Astrobiology News July 2018:
Marvelous Mars

This month's news will deviate a bit from my usual astrobiology focus, although I'll stick with my promised summer focus on Mars. I'd like to encourage you all to #Lookup[1] and appreciate Mars' closest approach to Earth late this month, when the Red Planet will be at its brightest and closest to Earth since 2003. It won't be as close again until 2035!

One cautionary note – beware the "Mars hoax" that's been trolling the internet since 2003, when a meme was initiated that claimed Mars would be as large as the Moon. This is nonsense! Although Mars will shine about 5 times brighter than you might typically see it, the angular diameter of the Moon is about 75 times larger. For fun, you can calculate this yourself, using what astronomers call the "small angle formula".

Knowing the distance to a celestial body and its physical size, you can calculate its angular size on the sky: physical size = angular size (measured in radians) times distance. This equation only works for small angles, but since the Moon is about a half degree on the sky and Mars is much smaller, no worries! At closest approach, Mars will be about 35.8 million miles from the Earth. The Moon is roughly 240,000 miles from Earth. Your challenge is to look up the diameters of Mars and the Moon and calculate their respective angular sizes on the sky. Watch your units and don't forget your answers will be in radians. (Perhaps I'll think of some incentives to include for future challenges!)

Mars will be at opposition, when the Earth is lined up between the Sun and Mars, on July 27th, and it will reach its closest approach to Earth on July 31st. The reason the dates are a bit different is because the orbits of the Earth and Mars are slightly elliptical, not circular. At opposition, Mars will be very close to the full Moon, rising in the east as the Sun sets in the west. The longest total lunar eclipse of the 21st century will also occur on July 27th, but won't be visible to observers in North America, since it will happen during daylight hours, when the full Moon is not in the sky. In any event, Mars will make a spectacular night-sky object for the remainder of the summer![2]

Finally, I want to remind you that there will be a public event entitled, "Becoming Interplanetary: What Living on Earth Can Teach Us about Living on Mars" on September 27, 2018 at the Library of Congress Kluge Center.[3] This event has been organized by my Adler colleague, Lucianne Walkowicz, who has been on sabbatical for the last year, researching scientific and ethical questions in anticipation of a future human presence on Mars. If you can be in the D.C. area for this event, I urge you to consider attending!

Until next month,

Grace

---

[1] https://www.adlerplanetarium.org/events/observe-mars-july-30/

[2] For more details, check out: http://earthsky.org/sky-archive/close-and-far-martian-oppositions

[3] Check https://www.decolonizemars.org/becoming-interplanetary/ for more details as they become available.