

CHAPTER OVERVIEW

13: Solar and Lunar Eclipses

Caution

NEVER look directly at the Sun! Not with sunglasses, not through a camera, definitely not with a telescope or a binocular, not even through a welder's mask. **NEVER LOOK AT THE SUN DIRECTLY!**

Solar and lunar eclipses are the stuff of legends. The spectacle of the Moon going dark and then becoming blood-red for hours at a time, or the horror of the Sun being devoured until the world stood in darkness at midday was enough to chill the blood of any ancient or primitive soul that witnessed them. Columbus himself is supposed to have used a solar eclipse prediction to convince the Native Americans that he had great mystical powers and should be left to his business; Mark Twain incorporated this story in his book *A Connecticut Yankee in King Arthur's Court*.

But why do eclipses happen? Some students may know that the eclipses have something to do with the shadows of the Earth and Moon, but if that is true, why don't they happen every month? In this unit, we will not only investigate the phenomena of lunar and solar eclipses, we will see once again that we can take an existing model of the solar system, and add new features to it that will not only increase its richness, but also improve its usefulness and allow us to make even more testable predictions!

[13.1: Modeling a Solar Eclipse](#)

[13.2: Modeling a Lunar Eclipse](#)

[13.3: Why are Eclipses so Rare?](#)

Thumbnail: Totality during the 1999 solar eclipse. Solar prominences can be seen along the limb (in red) as well as extensive coronal filaments. https://en.Wikipedia.org/wiki/Eclips..._1999_4_NR.jpg

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