Total Lunar Eclipse of 2022 May 16

Ecliptic Conjunction = 04:15:18.8 TD (= 04:14:06.0 UT)
Greatest Eclipse = 04:12:41.6 TD (= 04:11:28.8 UT)

Penumbral Magnitude = 2.3726 P. Radius = 1.2854° Gamma = -0.2532
Umbral Magnitude = 1.4137 U. Radius = 0.7580° Axis = 0.2555°

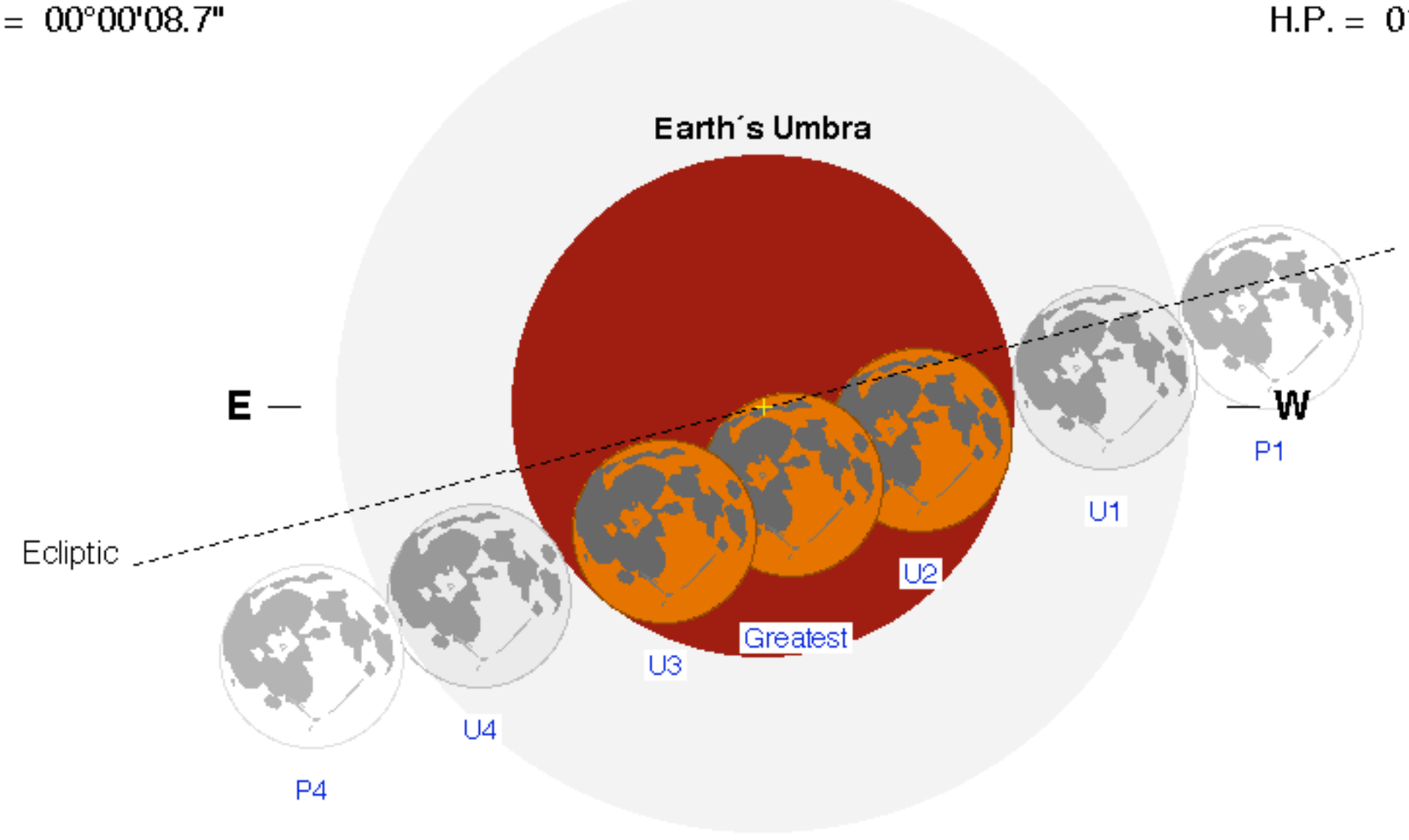
Saros Series = 131 Member = 34 of 72

<u>Sun at Greatest Eclipse</u>
(Geocentric Coordinates)

R.A. = 03h31m49.5s
Dec. = +19°05'13.4"
S.D. = 00°15'49.2"
H.P. = 00°00'08.7"

<u>Moon at Greatest Eclipse</u>
(Geocentric Coordinates)

R.A. = 15h31m27.8s
Dec. = -19°19'40.4"
S.D. = 00°16'29.9"
H.P. = 01°00'33.1"



<u>Eclipse Durations</u>

Penumbral = 05h18m40s
Umbral = 03h27m14s
Total = 01h24m53s

ΔT = 73 s
Rule = CdT (Danjon)
Eph. = VSOP87/ELP2000-85

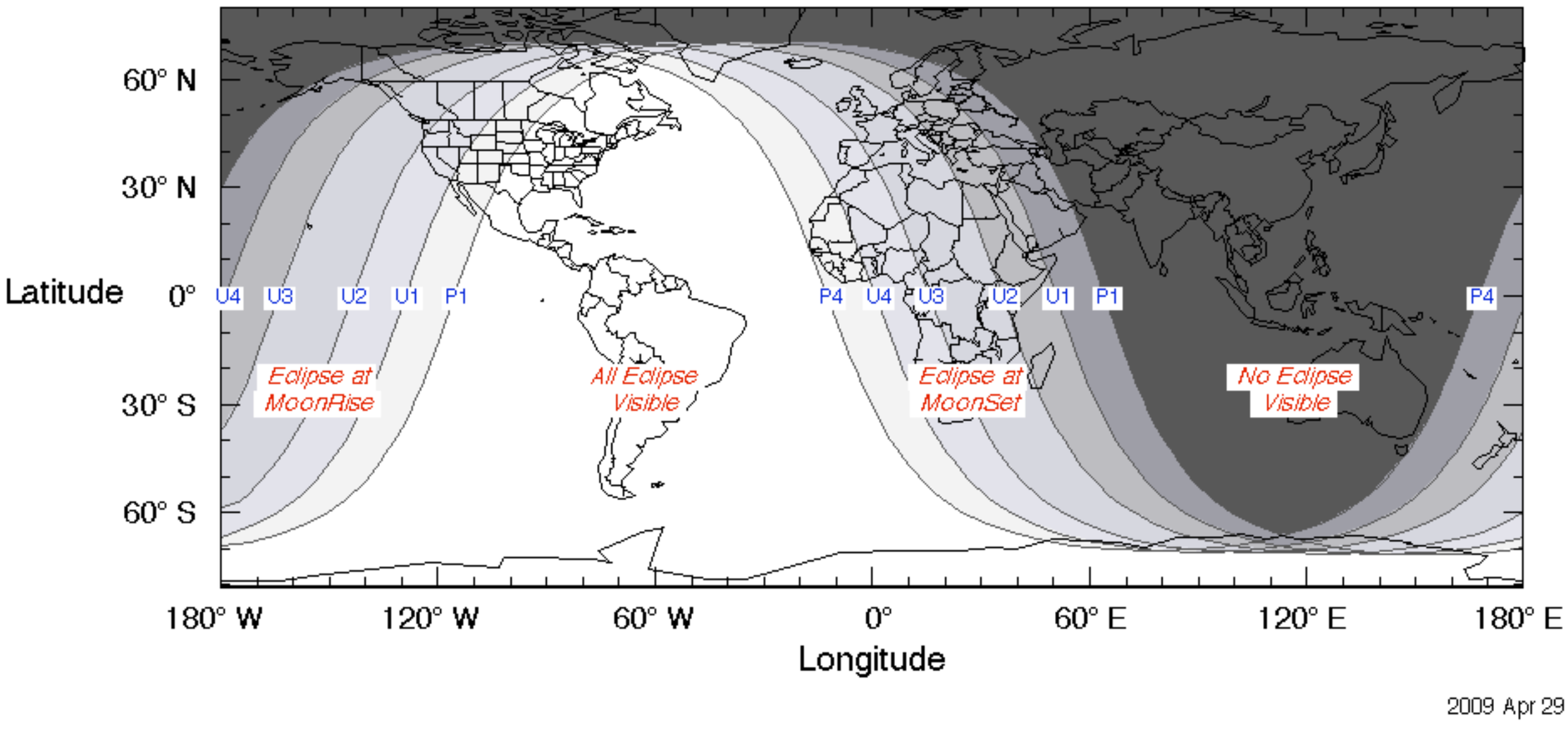
S

0 15 30 45 60
Arc-Minutes

F. Espenak, NASA's GSFC
eclipse.gsfc.nasa.gov/eclipse.html

<u>Eclipse Contacts</u>

P1 = 01:32:07 UT
U1 = 02:27:53 UT
U2 = 03:29:03 UT
U3 = 04:53:56 UT
U4 = 05:55:07 UT
P4 = 06:50:48 UT



2009 Apr 29

Total Lunar Eclipse of 2022 Nov 08

Ecliptic Conjunction = 11:03:18.4 TD (= 11:02:05.3 UT)
Greatest Eclipse = 11:00:22.0 TD (= 10:59:08.8 UT)

Penumbral Magnitude = 2.4143 P. Radius = 1.2164° Gamma = 0.2570
Umbral Magnitude = 1.3589 U. Radius = 0.6783° Axis = 0.2404°

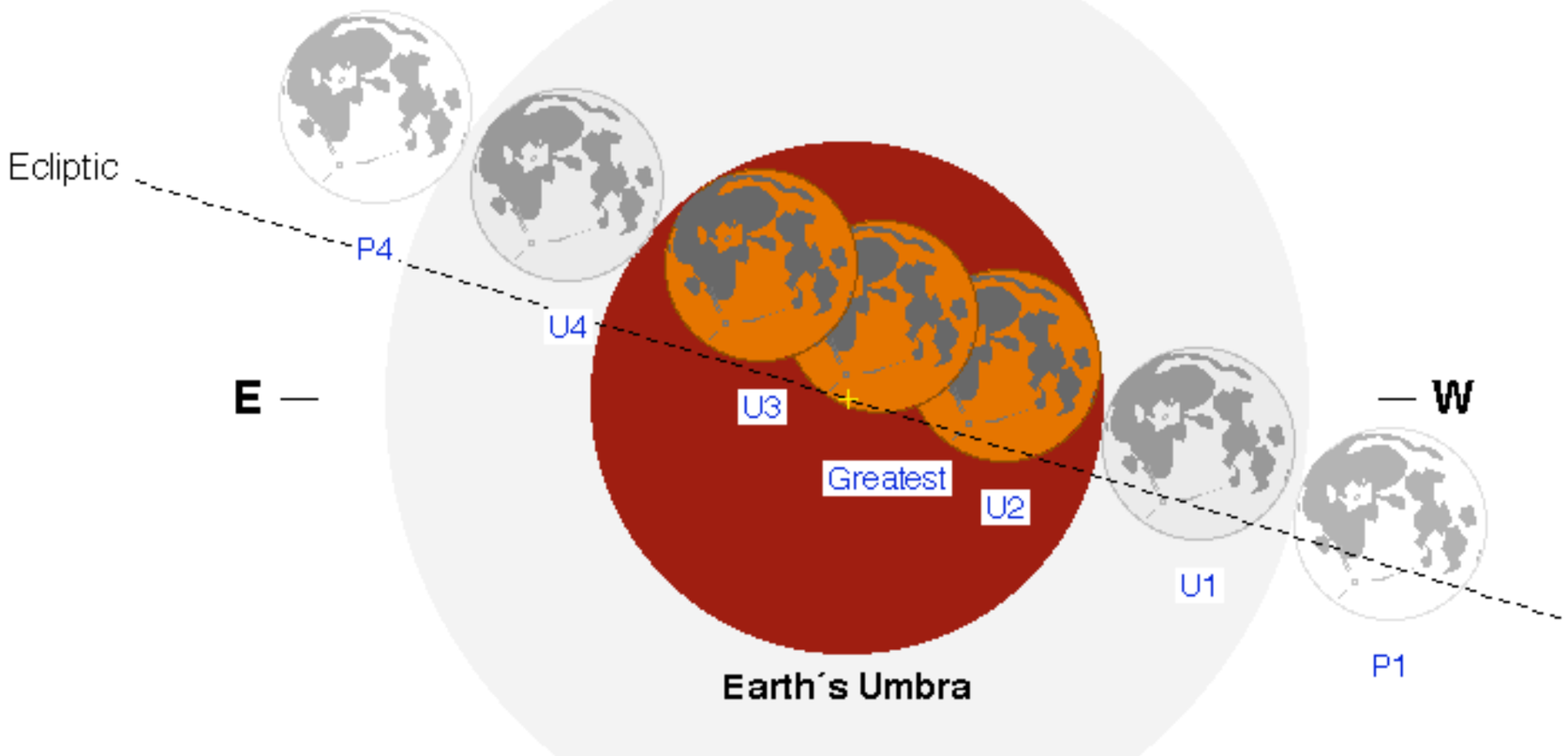
Saros Series = 136 Member = 20 of 72

<u>Sun at Greatest Eclipse</u>
(Geocentric Coordinates)

R.A. = 14h54m11.2s
Dec. = -16°37'47.0"
S.D. = 00°16'08.5"
H.P. = 00°00'08.9"

<u>Moon at Greatest Eclipse</u>
(Geocentric Coordinates)

R.A. = 02h53m48.1s
Dec. = +16°51'06.7"
S.D. = 00°15'17.7"
H.P. = 00°56'07.8"



<u>Eclipse Durations</u>

Penumbral = 05h53m51s
Umbral = 03h39m50s
Total = 01h24m58s

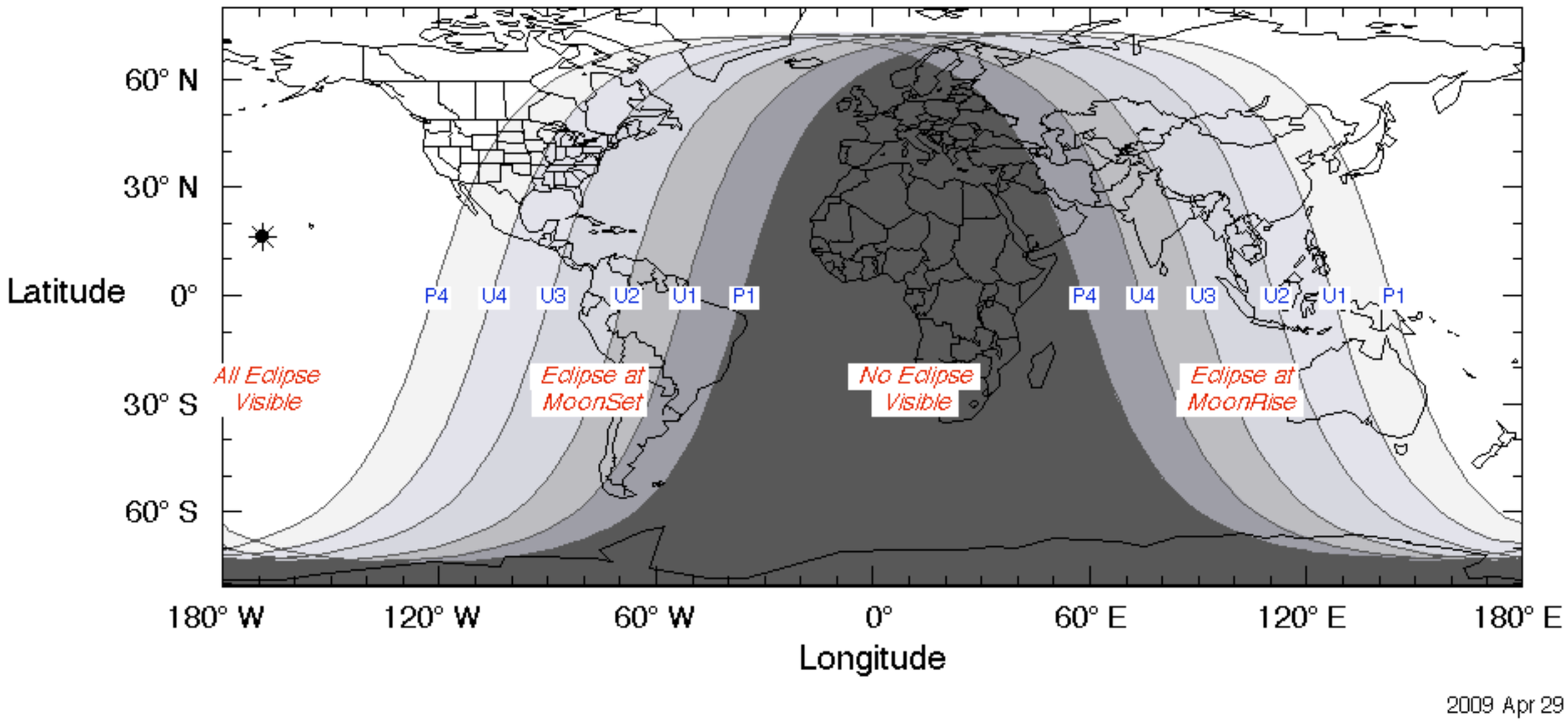
ΔT = 73 s
Rule = CdT (Danjon)
Eph. = VSOP87/ELP2000-85

0 15 30 45 60
Arc-Minutes

F. Espenak, NASA's GSFC
eclipse.gsfc.nasa.gov/eclipse.html

<u>Eclipse Contacts</u>

P1 = 08:02:17 UT
U1 = 09:09:12 UT
U2 = 10:16:39 UT
U3 = 11:41:37 UT
U4 = 12:49:03 UT
P4 = 13:56:08 UT



2009 Apr 29

Partial Solar Eclipse of 2022 Apr 30

Geocentric Conjunction = 19:40:42.5 UT J.D. = 2459700.319937
Greatest Eclipse = 20:41:20.2 UT J.D. = 2459700.362039

Eclipse Magnitude = 0.6389 Gamma = -1.1900

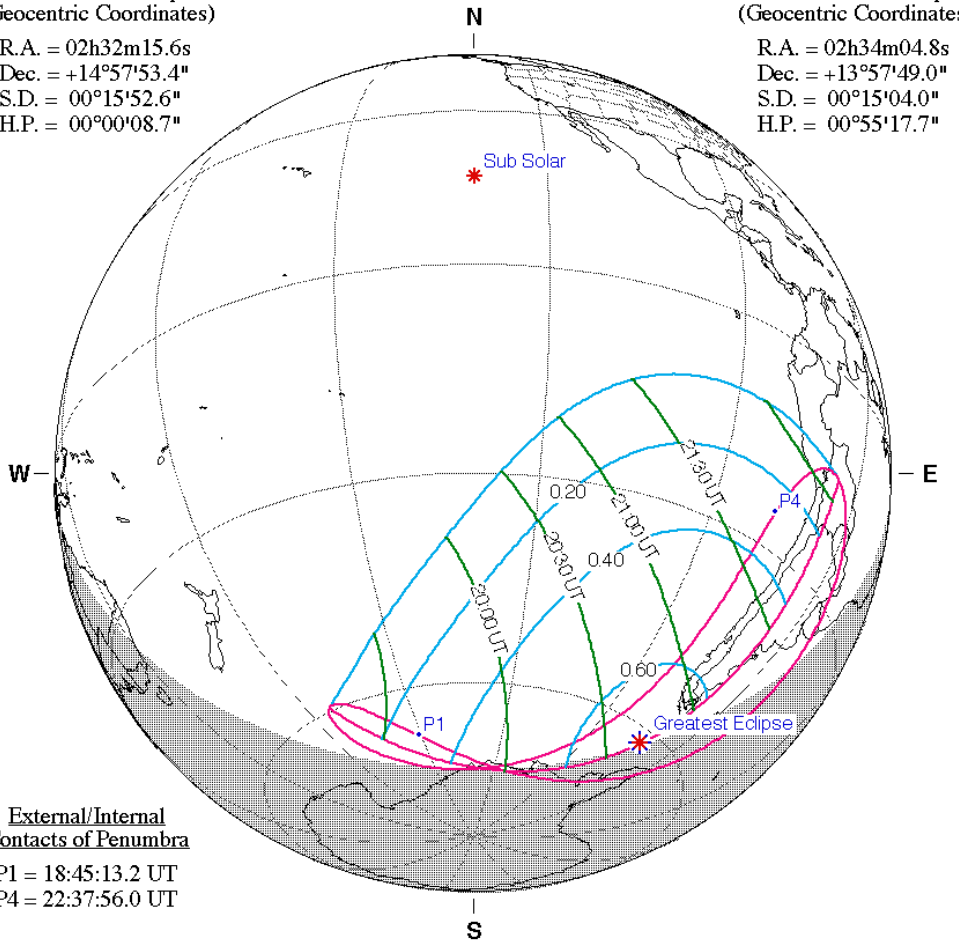
Saros Series = 119 Member = 66 of 71

Sun at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 02h32m15.6s
Dec. = +14°57'53.4"
S.D. = 00°15'52.6"
H.P. = 00°00'08.7"

Moon at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 02h34m04.8s
Dec. = +13°57'49.0"
S.D. = 00°15'04.0"
H.P. = 00°55'17.7"



External/Internal Contacts of Penumbra

P1 = 18:45:13.2 UT
P4 = 22:37:56.0 UT

Ephemeris & Constants

Eph. = Newcomb/ILE
ΔT = 79.2 s
k1 = 0.2724880
k2 = 0.2722810
Δb = 0.0" Δl = 0.0"

Geocentric Libration
(Optical + Physical)

l = 4.01°
b = 1.40°
c = -16.62°

Brown Lun. No. = 1229

0 1000 2000 3000 4000 5000
Kilometers

F. Espenak, NASA's GSFC - Fri, Jul 2,
sunearth.gsfc.nasa.gov/eclipse/eclipse.html

Partial Solar Eclipse of 2022 Oct 25

Geocentric Conjunction = 10:03:36.7 UT J.D. = 2459877.919175
Greatest Eclipse = 11:00:00.4 UT J.D. = 2459877.958338

Eclipse Magnitude = 0.8611 Gamma = 1.0700

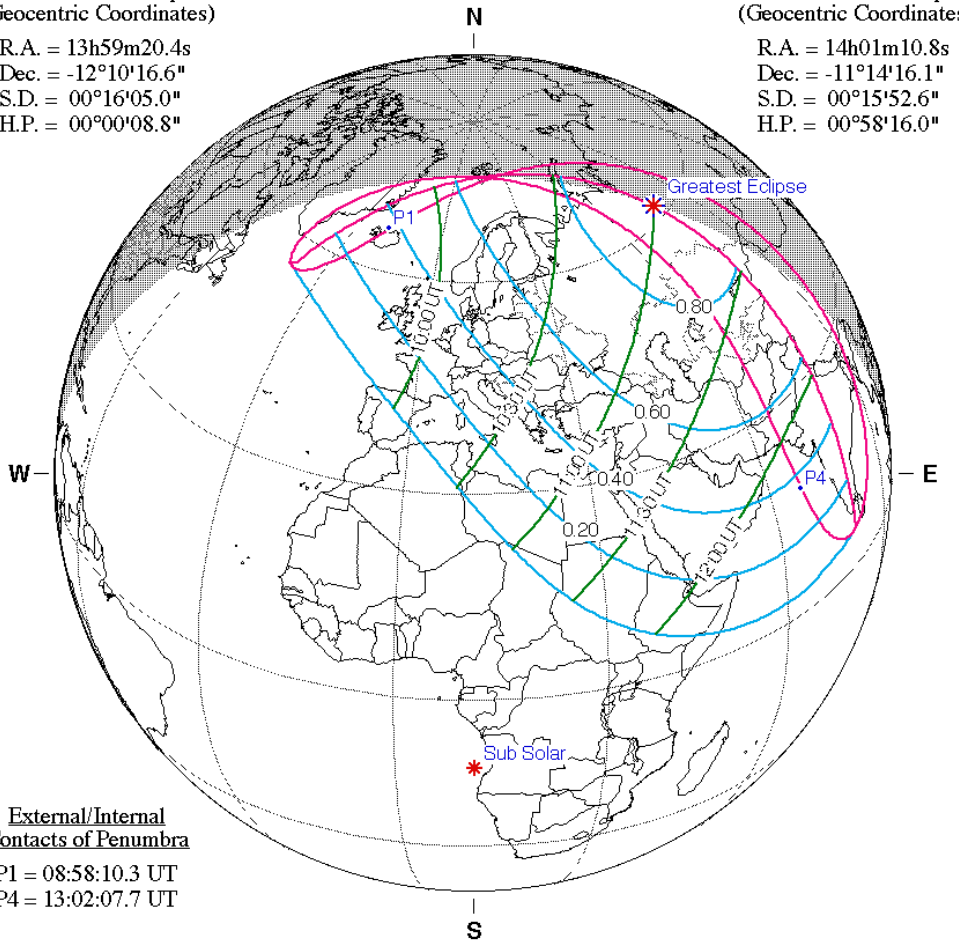
Saros Series = 124 Member = 55 of 73

Sun at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 13h59m20.4s
Dec. = -12°10'16.6"
S.D. = 00°16'05.0"
H.P. = 00°00'08.8"

Moon at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 14h01m10.8s
Dec. = -11°14'16.1"
S.D. = 00°15'52.6"
H.P. = 00°58'16.0"



External/Internal Contacts of Penumbra

P1 = 08:58:10.3 UT
P4 = 13:02:07.7 UT

Ephemeris & Constants

Eph. = Newcomb/ILE
ΔT = 79.7 s
k1 = 0.2724880
k2 = 0.2722810
Δb = 0.0" Δl = 0.0"

Geocentric Libration
(Optical + Physical)

l = -4.55°
b = -1.38°
c = 18.60°

Brown Lun. No. = 1235

0 1000 2000 3000 4000 5000
Kilometers

F. Espenak, NASA's GSFC - Fri, Jul 2,
sunearth.gsfc.nasa.gov/eclipse/eclipse.html