TOTAL SOLAR ECLIPSE OF 2012 NOVEMBER 13

TABLE 1

ELEMENTS OF THE TOTAL SOLAR ECLIPSE OF 2012 NOVEMBER 13

Equatorial Conjunction: 22:19:11.68 TDT J.D. = 2456245.429996
(Sun & Moon in R.A.) (=22:18:04.87 UT)

Ecliptic Conjunction: 22:09:06.87 TDT J.D. = 2456245.422996
(Sun & Moon in Ec. Lo.) (=22:08:00.06 UT)

Instant of Greatest Eclipse: 22:12:55.17 TDT J.D. = 2456245.425639
(=22:11:48.37 UT)

Geocentric Coordinates of Sun & Moon at Greatest Eclipse (JPL DE405):

	Sun	Moon
R.A.	15h18m06.743s	15h17m51.236s
Dec.	=-18°15'02.64"	=-18°37'29.49"
Semi-Diameter	16'09.93"	16'42.43"
Eq.Hor.Par.	08.89"	1°01'18.98"
Δ R.A.	10.247s/h	158.463s/h
Δ Dec.	-39.00"/h	-386.55"/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 = -1.0° b = 0.5° c = 16.5°

Brown Lun. No. = 1112
Saros Series = 133 (45/72)
nDot = -25.83 "/cy**2

Eclipse Magnitude = 1.05004 Gamma =-0.37189 ΔT = 66.8 s

Polynomial Besselian Elements for: 2012 Nov 13 22:00:00.0 TDT (=t_0)

n	x	y	d	l_1	l_2	μ
0	-0.1837414	-0.3467596	-18.2475452	0.5374644	-0.0086497	153.897812
1	0.5743387	-0.0940698	-0.0106020	-0.0000229	-0.0000228	14.999868
2	0.0000350	0.0001483	0.0000043	-0.0000130	-0.0000130	-0.000003
3	-0.0000097	0.0000015	0.0000000	0.0000000	0.0000000	0.000000

Tan f_1 = 0.0047255 Tan f_2 = 0.0047020

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 19.00 (Nov 13) ≤ t_1 ≤ 01.00 (Nov 14) TDT.

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

Saros Series 133: Member 45 of 72 eclipses in series (ascending node).