

u11_ctio_400cm_2200nm_predicted_ring_event_times.txt produced Sun Apr 4 15:07:42 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_u11_ctio_400cm

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Event: u11
Planet: Uranus
Reference: Elliot et al. 1981 Astron. J. 86, 127
Title: The 20 March 1980 Occultation by the Uranian Rings
Computations from: 1980-03-20T04:00:00.0000Z to 1980-03-20T06:00:00.0000Z
Observatory name: Cerro Tololo Inter-American Observatory
Observatory code file directory: /Volumes/dione_raid2/Research/kernels/
Observatory code file: ObsCodes_pck00010_20200709_Elon+ocobs_v9BJ.obs
Observatory code: 807
Observatory abbreviation: ctio
Entry from observatory code file:
  807 G +289 11 38.80 -30 10 08.9          2380 CTIO 4m - tweaked 2020 Apr 01 to match JPL Horizons pck00010.tpc
Telescope: 400cm
Instrument: Generic InSb High Speed Photometer
Mean wavelength (nm): 2200nm
Observatory latitude (deg): -30.169138889
Observatory E longitude (deg): 289.194111111
Observatory altitude (km): 2.380000000
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: 1815.108950819 -5214.008358653 -3187.793456948
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: 24610234
Star number: 35
Star name: U11
Star source catalog: UCAC2
Star RA (deg): 233.409978000
Star Dec (deg): -18.901289500
Star epoch: 2000-01-01T00:00:00.0000Z
Star parallax (mas): 0.000000000
Star pm RA (mas/yr): -15.000000000
Star pm Dec (mas/yr): 2.500000000
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): -294.048893944 27.146614153
Time offset for this obstr./event (sec): 0.000000000
Kernel directory: /Volumes/dione_raid2/Research/kernels/
  ../../../../kernels/urall1.bsp
  ../../../../kernels/vgr2.urall1.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_U11+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

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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	1980-03-20T04:10:50.36Z	1980-03-20T01:39:48.58Z	50774.30	-5.132	22.588	-0.91958	303.967 31.938	-58.263
lambda	I	1980-03-20T04:13:19.68Z	1980-03-20T01:42:17.92Z	50026.01	-4.885	354.693	-0.91958	302.412 32.476	-58.436
delta	I	1980-03-20T04:19:38.41Z	1980-03-20T01:48:36.69Z	48300.46	-4.210	92.117	-0.91958	298.259 33.841	-58.828
gamma	I	1980-03-20T04:22:25.94Z	1980-03-20T01:51:24.23Z	47621.71	-3.888	26.207	-0.91958	296.329 34.445	-58.980
eta	I	1980-03-20T04:24:23.98Z	1980-03-20T01:53:22.28Z	47176.32	-3.653	122.453	-0.91958	294.936 34.871	-59.079
beta	I	1980-03-20T04:32:32.18Z	1980-03-20T02:01:30.53Z	45642.37	-2.607	339.524	-0.91961	288.908 36.633	-59.416
alpha	I	1980-03-20T04:40:02.94Z	1980-03-20T02:09:01.33Z	44699.11	-1.555	54.862	-0.91959	283.023 38.260	-59.620
alpha	E	1980-03-20T05:00:59.70Z	1980-03-20T02:29:58.22Z	44691.83	1.552	37.832	-0.91959	266.014 42.800	-59.635
beta	E	1980-03-20T05:08:35.50Z	1980-03-20T02:37:34.06Z	45648.13	2.633	310.607	-0.91961	260.042 44.445	-59.439
eta	E	1980-03-20T05:16:37.70Z	1980-03-20T02:45:36.31Z	47176.21	3.692	81.491	-0.91958	254.043 46.184	-59.118
gamma	E	1980-03-20T05:18:34.53Z	1980-03-20T02:47:33.15Z	47621.40	3.933	342.459	-0.91958	252.652 46.605	-59.023
delta	E	1980-03-20T05:21:20.24Z	1980-03-20T02:50:18.87Z	48300.24	4.262	44.511	-0.91958	250.723 47.202	-58.877
lambda	E	1980-03-20T05:27:34.28Z	1980-03-20T02:56:32.95Z	50026.01	4.958	298.775	-0.91958	246.572 48.548	-58.498
epsilon	E	1980-03-20T05:30:10.67Z	1980-03-20T02:59:09.35Z	50822.20	5.226	323.470	-0.91958	244.922 49.110	-58.321

Event geometry at 1980-03-20T04:47:01.0000Z

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Ring opening angle B (deg): -66.86481
Position angle of pole P (deg): 84.41643
Observer-planet distance (km): 2716.475849 x 10^6
Light travel time (sec): 9061.188085

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