u144_caha_123cm_2200nm_predicted_ring_event_times.txt produced Mon Apr 12 20:50:57 2021 using
rfrench@Achilles.local:/Volumes/PromisePegasus28TB_backup/dione_raid2/Research/uranus/PDART2014/programs/pro_occinfo2geom_plots_pds4_v7.pro

Bundle ID: uranus_occ_u144_caha_123cm

```
Event:                                  u144
Planet:                                 Uranus
Reference:                              Unpublished
Title:                                  Unpublished
Computations from:                      1997-09-30T21:42:07.0000Z to 1997-09-30T23:37:38.6288Z
Observatory name:                       Centro Astronomico Hispano-Aleman
Observatory code file directory:        /Volumes/dione_raid2/Research/kernels/
Observatory code file:                  ObsCodes_pck00010_20200709_Elon+ocobs_v9BJ.obs
Observatory code:                       CAL
Observatory abbreviation:               caha
Entry from observatory code file:
    CAL G +357 27 14.00  +37 13 25.0        2161 Calar Alto  from Google Earth - obs 493 is bad!     pck00010.tpc
Telescope:                              123cm
Instrument:                             Generic NICMOS IR camera
Mean wavelength (nm)                    2200nm
Observatory latitude (deg):              37.223611111
Observatory E longitude (deg):          357.453888889
Observatory altitude (km):                2.161000000
Ellipsoid source:                       /Volumes/dione_raid2/Research/kernels/pck00010.tpc
Observatory reference frame:            ITRF93
Earth equatorial radius (km):           6378.136600000
Earth 1/flattening:                      298.257006177
Topocentric position vector:            5081.718442324    -225.970279594    3838.490138971
Leapsecond kernel file:                 /Volumes/dione_raid2/Research/kernels/naif0012.tls
Star catalog directory:                 /Volumes/dione_raid2/Research/RINGFIT/stars/data/
Star catalog file:                      ustarsALLd.v3.merged.sortedA.csv
Star catalog ID:                        24243741
Star number:                            60
Star name:                              U144
Star source catalog:                    UCAC2
Star RA (deg):                          307.350520900
Star Dec (deg):                         -19.670615600
Star epoch:                             2000-01-01T00:00:00.0000Z
Star parallax (mas):                     0.000000000
Star pm RA (mas/yr):                    -4.200000000
Star pm Dec (mas/yr):                   -0.400000000
Star catalog positions in frame:        J2000
Star frame for calculations:            J2000
Heliocentric frame for calculations:    J2000
Ringfit savefile directory:             /Volumes/dione_raid2/Research/RINGFIT/tests/Uranus/Ur017L/savefiles/
Ringfit savefile for star/time offsets: ringfit_v1.8.Ur017L-RF-V0204.sav
Ringfit output file directory:          /Volumes/dione_raid2/Research/RINGFIT/tests/Uranus/Ur017L/outfiles/
Ringfit output file:                    ringfit_v1.8.Ur017L-RF-V0204.out
Star offsets dRA,dDec (mas):             10.650601081      -9.675893390
Time offset for this obstr./event (sec):     0.000000000
Kernel directory:                       /Volumes/dione_raid2/Research/kernels/
   ../../../../kernels/ura111.bsp
   ../../../../kernels/vgr2.ura111.bsp
   ../../../../kernels/earthstns_itrf93_040916.bsp
   ../../../../kernels/earth_720101_031229.bpc
   ../../../../kernels/pg3f0000r.bsp
   ../../../../kernels/pg490000r.bsp
   ../../../../kernels/naif0012.tls
   /Volumes/dione_raid2/Research/RINGFIT/tests/Uranus/Ur017L/savefiles/../kernels/RAJobs_U111+rgf9.spk
   /Volumes/dione_raid2/Research/RINGFIT/tests/Uranus/Ur017L/savefiles/../kernels/URKALLv1.spk
   /Volumes/dione_raid2/Research/kernels/uranus_ringframes_rfrench20201201_v1.tf
   /Volumes/dione_raid2/Research/kernels/pck00010.tpc
```

Predicted Ring/Atmosphere Occultation Events

Ring	I/E	UTC(Earth)	UTC(@ring)	R(model)	R-dot	Anomaly	Sin B	Ulon	Alt(deg)	Sun(deg)
epsilon	I	1997-09-30T21:46:36.91Z	1997-09-30T19:05:37.57Z	50876.35	-6.251	48.046	-0.67180	59.394	27.873	-44.165
lambda	I	1997-09-30T21:48:54.82Z	1997-09-30T19:07:55.47Z	50026.01	-6.074	36.211	-0.67180	60.645	27.653	-44.514
delta	I	1997-09-30T21:53:48.40Z	1997-09-30T19:12:49.01Z	48300.31	-5.671	62.698	-0.67180	63.451	27.172	-45.246
gamma	I	1997-09-30T21:55:49.19Z	1997-09-30T19:14:49.79Z	47626.13	-5.493	86.136	-0.67180	64.662	26.969	-45.543
eta	I	1997-09-30T21:57:11.99Z	1997-09-30T19:16:12.58Z	47176.39	-5.366	177.611	-0.67181	65.512	26.828	-45.745
beta	I	1997-09-30T22:02:08.19Z	1997-09-30T19:21:08.74Z	45655.72	-4.882	74.115	-0.67179	68.685	26.314	-46.455
alpha	I	1997-09-30T22:05:24.50Z	1997-09-30T19:24:25.04Z	44731.49	-4.540	247.784	-0.67164	70.897	25.963	-46.916
alpha	E	1997-09-30T23:12:41.83Z	1997-09-30T20:31:41.90Z	44700.98	4.468	301.357	-0.67164	124.567	17.311	-54.195
beta	E	1997-09-30T23:16:12.11Z	1997-09-30T20:35:12.16Z	45674.78	4.820	132.222	-0.67179	126.896	16.795	-54.432
eta	E	1997-09-30T23:21:09.72Z	1997-09-30T20:40:09.74Z	47176.30	5.277	242.015	-0.67181	130.023	16.056	-54.738
gamma	E	1997-09-30T23:22:34.93Z	1997-09-30T20:41:34.94Z	47631.21	5.401	152.261	-0.67180	130.882	15.842	-54.820
delta	E	1997-09-30T23:24:36.95Z	1997-09-30T20:43:36.94Z	48300.64	5.571	131.231	-0.67180	132.083	15.534	-54.931
lambda	E	1997-09-30T23:29:36.21Z	1997-09-30T20:48:36.17Z	50026.01	5.956	110.349	-0.67180	134.886	14.772	-55.180
epsilon	E	1997-09-30T23:33:19.07Z	1997-09-30T20:52:19.00Z	51382.37	6.215	125.395	-0.67180	136.845	14.198	-55.342

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Event geometry at 1997-09-30T22:31:43.0000Z
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    Ring opening angle B (deg):  -42.20604
Position angle of pole P (deg):  267.07565
 Observer-planet distance (km):    2896.001815 x 10^6
       Light travel time (sec):    9660.022252
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