You're kidding? No, I'm Sirius!

by Bob Riddle

A popular idea exists that if anybody ever discovers exactly what the universe is for and why it is here, it will instantly disappear and be replaced by something even more bizarre and inexplicable. Others think that this has already happened (cue rim shot). This type of science humor has the power to make us stop, think, and laugh. More important, it can help us appreciate and remember important science concepts. Although my editors attempt to remove as many groan-inducing puns as possible from my columns, this month, in the spirit of April Fool's Day, I've persuaded them to put down their red pens and embrace the laughter.

This month, I'm encouraging you to have students look for, examine, and explain humor that is based on science concepts, ideas, or events. This could be part of a STEM-based activity as students look for humor relating to technology, engineering, and mathematics in addition to science. This is also an excellent opportunity to sneak in a little language arts into your science lessons.

Finding the punchline

Many sources exist, both online and in print, for STEM-related humor. Gary Larson's *The Far Side* series had many cartoons that could be used in the classroom to illustrate a topic. Be sure to discuss with students the importance of respecting copyrighted material, because these cartoons, like anything copyrighted, should not be downloaded or copied without permission (see Resources for a link to a letter from Gary Larson). One of my favorite *Far Side* comics shows a man standing at the edge of a parking lot, which is empty except for his car parked off in the distance on the lot's other side. The man is saying to himself, "I thought I parked my Lincoln Continental right here." The caption reads: "An example of Lincoln Continental Drift."

You can also ask students to examine a cartoon or advertisement showing the Moon and determine whether it is at the correct phase for the time indicated by the cartoon. To answer this question, your students would need to understand what the Moon looks like during its rising and setting times. If the Moon is drawn as a crescent, look at the cusps, or points, as they are always pointing away from the Sun. If the Moon is drawn in a gibbous phase, the rounded, curved side is the one facing the Sun. If it is at full phase, then look for the two elongated, dark parts of the Moon's surface for what I describe as rabbit ears. As the Moon traverses our northern hemisphere sky, these two dark areas should be on the right side of the Moon (see Figure 1).

FIGURE 1 Morning or evening crescent Moon?

PHOTOS COURTESY OF THE AUTHOR

Some science behind humor

Here are some of my favorite, well-known science jokes. Have your students identify and explain the science within in each humorous statement. Then, have your students write their own science jokes.

- A day without sunshine is like night.
- I was up all night wondering where the Sun had gone … then it dawned on me.
- Living on Earth might be expensive, but at least you get a free trip around the Sun every year.
- A Higgs boson goes into a church and the priest

says, "We don't allow Higgs bosons in here." The Higgs boson replies, "But without me, there is no mass." *(A* Higgs boson *is a theoretical particle that gives all things mass [see Resources for a link to the CERN facility, where the Higgs boson was discovered, for an animated video explanation].)*

- A photon walks into a hotel to check in. The desk clerk asks, "Do you have any luggage?" The photon says, "No, I'm traveling light." *(A* photon *is an elementary particle; light, as well as other forms of electromagnetic energy, travel as photons.)*
- A neutrino walks into a bar … and keeps right on going. *(*Neutrinos *are electrically neutral elementary particles with nearly no mass. They are produced in stars and travel away from the star at the speed of light. Because they are electrically neutral, they are not affected by the electromagnetic force, one of the four fundamental forces in nature. As a result, neutrinos are constantly passing through us, the journal you are reading, Earth—everything.)*
- Two atomic particles were walking down the street and arguing. One insisted that it was an ion and the other disagreed. Finally one said, "Are you really sure you are an ion?" To which the other replied, "I'm positive!" *(An* atom *is electrically neutral because the number of positive particles, protons, equals the number of negative particles, electrons. An ion is an atom that became electrically charged by either gaining or losing at least one electron.)*
- How do astronomers see in the dark? They use standard candles. *(The term* standard candle *refers to a celestial object with a known luminosity.* Luminosity *is the total energy output and, with regard to stars, it is thought of as the brightness of a star.)*

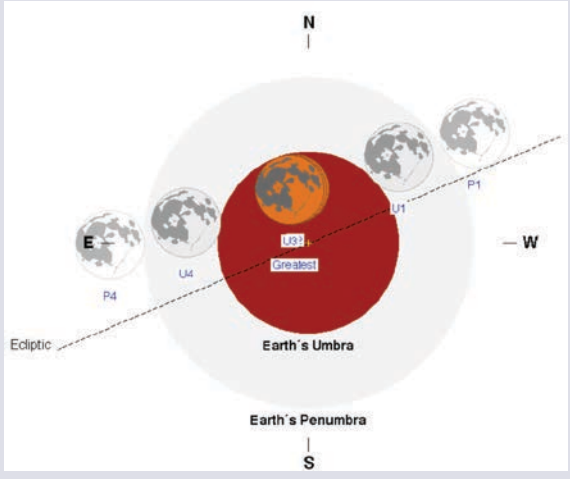
Partial lunar eclipse

On April 4, the Moon will move into and through Earth's shadow, resulting in the third lunar eclipse in the current *tetrad*, or series of four total lunar eclipses, which are each separated by approximately 6months (see the October 2014 "Scope on the Skies" column). As with any lunar eclipse, as long as the Moon is visible, an observer will be able to see some or all of the eclipse depending on the local times for the eclipse events and sunrise (see Figure 2). This lunar eclipse will be visible across most of North America, the Pacific Ocean, Eastern Asia, Australia, and New Zealand. The path the Moon follows as it traverses the dark umbral shadow is across the northern part of the Earth's shadow, and at mid-eclipse, the Moon will be just barely within Earth's umbral shadow (see Figure 3). This means that the total-eclipse phase will be relatively short: The entire Moon will be within Earth's darker umbral shadow for about 5 minutes. ■

FIGURE 2 Eclipse timeline

Eclipse event	Time (EDT)
Penumbra	5:01 a.m.
Moon enters umbra	6:15 a.m.
Total eclipse starts	7:57 a.m.
Mid-eclipse	8:00 a.m.
Total eclipse ends	8:02 a.m.
Last contact with umbra	9:44 a.m.
Moon exits penumbra	10:58 a.m.

FIGURE 3 Path of Moon during eclipse



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Visible planets

Mercury will be at superior conjunction and will not be visible during April. During May, it will be at its best visibility for the year.

Venus will be very visible over the western horizon at sunset during April and May.

Mars will be low over the western horizon at sunset and by around mid-April will be too close to the Sun to be visible.

Jupiter will rise in midafternoon and will set after midnight local time.

Saturn will be close to opposition; it will rise around sunset local time and will be visible all night.

April

1 Moon at apogee: 406,000 km (243,600 mi.)

3 Moon at ascending node

4 Total lunar eclipse

Full Moon

6 Uranus at solar conjunction

50th anniversary of *Intelsat* launch

8 Waning gibbous Moon near Saturn

Jupiter ends retrograde motion

Jupiter near Beehive star cluster

For students

1. Look at Figure 1. Which picture is the waxing phase and which one is the waning phase? *(The picture on the left is the waning gibbous phase because the curved side is toward the left, where the Sun would be during the waning phases. Also, the "rabbit ears" in the picture on the right are visible, indicating that this is a waxing Moon.)*
2. What is the advantage of having the Hubble Space Telescope in orbit around the Earth rather than on the Earth's surface? *(By being above the atmosphere, the telescope receives no interference from atmospheric turbulence and clouds, which would affect a ground-based telescope.)*

10 Mercury at superior conjunction

11 Venus near the Pleiades

Last quarter Moon

Cassini flyby of Titan, Tethys, and Dione

12 Yuri's Night: World Space Party

16 Moon at perigee: 361,000 km (216,000 mi.)

17 Moon at descending node

18 New Moon

20–26 Astronomy Week

21 Waxing crescent Moon near Aldebaran

Waxing crescent Moon near Venus

22 Earth Day

Lyrid meteor shower peak (20 per hour)

24 25th anniversary of Hubble Space Telescope launch

25 First quarter Moon

Moon at descending node

Astronomy Day

26 Venus at eastern elongation

28 Moon at apogee: 405,100 km (243,060 mi.)

30 Mercury near the Pleiades

May

1 Moon at ascending node

Space Day

Scott Carpenter's 90th birthday

3 Full Moon

4 Jupiter at east quadrature

5 Eta Aquarid shower

Moon near Saturn

7 Mercury at east elongation

Cassini flyby of Titan

11 Last quarter Moon

14 Moon at descending node

Moon at perigee: 366,000 km (227,428 mi.)
Astronomy Day

17 New Moon

22 Saturn at opposition

25 First quarter Moon

26 Moon at apogee: 404,200 km (251,158 mi.)

27 Mercury near Mars

28 Moon at ascending node
Saturn at opposition

29 Venus near Pollux

30 Mercury at inferior conjunction
Dwarf planet Ceres occults dim star

Resources

April 4 partial lunar eclipse information—*http://eclipse.gsfc.nasa.gov/LEplot/LEplot2001/LE2015Apr04T.pdf*
Astronomy Week—*www.astroleague.org/al/astroday/astroday.html*
Cassini Solstice mission—*http://saturn.jpl.nasa.gov*
Earth Day—*www.earthday.org*
Higgs boson basics—*http://home.web.cern.ch/about/updates/2013/05/basics-higgs-boson*
Hubble Telescope—*http://hubblesite.org*
A note from Gary Larson—*www.creators.com/a-note-from-gary-larson.html*
Yuri's Night—*www.yurisnight.net*

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