u102b_irtf_320cm_2200nm_predicted_ring_event_times.txt produced Mon Apr 5 11:33:52 2021 using
rfrench@Achilles.fios-router.home:/Volumes/PromisePegasus28TB_backup/dione_raid2/Research/uranus/PDART2014/programs/pro_occinfo2geom_plots_pds4_v7
.pro

Bundle ID: uranus_occ_u102b_irtf_320cm

```
Event:                                  u102b
Planet:                                 Uranus
Reference:                              R. G. French et al. Bulletin of the American Astronomical Society, Vol. 24, p.1029, 1992
Title:                                  Observations of the July 1992 Occultations of U102 and U103 by Uranus and of N4174 by Neptune
Computations from:                      1992-07-08T09:27:12.8000Z to 1992-07-08T11:15:22.5500Z
Observatory name:                       IRTF
Observatory code file directory:        /Volumes/dione_raid2/Research/kernels/
Observatory code file:                  ObsCodes_pck00010_20200709_Elon+ocobs_v9BJ.obs
Observatory code:                       568
Observatory abbreviation:               irtf
Entry from observatory code file:
    568 G +204 31 40.08  +19 49 34.0        4212 Mauna Kea                                          pck00010.tpc
Telescope:                              320cm
Instrument:                             Generic InSb High Speed Photometer
Mean wavelength (nm)                    2200nm
Observatory latitude (deg):              19.826111111
Observatory E longitude (deg):          204.527800000
Observatory altitude (km):                4.212000000
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:           -5464.341062821   -2493.446346975    2151.026113131
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:                        22794648
Star number:                               25
Star name:                              U102B
Star source catalog:                    UCAC2
Star RA (deg):                          287.525552700
Star Dec (deg):                         -22.897653900
Star epoch:                             2000-01-01T00:00:00.0000Z
Star parallax (mas):                      0.000000000
Star pm RA (mas/yr):                      1.800000000
Star pm Dec (mas/yr):                    -4.600000000
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):           -17.575332229      55.027229645
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	1992-07-08T09:41:41.96Z	1992-07-08T07:07:37.77Z	51146.20	-25.666	89.997	-0.87014	16.828	45.968	-46.330
lambda	I	1992-07-08T09:42:25.62Z	1992-07-08T07:08:21.43Z	50026.01	-25.641	288.030	-0.87014	17.094	46.010	-46.375
delta	I	1992-07-08T09:43:32.98Z	1992-07-08T07:09:28.78Z	48300.24	-25.599	45.010	-0.87014	17.528	46.075	-46.442
gamma	I	1992-07-08T09:43:59.13Z	1992-07-08T07:09:54.93Z	47631.06	-25.581	149.099	-0.87014	17.705	46.099	-46.468
eta	I	1992-07-08T09:44:16.93Z	1992-07-08T07:10:12.73Z	47176.07	-25.570	349.336	-0.87013	17.828	46.116	-46.486
beta	I	1992-07-08T09:45:16.57Z	1992-07-08T07:11:12.37Z	45650.07	-25.524	303.695	-0.87018	18.259	46.170	-46.543
alpha	I	1992-07-08T09:45:53.76Z	1992-07-08T07:11:49.55Z	44697.16	-25.491	50.741	-0.87026	18.542	46.204	-46.578
four	I	1992-07-08T09:47:17.36Z	1992-07-08T07:13:13.16Z	42584.92	-25.425	107.546	-0.86993	19.226	46.277	-46.656
five	I	1992-07-08T09:47:32.91Z	1992-07-08T07:13:28.71Z	42156.81	-25.392	12.813	-0.87061	19.360	46.290	-46.670
six	I	1992-07-08T09:47:44.25Z	1992-07-08T07:13:40.04Z	41875.76	-25.381	154.657	-0.87047	19.460	46.300	-46.680
Atmosphere	I	1992-07-08T09:55:36.05Z							46.660	-47.063
Atmosphere	E	1992-07-08T10:30:27.47Z							47.244	-47.747
six	E	1992-07-08T10:39:16.75Z	1992-07-08T08:05:12.40Z	41812.28	25.384	306.001	-0.87047	170.905	47.122	-47.650
five	E	1992-07-08T10:39:36.27Z	1992-07-08T08:05:31.93Z	42312.41	25.404	164.438	-0.87061	171.080	47.116	-47.644
four	E	1992-07-08T10:39:45.98Z	1992-07-08T08:05:41.64Z	42579.59	25.431	259.412	-0.86993	171.179	47.113	-47.641
alpha	E	1992-07-08T10:41:11.59Z	1992-07-08T08:07:07.24Z	44749.70	25.499	203.989	-0.87026	171.871	47.082	-47.614
beta	E	1992-07-08T10:41:47.24Z	1992-07-08T08:07:42.90Z	45663.87	25.530	97.503	-0.87018	172.145	47.068	-47.602
eta	E	1992-07-08T10:42:46.37Z	1992-07-08T08:08:42.02Z	47176.36	25.575	144.014	-0.87013	172.573	47.045	-47.581
gamma	E	1992-07-08T10:43:03.85Z	1992-07-08T08:08:59.50Z	47623.51	25.587	304.013	-0.87014	172.694	47.037	-47.574
delta	E	1992-07-08T10:43:30.32Z	1992-07-08T08:09:25.97Z	48300.72	25.605	200.284	-0.87014	172.873	47.026	-47.564
lambda	E	1992-07-08T10:44:37.64Z	1992-07-08T08:10:33.29Z	50026.01	25.646	84.173	-0.87014	173.307	46.996	-47.537
epsilon	E	1992-07-08T10:45:27.57Z	1992-07-08T08:11:23.21Z	51307.18	25.675	246.719	-0.87014	173.609	46.973	-47.516

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Event geometry at 1992-07-08T10:13:01.0000Z
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    Ring opening angle B (deg):  -60.47480
Position angle of pole P (deg):  279.74459
 Observer-planet distance (km):    2771.366935 x 10^6
       Light travel time (sec):    9244.285041
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