u0201_palomar_508cm_2200nm_predicted_ring_event_times.txt produced Mon Apr 5 19:24:57 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_u0201_palomar_508cm

```
Event:                                  u0201
Planet:                                 Uranus
Reference:                              Unpublished
Title:                                  Unpublished
Computations from:                      2002-07-29T09:18:01.9520Z to 2002-07-29T10:15:59.9567Z
Observatory name:                       Palomar Observatory
Observatory code file directory:        /Volumes/dione_raid2/Research/kernels/
Observatory code file:                  ObsCodes_pck00010_20200709_Elon+ocobs_v9BJ.obs
Observatory code:                       675
Observatory abbreviation:               palomar
Entry from observatory code file:
    675 G +243 08 14.86  +33 21 14.8        1696 Palomar Mountain                                   pck00010.tpc
Telescope:                              508cm
Instrument:                             Generic InSb High Speed Photometer
Mean wavelength (nm)                    2200nm
Observatory latitude (deg):                33.354111111
Observatory E longitude (deg):            243.137461111
Observatory altitude (km):                  1.696000000
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:             -2410.356622789   -4758.781262269    3487.762207224
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:                        27214859
Star number:                               16
Star name:                              U0201
Star source catalog:                    UCAC2
Star RA (deg):                             330.114305300
Star Dec (deg):                            -13.013521400
Star epoch:                             2000-01-01T00:00:00.0000Z
Star parallax (mas):                        0.000000000
Star pm RA (mas/yr):                      -17.100000000
Star pm Dec (mas/yr):                      -8.500000000
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):              106.218466086      52.910106996
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	2002-07-29T09:56:01.04Z	2002-07-29T07:17:32.07Z	51549.30	-32.499	170.213	-0.33696	64.323	42.875	-30.316
lambda	I	2002-07-29T09:56:49.99Z	2002-07-29T07:18:21.01Z	50026.01	-29.664	325.608	-0.33696	67.304	42.840	-30.221
delta	I	2002-07-29T09:57:52.12Z	2002-07-29T07:19:23.13Z	48300.32	-25.740	295.562	-0.33696	71.345	42.794	-30.099
gamma	I	2002-07-29T09:58:19.16Z	2002-07-29T07:19:50.16Z	47628.80	-23.894	244.290	-0.33695	73.189	42.773	-30.046
eta	I	2002-07-29T09:58:38.60Z	2002-07-29T07:20:09.60Z	47176.32	-22.517	235.260	-0.33696	74.549	42.759	-30.008
beta	I	2002-07-29T09:59:55.05Z	2002-07-29T07:21:26.04Z	45666.84	-16.752	106.168	-0.33691	80.134	42.699	-29.857
alpha	I	2002-07-29T10:01:06.16Z	2002-07-29T07:22:37.14Z	44685.28	-11.004	10.647	-0.33692	85.566	42.642	-29.716
alpha	E	2002-07-29T10:05:20.79Z	2002-07-29T07:26:51.73Z	44689.56	11.115	31.091	-0.33692	106.016	42.424	-29.201
beta	E	2002-07-29T10:06:30.80Z	2002-07-29T07:28:01.73Z	45676.08	16.844	137.441	-0.33691	111.459	42.360	-29.057
eta	E	2002-07-29T10:07:46.91Z	2002-07-29T07:29:17.82Z	47176.21	22.585	277.696	-0.33696	117.002	42.290	-28.900
gamma	E	2002-07-29T10:08:06.22Z	2002-07-29T07:29:37.12Z	47624.72	23.957	289.449	-0.33695	118.350	42.271	-28.860
delta	E	2002-07-29T10:08:33.41Z	2002-07-29T07:30:04.31Z	48300.17	25.800	344.423	-0.33696	120.206	42.245	-28.803
lambda	E	2002-07-29T10:09:35.58Z	2002-07-29T07:31:06.47Z	50026.01	29.714	22.522	-0.33696	124.248	42.185	-28.674
epsilon	E	2002-07-29T10:10:19.69Z	2002-07-29T07:31:50.58Z	51392.73	32.236	232.812	-0.33696	126.942	42.142	-28.581

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Event geometry at 2002-07-29T09:58:40.0000Z
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    Ring opening angle B (deg):  -19.69149
Position angle of pole P (deg):  258.31148
 Observer-planet distance (km):    2850.733765 x 10^6
       Light travel time (sec):    9509.024289
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