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ECLIPSE

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Abstract

'Eclipse' Astronomy is connected to a celestial phenomenon. It is a natural and wonderful event. Causing three pixels. It does not appear in the sky, but it always has to look a certain time. Lunar Eclipse as the moon and the full moon in the sky you can see. Astrology almost all acharyas - their theoretical texts 'Eclipse' is described. According to astronomy Eclipses celestial phenomenon - along with elements affecting humans too. Eclipse is proved during the ritual. Eclipse, in astronomy, complete or partial obscuring of a celestial body by another. An Eclipse occurs when three celestial objects become aligned.

Keywords : Astronomy, Phenomenon, **Solar Eclipse**, Luner Eclipse, Celestial, Salvation

Introduction

Prelude

According to astronomy "**Eclipse**" an astronomical / celestial phenomena. Generally 'Eclipse' is the literal meaning of to Grass. Now the question arises that whom to grass. In truth, we eat (food) is also only a mouthful, so to grass is also assumed that no ? astronomical / celestial Eclipse is not. Eclipse during to astronomy (two celestial Bimbo is connected to the customer and "Chhadak Bimbo" her eligible or imagery Chhady says. Which is assumed, it is eligible or Chhady Bimbo and assumed by the customer or "Chhadak Bimbo" him say. Although it is assumed that all of the planets in the sky, But relative to the Earth mainly two views we have to assume - a **solar Eclipse** and other **lunar Eclipse**.

An Eclipse is an astronomical event that occurs when an astronomical object is temporarily obscured, either by passing into the shadow of another body or by having another body pass between it and the viewer.

The term Eclipse is most often used to describe either a **solar Eclipse**, when the Moon's shadow crosses the Earth's surface, or a **lunar Eclipse**, when the Moon moves into the Earth's shadow. However, it can also refer to such events beyond the Earth-Moon system: for example, a planet moving into the shadow cast by one of its moons, a moon passing into the shadow cast by its host planet, or a moon passing into the shadow of another moon. A binary star system can also produce **Eclipses** if the plane of the orbit of its constituent stars intersects the observer's position.

Purpose

Eclipse purpose Bhaskaracharya stating that –

बहुफलं जपदानहुतादिके स्मृतिपुराणविदः प्रवदन्ति हि ।
सदुपयोगि जने सचमत्कृति ग्रहणमिन्द्रिनयोः कथयाम्यतः ॥

The knowledgeable Person of Smriti and Puranas said Japdaan, Ygyahuti etc. for the public to take the time to fructify stop miraculously and is very useful.

Type

According to Astronomy Eclipse is of three types - Khagrass, Khandgrass and Sarwgrass.

States

Eclipse has five states - Sprsh, Summialn, Madhy, Unmmilan and salvation.

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Solar Eclipse

As observed from the Earth, a solar Eclipse occurs when the Moon passes in front of the Sun. The type of solar Eclipse event depends on the distance of the Moon from the Earth during the event. A total solar Eclipse occurs when the Earth intersects the umbra portion of the Moon's shadow. When the umbra does not reach the surface of the Earth, the Sun is only partially occulted, resulting in an annular Eclipse. Partial solar Eclipses occur when the viewer is inside the penumbra.

The Eclipse magnitude is the fraction of the Sun's diameter that is covered by the Moon. For a total Eclipse, this value is always greater than or equal to one. In both annular and total Eclipses, the Eclipse magnitude is the ratio of the angular sizes of the Moon to the Sun.

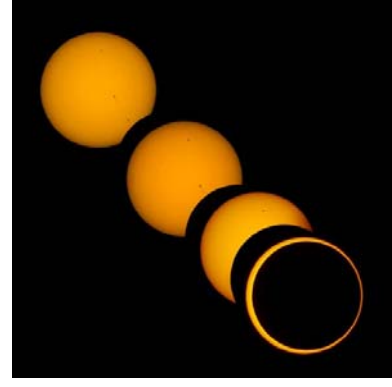
Solar Eclipses are relatively brief events that can only be viewed in totality along a relatively narrow track. Under the most favorable circumstances, a total solar Eclipse can last for 7 minutes, 31 seconds, and can be viewed along a track that is up to 250 km wide. However, the region where a partial Eclipse can be observed is much larger. The Moon's umbra will advance eastward at a rate of 1,700 km/h, until it no longer intersects the Earth's surface.

During a solar Eclipse, the Moon can sometimes perfectly cover the Sun because its size is nearly the same as the Sun's when viewed from the Earth. A total solar Eclipse is in fact an occultation while an annular solar Eclipse is a transit.



There are four types of solar Eclipses:

- A **total Eclipse** occurs when the dark silhouette of the Moon completely obscures the intensely bright light of the Sun, allowing the much fainter solar corona to be visible. During any one Eclipse, totality occurs at best only in a narrow track on the surface of Earth.
- An **annular Eclipse** occurs when the Sun and Moon are exactly in line, but the apparent size of the Moon is smaller than that of the Sun. Hence the Sun appears as a very bright ring, or annulus, surrounding the dark disk of the Moon.
- A **hybrid Eclipse** (also called **annular/total Eclipse**) shifts between a total and annular Eclipse. At certain points on the surface of Earth it appears as a total Eclipse, whereas at other points it appears as annular. Hybrid Eclipses are comparatively rare.
- A **partial Eclipse** occurs when the Sun and Moon are not exactly in line and the Moon only partially obscures the Sun. This phenomenon can usually be seen from a large part of the Earth outside of the track of an annular or total Eclipse. However, some Eclipses can only be seen as a partial Eclipse, because the umbra passes above the Earth's polar regions and never intersects the Earth's surface^[6]. Partial Eclipses are virtually unnoticeable, as it takes well over 90% coverage to notice any darkening at all. We can see this picture –



Acharya Bhaskar described the solar Eclipse in Siddhantsiromani –

‘ पताढ्यार्कभुजांशका यदि नगो नाः स्युस्तदार्कग्रहः । ’
अर्थात् यावत् पर्यन्तं सपातसूर्यस्य भुजांशः सप्त अंशेन न्यूनं न भवेत्
तावत् पर्यन्तं सूर्यग्रहणस्यसंभवम् न भवितुमर्हति ।

In Solar Eclipse 32 kala sar = 7 bhujansa.

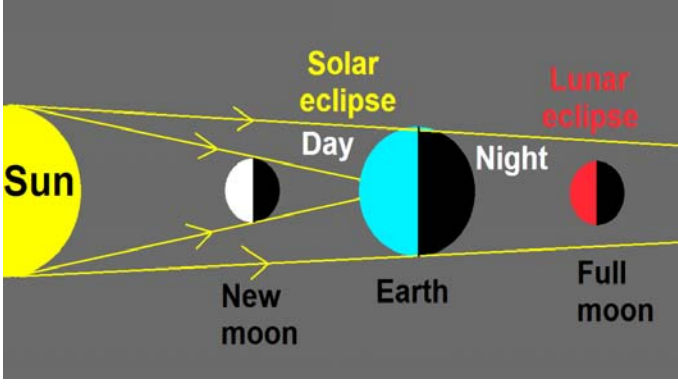
An Eclipse is a natural phenomenon. Nevertheless, in some ancient and modern cultures, solar Eclipses have been attributed to supernatural causes or regarded as bad omens. A total solar Eclipse can be frightening to people who are unaware of its astronomical explanation, as the Sun seems to disappear during the day and the sky darkens in a matter of minutes.

Since looking directly at the Sun can lead to permanent eye damage or blindness, special eye protection or indirect viewing techniques are used when viewing a solar Eclipse. It is technically safe to view only the total phase of a total solar Eclipse with the unaided eye and without protection; however, this is a dangerous practice, as most people are not trained to recognize the phases of an Eclipse, which can span over two hours while the total phase can only last up to 7.5 minutes for any one location. People referred to as *Eclipse chasers* or *umbraphiles* will travel to remote locations to observe or witness predicted central solar Eclipses.

Lunar Eclipse

Lunar Eclipses occur when the Moon passes through the Earth's shadow. This occurs only when the Moon is on the far side of the Earth from the Sun, lunar Eclipses only occur when there is a full moon. Unlike a solar Eclipse, an Eclipse of the Moon can be observed from nearly an entire hemisphere. For this reason it is much more common to observe a lunar Eclipse from a given location. A lunar Eclipse also lasts longer, taking several hours to complete, with totality itself usually averaging anywhere from about 30 minutes to over an hour.

There are three types of lunar Eclipses: penumbral, when the Moon crosses only the Earth's penumbra; partial, when the Moon crosses partially into the Earth's umbra; and total, when the Moon crosses entirely into the Earth's umbra. Total lunar Eclipses pass through all three phases. Even during a total lunar Eclipse, however, the Moon is not completely dark. Sunlight refracted through the Earth's atmosphere enters the umbra and provides a faint illumination. Much as in a sunset, the atmosphere tends to more strongly scatter light with shorter wavelengths, so the illumination of the Moon by refracted light has a red hue, thus the phrase 'Blood Moon' is often found in descriptions of such lunar events as far back as Eclipses are recorded.



About Lunar Eclipse Acharya Ganesh described in Grahalaghava –

एवं पर्वान्ते विशाह्वर्कबाहो रिन्द्राल्पांशाः सम्भवश्चेद्ग्रहस्य ।
तैःशा निघ्नाः शंकरैः शैलभक्ता व्यग्वर्काङ्गः स्यात् पृषतकोऽङ्गुलादिः ॥

Also described in Siddhantsiromani –

सपातसूर्योऽस्य भुजांशका यदा मनू नकाः स्याद्ग्रहणस्य संभवः ॥

In Lunar Eclipse 56 kala sar = 14 bhujansa.

Eclipse from the vedic viewpoint –

There are many astronomical evidences that are firmly established in the Vedas. There are many things discussed in the Vedas from the creation of the universe to its desolation. Eclipses are described through the story of demon **Rahu** is defined as a certain point in the universe where the moon's orbit crosses the orbit of the sun. Rahu is the name of this point and the point opposite is called **Ketu** (180° distance from rahu). Following this story, Acharya Bhaskar says that Rahu pervades the moon through the shadow of earth.³ In vedic age Tithis, lunar days were very important due to Yagna, sacrifices. It was clearly mentioned that Tithies are fully related with the sun and the moon and with the phases of the moon also. Tithies are referred to as the described in the different part of the Vedas. From pratipada to purnima / amavasya fifteen lunar days are fifties Tithies. Among the Tithies Purnima and Amavasya were very popular. Those lunar days (Amavasya and Purnima) are the day of Eclipses. Theoretical astronomy Eclipse is described in each of the texts. Namely - in Suryasiddhant –

छादको भास्करस्येन्दुरधस्थो घनवद्भवेत् ।
भूच्छायां प्राड्मुखश्चन्द्रो विशत्यस्य भवेदसौ ॥

In a solar Eclipse the moon is the Eclipser (Chhadaka) of the sun just like cloud, moving eastward the moon enters in the shadow of earth. In a lunar Eclipse, the shadow is the Eclipser and the moon is eclipsing.

Grahalaghava also described the Eclipses: -

छादयत्यर्कमिन्दुर्विधुं भूमिभा छादकच्छाद्यमानैक्यखण्डं कुरु ।
तच्छरोनं भवेच्छन्नमेतदद्या ग्राह्यहीनावच्छिष्टं तु खच्छन्नकम् २ ॥

In solar Eclipse the moon is Eclipser (Chhadaka) and the sun is eclipsing (Chhadya). In the lunar Eclipse the shadow of earth is Eclipser (Chhadka) and the moon is Eclipsing (Chhadya). The possibility of Eclipse is an following: The earth's shadow is 180° from the sun, when the longitude of the moon's node is

the same with that of the shadow, or with that of the sun, or when is a few degrees greater or less, there will be an Eclipse. The longitudes of the sun and the moon, at the moment of the end of the lunar day of new moon (Amavasya), are equal in longitude and at the end of the day of full moon (Purnima) they are 180° separate. This is the situation of Eclipse. This is mentioned in Surya siddhant –

भानोर्भार्धे महीच्छाया तत्तुल्येर्कसमेपि वा ।
शशांकपाते ग्रहणं कियद्भागाधिकोनके ॥
तुल्यौ राश्यादिभिः स्याताममावास्यान्तकालिकौ ।
सूर्येन्दू पौर्णमास्यन्ते भार्धे भागादिभिः समौ ३ ॥

Cycles

An Eclipse cycle takes place when a series of Eclipses are separated by a certain interval of time. This happens when the orbital motions of the bodies form repeating harmonic patterns. A particular instance is the saros, which results in a repetition of a solar or **lunar Eclipse** every 6,585.3 days, or a little over 18 years (because this is not a whole number of days, successive Eclipses will be visible from different parts of the world).

References

1. Suryasiddhant
2. Grahalaghava
3. Suryasiddhant
4. Prachyaavidyanushilnam
5. Siddhantsiromani
6. Pictures – Google Eclipse image