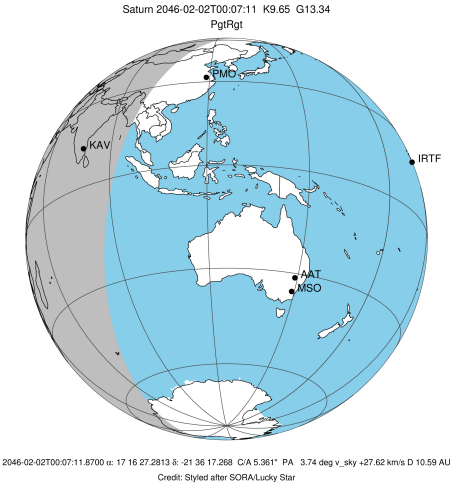
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

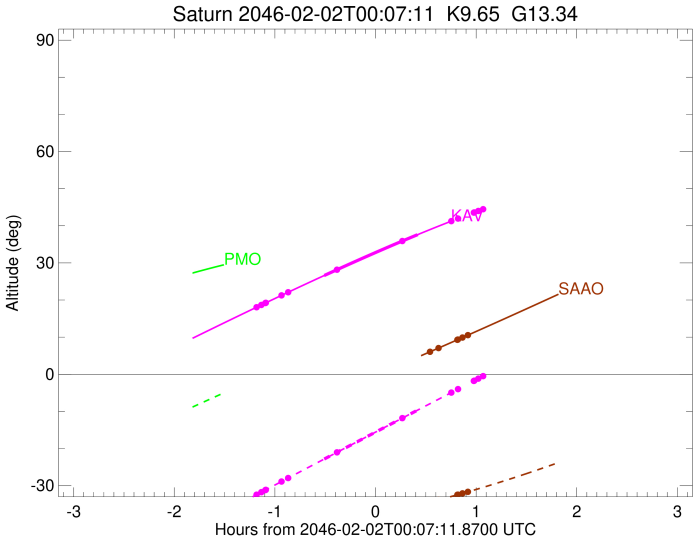
Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (20	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl	32.0	248.4					PnnRnn
MCD	McDonald Obs.	30.7	256.0					PnnRnn
TEN	Teide Obs./Ten	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observ	12.6	78.8	+ + + + + +	+ +		FEB 01 22:56 - FEB 02 00:32	PieRin
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			+ + + + + +	FEB 02 00:39 - FEB 02 01:02	PnnRne
MSO	Mt. Stromlo Ob	-35.3	149.0					PnnRnn



Saturn_2046-02-02T00_07_11.8700_KAV.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:18:21 2023

target : Saturn
target radius (km) : 60268.00
C/A epoch : 2046-02-02T00:04:27.070
Event type : PgtRgt
: Saturn 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 : 4115763981793858048
2Mass ID (if available) : 17162727-2136170
ICRS Star Coord at Epoch: 17h 16m 27.28129s -21:36:17.26816s
RUWE (>1.4 is poor) : 0.95
K magnitude : 9.653
G magnitude : 13.344
RP magnitude : 12.321
BP magnitude : 14.424
DUPflag : 0
Distance (au) : 10.590
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 27.62
Sun-Target sep (deg) : 52.78
Sun-Moon sep (deg) : 10.96
B (ring opening deg) : 26.63
PA of pole (deg) : 4.53
Pole direction: RA (deg): 40.60000
Dec (deg): 83.50000
C/A sky separation (") : 5.028
C/A sky separation (km) : 38618.4
NAIF SPICE kernels : RAJobs_U111+rgf15.spk
URKALLv1.spk
Saturn_ring_plane.tf
sat378.bsp
sat286.bsp
vgr1.sat286.bsp
vgr2.sat286.bsp
HST1081HSPephemUTC.bsp
pfbl0000r.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



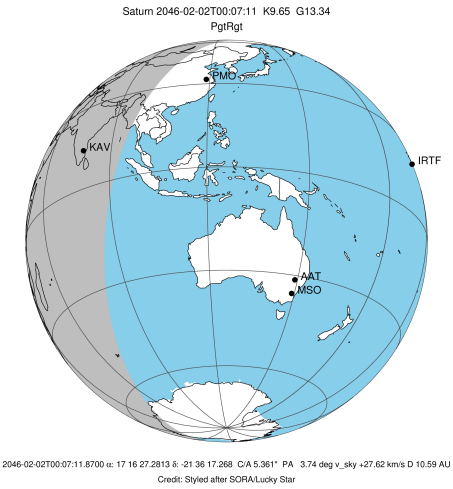


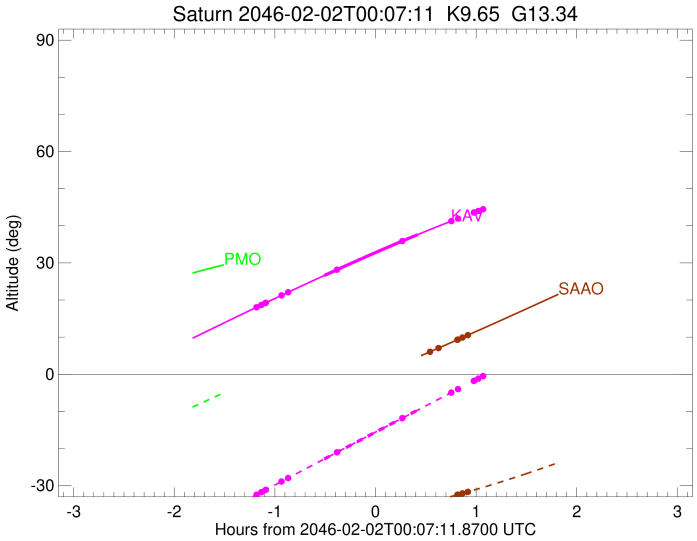
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2046-02-01T22:56:12.966		18.05	-32.46	140461.00	-21.69		
A (OER)	I	2046-02-01T22:59:04.379		18.66	-31.78	136774.40	-21.32		
Encke (OEG)	I	2046-02-01T23:01:27.556		19.18	-31.21	133744.89	-20.99		
Encke (IEG)	I	2046-02-01T23:01:42.887		19.23	-31.15	133423.31	-20.96		
A (IER)	I	2046-02-01T23:11:05.289		21.24	-28.92	122050.38	-19.42		
B (OER)	I	2046-02-01T23:15:00.536		22.07	-27.98	117571.16	-18.65		
B (IER)	I	2046-02-01T23:44:11.464	b	28.16	-21.04	91984.69	-9.47		
Saturn	I	2046-02-01T23:36:37.933		26.60	-22.84	59795.01		-34.90	-40.39
Saturn	E	2046-02-02T00:32:18.319		37.61	-9.66	59776.54		-35.68	-41.21
B (IER)	E	2046-02-02T00:23:07.441	b	35.88	-11.83	91984.69	9.44		
B (OER)	E	2046-02-02T00:52:26.181		41.26	-4.93x	117571.16	18.54		
A (IER)	E	2046-02-02T00:56:22.894		41.94	-4.01x	122050.38	19.30		
Encke (IEG)	E	2046-02-02T01:05:49.234		43.55	-1.80x	133423.31	20.80		
Encke (OEG)	E	2046-02-02T01:06:04.682		43.59	-1.74x	133744.89	20.84		
A (OER)	E	2046-02-02T01:08:28.964		43.99	-1.18x	136774.40	21.16		
F ring	E	2046-02-02T01:11:21.752		44.46	-0.50x	140461.00	21.51		

Saturn_2046-02-02T00_07_11.8700_SAAO.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:21:55 2023

target : Saturn
target radius (km) : 60268.00
C/A epoch : 2046-02-02T00:04:20.010
Event type : PgtRgt
: Saturn 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 : 4115763981793858048
2Mass ID (if available) : 17162727-2136170
ICRS Star Coord at Epoch: 17h 16m 27.28129s -21:36:17.26816s
RUWE (>1.4 is poor) : 0.95
K magnitude : 9.653
G magnitude : 13.344
RP magnitude : 12.321
BP magnitude : 14.424
DUPflag : 0
Distance (au) : 10.590
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 27.62
Sun-Target sep (deg) : 52.78
Sun-Moon sep (deg) : 10.44
B (ring opening deg) : 26.63
PA of pole (deg) : 4.53
Pole direction: RA (deg): 40.60000
Dec (deg): 83.50000
C/A sky separation (") : 5.881
C/A sky separation (km) : 45168.6
NAIF SPICE kernels : RAJobs_U111+rgf15.spk
URKALLv1.spk
Saturn_ring_plane.tf
sat378.bsp
sat286.bsp
vgr1.sat286.bsp
vgr2.sat286.bsp
HST1081HSPephemUTC.bsp
pfbl0000r.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





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
F ring	I	2046-02-01T23:04:40.272		-11.67x	-40.84	140461.00	-19.37		
A (OER)	I	2046-02-01T23:07:53.442		-11.11x	-40.78	136774.40	-18.79		
Encke (OEG)	I	2046-02-01T23:10:36.897		-10.63x	-40.72	133744.89	-18.27		
Encke (IEG)	I	2046-02-01T23:10:54.527		-10.58x	-40.71	133423.31	-18.21		
A (IER)	I	2046-02-01T23:22:04.049		-8.60x	-40.37	122050.38	-15.65		
B (OER)	I	2046-02-01T23:27:03.188		-7.70x	-40.18	117571.16	-14.27		
Saturn	I	2046-02-01T23:40:57.882		-5.17x	-39.48	59617.49		-42.26	-47.87
Saturn	E	2046-02-02T00:27:43.324		3.71x	-35.70	59598.14		-43.04	-48.64
B (OER)	E	2046-02-02T00:39:45.891		6.06	-34.40	117571.16	14.20		
A (IER)	E	2046-02-02T00:44:46.624		7.05	-33.83	122050.38	15.56		
Encke (IEG)	E	2046-02-02T00:56:00.368		9.28	-32.47	133423.31	18.08		
Encke (OEG)	E	2046-02-02T00:56:18.122		9.34	-32.43	133744.89	18.14		
A (OER)	E	2046-02-02T00:59:02.755		9.89	-32.09	136774.40	18.66		
F ring	E	2046-02-02T01:02:17.389		10.54	-31.67	140461.00	19.22		