KING FAHD UNIVERSITY OF PETROLEUM AND MINERALS
PHYSICS DEPARTMENT

TOTAL LUNAR ECLIPSE OF 15 JUNE 2011

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.

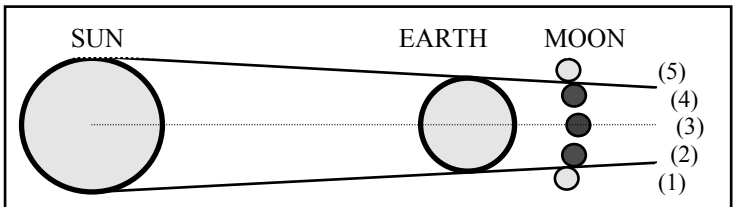

Fig (1): The Figure is not to scale, it is meant for demonstration

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

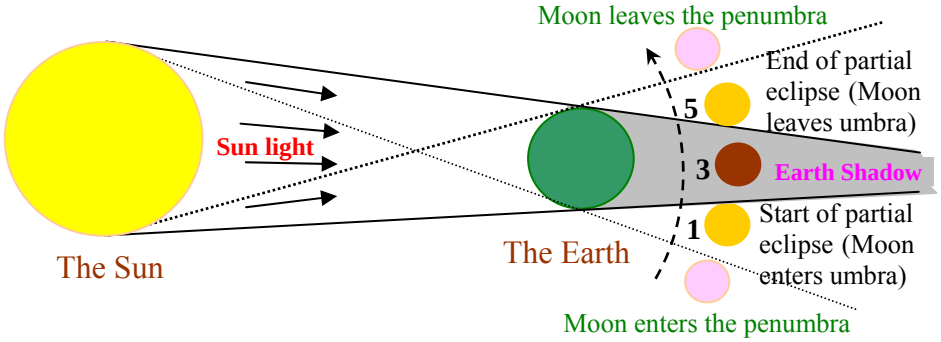

Fig (2): Lunar Eclipse: The Figure shows Geometry of a lunar Eclipse

A total lunar eclipse is predicted to occur on Wednes**day, 14th Rajab 1432 H** (15th **June 2011**) according to Umm Al-Qura calendar. According to the Local Time of Saudi Arabia (GMT+3), the start of the partial phase of the lunar eclipse (the instance moon touches the Earth's Shadow, see no. **1** in Figs. **1** & **2**) will occur at about **9:23 p.m.** The moon enters completely in the shadow at about **10:22 p.m.**, see no. **2** in Fig. **1** The maximum total lunar eclipse, no. **3** in Figs. **1** & **2**, happens at about **11:13 p.m .** The moon starts emerging out of the shadow at about **12:03 a.m.**, see no. **4** in Fig. **1**. It ends at about **1:01 a.m**. (the instance the moon will completely emerge the earth's shadow and that is the end of the observable lunar eclipse, no. **5** in Figs. **1** & **2**.

People around the world can see some stages of the partial lunar eclipse except the North and America and North Pole areas. Observers in areas located in Middle East, Western Asia and Eastern and Southern Africa can see all phases of the eclipse. The Moon rises eclipsed in South America, Europe and Western Africa, while the Moon sets before the end of the eclipse in Eastern and Northern Asia and Australia. The entire eclipse will last for about three hours and thirty eight minutes while the total phase lasts for about an hour and forty minutes. Observers in Saudi Arabia can watch the entire period of the 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 (صلى الله عليه وسلم) and people believed that it happed because of his death, but our Prophet (صلى الله عليه وسلم) 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 (صلى الله عليه وسلم).

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Sultan Bin AbdulAziz Science & Technology Center (SciTech) will organize an observation of the Total Lunar Eclipse starting at 9:15 pm on Wednesday 15 June 2011 at the center.

For more information: **SciTech** @ Phone: 896-7777 or Fax: 896-7778 (Al-Khobar – chorniche Area)
Dr. Ali M. Al-Shukri, KFUPM, Phone: 860-2255 , fax: 860-2293, mobile: 0505899578

Fig. (3)

Total Lunar Eclipse of 2011 Jun 15

Ecliptic Conjunction = 20:14:41.4 TD (= 20:13:34.1 UT)
Greatest Eclipse = 20:13:43.5 TD (= 20:12:36.2 UT)

Penumbral Magnitude = 2.6868 P. Radius = 1.2504° Gamma = 0.0897
Umbral Magnitude = 1.6999 U. Radius = 0.7256° Axis = 0.0875°

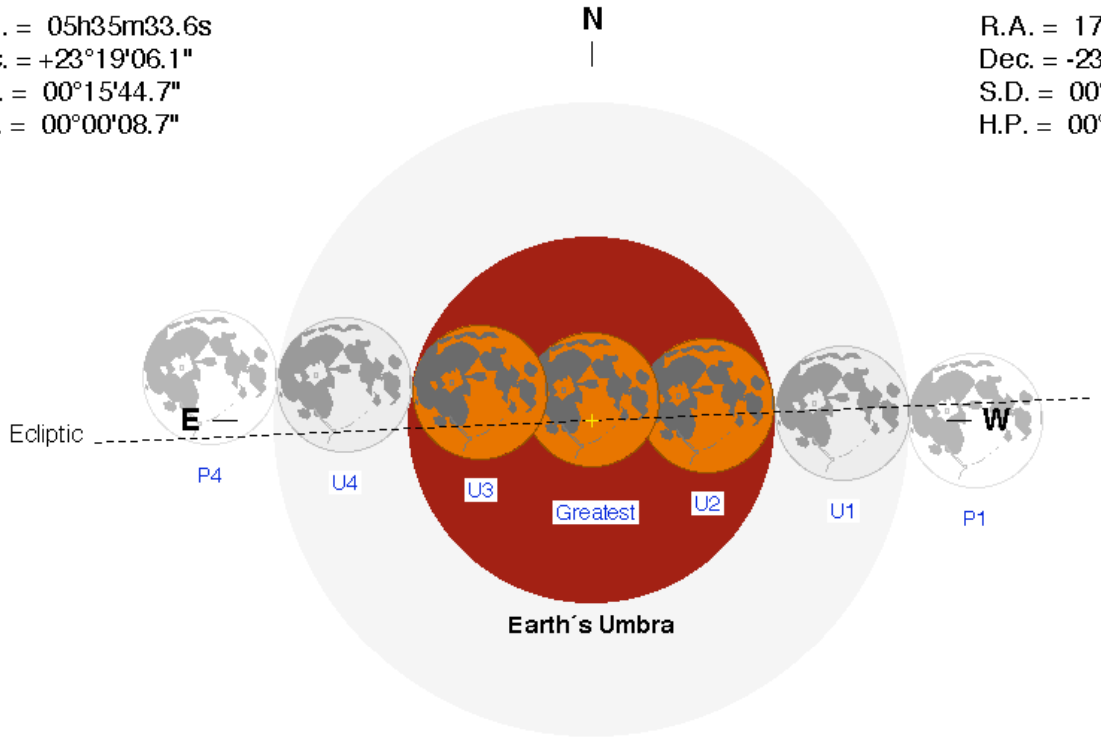
Saros Series = 130 Member = 34 of 72

Sun at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 05h35m33.6s
Dec. = +23°19'06.1"
S.D. = 00°15'44.7"
H.P. = 00°00'08.7"

Moon at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 17h35m32.3s
Dec. = -23°13'51.6"
S.D. = 00°15'57.2"
H.P. = 00°58'33.0"



Eclipse Durations

Penumbral = 05h36m05s
Umbral = 03h39m17s
Total = 01h40m12s

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 = 17:24:37 UT
U1 = 18:22:57 UT
U2 = 19:22:29 UT
U3 = 21:02:42 UT
U4 = 22:02:14 UT
P4 = 23:00:41 UT