PARTIAL LUNAR ECLIPSE OF 31 DECEMBER 2009

Eclipses can take place whenever the Sun, the Earth, and the Moon are aligned or nearly in a straight line. As the Moon orbits the Earth, it reaches points along its orbit where it is in line with the Sun, but usually its orbit is tilted (inclined) with the Earth's orbit around the Sun. When the Moon is between the Earth and the Sun (conjunction) it is called a New Moon, and when the Earth is between the Sun and the Moon (opposition), it is called a Full Moon.

A lunar eclipse occurs when the Full Moon enters the Earth's shadow (umbra) as it orbits the Earth as shown in Figs 1 and 2. Lunar eclipses can be observed from all the areas that will fall into the nigh time during a lunar eclipse.
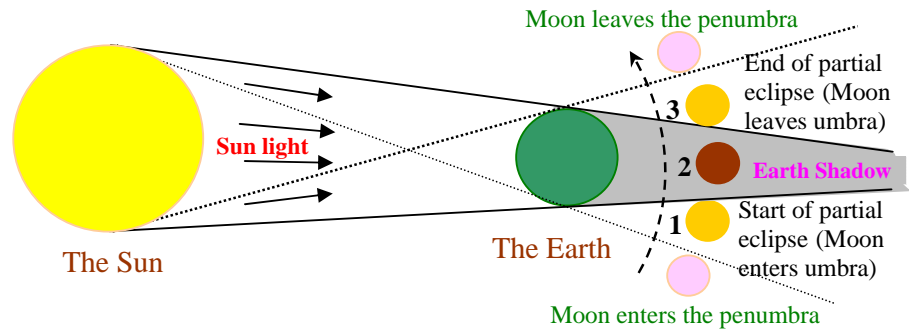

Fig (1): Lunar Eclipse: The Figure shows Geometry of a lunar Eclipse

A partial lunar eclipse is predicted to occur on Thurs**day, 14th Muharram1431 H** (31st **December 2009**) according to Umm Al-Qura calendar. According to the Local Time of Saudi Arabia (GMT+3), the start of the partial lunar eclipse (the instance moon touches the Earth's Shadow, no. **1** in Fig. 1) will occur at about **9:53 p.m.** The maximum partial lunar eclipse, no. **2** in Fig. 1 (about 5 % of the area of the moon will be eclipsed, its magnitude is 8 %) happens at about **10:24 p.m.** and it ends at about **10:53 p.m**. (the instance the moon will completely emerge the earth's shadow and that is the end of the observable lunar eclipse, no. **3** in Fig. 1.

People around the world can see some stages of the partial lunar eclipse except The North and South Amaricas. Observers in areas located in Africa (except West and South west), Europe, Asia (except far south east), and Middle East can see the entire duration of the partial lunar eclipse (see the map). The entire period of the lunar eclipse is observable in Saudi Arabia since it occurs at night.

The entire eclipse will last for about one hour. But will not be noticed by most of people due to its small magnitude.

Observers in Saudi Arabia can watch the entire period of the partial eclipse since it occors at night.

Please remember that Eclipses or any other celestial phenomena are not related to life, death, or destiny or fate of a person. A solar eclipse coincided with the day of the death of Ibraheem, son of our Prophet Mohammad – PBUH (ﷺ) and people believed that it happed because of his death, but our Prophet (ﷺ) said: (what the meaning is) the Sun and the Moon are Signs of Allah and they will NOT be eclipsed for the death or the life of any person, if you see them make dua'a to Allah and pray till it is over. Therefore, do not forget to observe the Eclipse prayer during the eclipse time as directed to us by our Prophet (ﷺ).

Since at greatest partial eclipse only about 5 % (Its magnitude is about 8 %) of the lunar area is darkened (enters the Earth shadow), most of the people will not notice it, but it still not that late to prepare ourselves to go to mosques to perform eclipse prayer as directed by our Prophet - PBUH (ﷺ).

For more information please contact: Dr. Ali Mohammad Al-Shukri
Physics Department, Physics Dept., KFUPM
Tel: 860-3573 and 860-2255 - Fax: 860-2293 - email: alshukri@kfupm.edu.sa
Homepage: faculty.kfupm.edu.sa/PHYS/alshukri

Partial Lunar Eclipse of 2009 Dec 31

Ecliptic Conjunction = 19:13:51.2 TD (= 19:12:44.5 UT)
Greatest Eclipse = 19:23:45.9 TD (= 19:22:39.2 UT)

|		
Penumbral Magnitude = 1.0556	P. Radius = 1.2997°	Gamma = 0.9765
Umbral Magnitude = 0.0763	U. Radius = 0.7575°	Axis = 0.9921°

Saros Series = 115   Member = 57 of 72

Sun at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 18h44m37.2s
Dec. = -23°02'33.1"
S.D. = 00°16'15.9"
H.P. = 00°00'08.9"

Moon at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 06h45m22.4s
Dec. = +24°01'10.4"
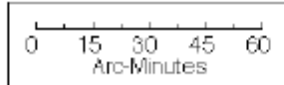S.D. = 00°16'36.6"
H.P. = 01°00'57.6"

N

P1

U1

U4

Greatest

P4

E — — W

Ecliptic

Earth's Umbra

Earth's Penumbra

S
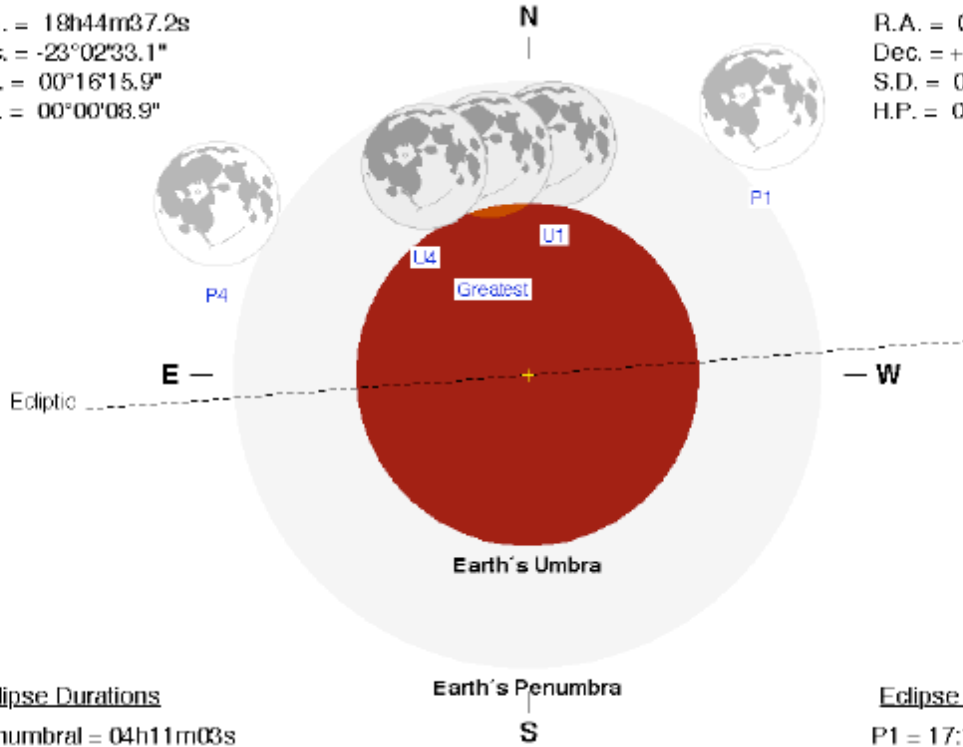
Eclipse Durations

Penumbral = 04h11m03s
Umbral = 00h59m58s

ΔT = 67 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

Eclipse Contacts

P1 = 17:17:08 UT
U1 = 18:52:43 UT
U4 = 19:52:41 UT
P4 = 21:28:11 UT

60° N

30° N

Latitude   0°   P1   P4   U4   U1   P1   P4   U4   U1

No Eclipse
Visible

Eclipse at
MoonRise

All Eclipse
Visible

Eclipse at
MoonSet

30° S

60° S

180° W   120° W   60° W   0°   60° E   120° E   180° E

Longitude

2009 Apr 29