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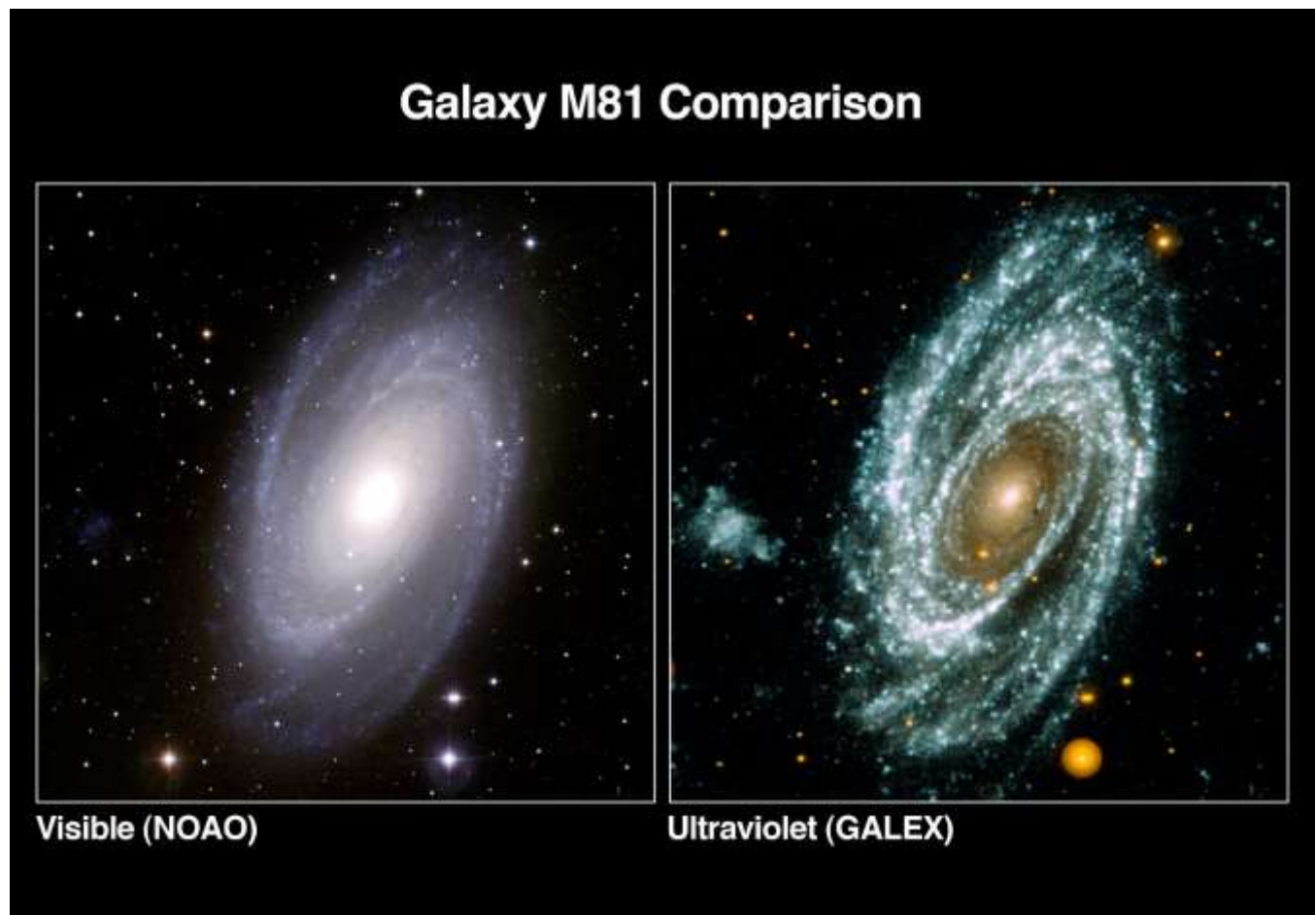
Chippewa Valley Astronomy Update

Unseen Light

By Kevin Litten

Figure caption. “Bode’s Galaxy” (also named M81) is seen in visible light and ultraviolet light (UV) in side-by-side images. The visible image is from NOAO (National Optical Astronomy Observatory) and the UV image is from the NASA orbiting telescope GALEX (Galaxy Explorer). In the UV image, we can see much more easily the companion dwarf irregular galaxy. The dwarf galaxy shines more brightly in UV because of the many hot young stars in it. Remember that all UV images are “false color” since we can’t see UV.

Photo Credit: NASA



Our eyes see very well, but only in a narrow band of light. In the early nineteenth century scientists discovered light of both shorter and longer wavelengths than what our eyes are able to see. This article is about the invisible light shorter than violet, or ultraviolet (UV) light. TV zappers and trail cameras emit in wavelengths longer than what our eyes can detect; something for another story.

The lens of our human eye blocks UV light so that it can see colors in sharper focus. As is our eyes barely focus on blue. Our mind accomplishes a great deal of jiggery-pokery to get the image of what we see as sharp as we perceive it. There is evidence that dogs, cats, goldfish, deer, and various other creatures do see UV light.

Earth's atmosphere blocks most of the UV light our sun emits. The sun must be at least 30 degrees above the horizon for any of its UV light to reach us. As the sun goes above that 30 degree zone or stays up longer, such as in the tropics, your chances of getting burned increase. Snow and water scatter UV rays. Reflected or indirect UV rays hurt just as bad.

The sunlight that burns our skin and causes other problems is UV-B light; light between the wavelengths of 2800 and 3200 angstroms. Only 0.7 % of the sun's total energy is emitted as UV-B, but oh what a percentage it is. There is an UV-A and an UV-C but we are not going to worry about those wavelengths in this article.

With the ability of satellites to reach above Earth's atmosphere, scientists have found stars that emit a large amount of their energy as UV light. These stars are usually hotter than other stars and emit much of their energy in visible light and x-rays also. Certain dwarf stars may emit significant amounts of UV light. Significant being a buzz word for nothing is probably going to grow on any planets orbiting them.

For the hunters out there, deer see UV brighteners, sometimes added to laundry detergents, far better than humans do. The UV brighteners, on human eyes, work to make clothes appear whiter, brighter, or cleaner. If you are worried about it, hunt mornings and afternoons, and take a nap at mid day – just like astronomers.

-- Kevin Litten is a member of the Chippewa Valley Astronomical Society