

u12\_eso\_360cm\_2200nm\_predicted\_ring\_event\_times.txt produced Mon Apr 12 18:30:34 2021 using  
rfrench@Achilles.local:/Volumes/PromisePegasus28TB\_backup/dione\_raid2/Research/uranus/PDART2014/programs/pro\_occinfo2geom\_plots\_pds4\_v7.pro

Bundle ID: uranus\_occ\_u12\_eso\_360cm

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Event: u12
Planet: Uranus
Reference: French et al. 1986 Icarus 67, 134-163
Title: Structure of the Uranian rings II. Ring orbits and widths.
Computations from: 1980-08-15T21:41:10.0000Z to 1980-08-16T01:51:39.4000Z
Observatory name: European Southern Observatory
Observatory code file directory: /Volumes/dione_raid2/Research/kernels/
Observatory code file: ObsCodes_pck00010_20200709_Elon+ocobs_v9BJ.obs
Observatory code: ESO
Observatory abbreviation: eso
Entry from observatory code file:
    ESO G +289 16 05.90 -29 15 39.5      2400 European Southern Observatory 3.6 m from Bruno Sicardy
Telescope: 360cm
Instrument: Generic InSb High Speed Photometer
Mean wavelength (nm): 2200nm
Observatory latitude (deg): -29.260972222
Observatory E longitude (deg): 289.268305556
Observatory altitude (km): 2.400000000
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: 1838.337577350 -5258.791852546 -3100.340976236
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: 25096598
Star number: 39
Star name: U12
Star source catalog: UCAC2
Star RA (deg): 229.541725300
Star Dec (deg): -17.994799500
Star epoch: 2000-01-01T00:00:00.0000Z
Star parallax (mas): 0.000000000
Star pm RA (mas/yr): -12.700000000
Star pm Dec (mas/yr): 10.000000000
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): -197.025441657 125.568807336
Time offset for this obstr./event (sec): -0.077387536
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

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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	1980-08-15T21:52:55.01Z	1980-08-15T19:16:50.92Z	50881.22	-8.289	48.966	-0.89307	173.106	76.838	4.729
lambda	I	1980-08-15T21:54:38.25Z	1980-08-15T19:18:34.15Z	50026.01	-8.280	5.969	-0.89307	172.856	77.034	4.374
delta	I	1980-08-15T21:58:06.91Z	1980-08-15T19:22:02.79Z	48300.36	-8.259	71.758	-0.89307	172.322	77.401	3.654
gamma	I	1980-08-15T21:59:29.18Z	1980-08-15T19:23:25.04Z	47621.16	-8.251	1.198	-0.89307	172.101	77.535	3.369
eta	I	1980-08-15T22:00:23.10Z	1980-08-15T19:24:18.96Z	47176.23	-8.245	90.166	-0.89307	171.953	77.619	3.183
beta	I	1980-08-15T22:03:27.33Z	1980-08-15T19:27:23.17Z	45657.74	-8.224	280.005	-0.89310	171.425	77.884	2.545
alpha	I	1980-08-15T22:05:25.20Z	1980-08-15T19:29:21.03Z	44687.20	-8.209	337.886	-0.89314	171.069	78.035	2.136
four	I	1980-08-15T22:09:50.39Z	1980-08-15T19:33:46.19Z	42530.32	-8.176	25.269	-0.89282	170.208	78.319	1.213
five	I	1980-08-15T22:10:21.20Z	1980-08-15T19:34:16.99Z	42262.11	-8.169	250.222	-0.89316	170.103	78.347	1.106
six	I	1980-08-15T22:11:16.75Z	1980-08-15T19:35:12.54Z	41818.89	-8.163	64.378	-0.89294	169.909	78.394	0.912
Atmosphere	E	1980-08-16T00:16:48.13Z							61.416	-26.047
six	E	1980-08-16T00:45:58.29Z	1980-08-15T22:09:53.05Z	41831.07	8.280	278.373	-0.89294	24.209	55.224	-32.404
five	E	1980-08-16T00:46:50.31Z	1980-08-15T22:10:45.07Z	42254.19	8.287	103.860	-0.89316	24.032	55.038	-32.593
four	E	1980-08-16T00:47:31.21Z	1980-08-15T22:11:25.97Z	42594.82	8.296	238.663	-0.89282	23.888	54.891	-32.742
alpha	E	1980-08-16T00:51:51.68Z	1980-08-15T22:15:46.40Z	44752.16	8.336	189.610	-0.89314	23.039	53.957	-33.688
beta	E	1980-08-16T00:53:42.34Z	1980-08-15T22:17:37.06Z	45674.47	8.353	131.036	-0.89310	22.700	53.559	-34.089
eta	E	1980-08-16T00:56:41.68Z	1980-08-15T22:20:36.37Z	47176.15	8.379	300.163	-0.89307	22.175	52.914	-34.740
gamma	E	1980-08-16T00:57:35.94Z	1980-08-15T22:21:30.63Z	47631.06	8.386	210.899	-0.89307	22.023	52.718	-34.937
delta	E	1980-08-16T00:58:55.72Z	1980-08-15T22:22:50.39Z	48300.39	8.396	281.030	-0.89307	21.805	52.431	-35.226
lambda	E	1980-08-16T01:02:20.92Z	1980-08-15T22:26:15.57Z	50026.01	8.421	214.192	-0.89307	21.269	51.691	-35.970
epsilon	E	1980-08-16T01:04:44.99Z	1980-08-15T22:28:39.63Z	51240.49	8.438	256.596	-0.89307	20.915	51.171	-36.492

Event geometry at 1980-08-15T23:27:12.0000Z

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Ring opening angle B (deg): -63.26138
Position angle of pole P (deg): 88.10158
Observer-planet distance (km): 2807.705006 x 10^6
Light travel time (sec): 9365.495800

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