ANNULAR SOLAR ECLIPSE OF 2012 MAY 20

TABLE 1

ELEMENTS OF THE ANNULAR SOLAR ECLIPSE OF 2012 MAY 20

Equatorial Conjunction: (Sun & Moon in R.A.)	00:00:16.01 TDT (=23:59:09.29 UT)	J.D. = 2456068.500185
Ecliptic Conjunction: (Sun & Moon in Ec. Lo.)	23:48:07.87 TDT (=23:47:01.15 UT)	J.D. = 2456068.491758
Instant of Greatest Eclipse:	23:53:53.39 TDT (=23:52:46.68 UT)	J.D. = 2456068.495757

Geocentric Coordinates of Sun & Moon at Greatest Eclipse (JPL DE200/LE200):

	Sun	Moon
R.A.	03h52m43.048s	03h52m30.731s
Dec.	+20°13'15.15"	+20°39'06.32"
Semi-Diameter	15'48.11"	14'43.35"
Eq.Hor.Par.	08.69"	0°54'01.67"
Δ R.A.	10.029s/h	125.927s/h
Δ Dec.	30.26"/h	211.62"/h

Lunar Radius Constants: k1 = 0.2725076 (Penumbra), k2 = 0.2722810 (Umbra)

Shift in Lunar Position: Δb = 0.00", Δl = 0.00"

Geocentric Libration (Optical + Physical): l = -1.3°, b = -0.6°, c = -13.7°

Brown Lun. No. = 1106

Saros Series = 128 (58/73)

nDot = -26.00 "/cy**2

Eclipse Magnitude = 0.94389 Gamma = 0.48279 ΔT = 66.7 s

Polynomial Besselian Elements for: 2012 May 21 00:00:00.0 TDT (=t_0)

n	x	y	d	l_1	l_2	μ
0	-0.0022373	0.4855297	20.2205563	0.5665071	0.0202486	180.856583
1	0.5031837	0.0560538	0.0082712	-0.0000312	-0.0000311	15.000578
2	0.0000183	-0.0001411	-0.0000047	-0.0000097	-0.0000097	-0.000002
3	-0.0000057	-0.0000006	0.0000000	0.0000000	0.0000000	0.000000

Tan f_1 = 0.0046205 Tan f_2 = 0.0045974

At time t_1 (decimal hours), each Besselian element is evaluated by:

$a = a_0 + a_1*t + a_2*t^2 + a_3*t^3$ (or $a = \sum [a_n*t^n]$; n = 0 to 3)

where: a = x, y, d, l_1, l_2, or μ

$t = t_1 - t_0$ (decimal hours) and t_0 = 0.00 TDT

The Besselian elements were derived from a least-squares fit to elements calculated at five uniformly spaced times over a 6-hour period centered at t_0. They are valid over the period 21.00 (May 20) ≤ t_1 ≤ 03.00 (May 21) TDT.

Note that all times are expressed in Terrestrial Dynamical Time (TDT).

Saros Series 128: Member 58 of 73 eclipses in series.