

July 2026 Chippewa Valley Astronomy Update



Figure caption: If the sun was the size of a US quarter, the nearby star Alpha Centauri A would be the size of a US half dollar and Alpha Centauri B would be the size of a five-cent piece 200 feet away from it.

Proxima Centauri would be a little smaller than a BB and would be about 15 miles away from the two coins.

Our sun would be 445 miles away from the two coins.

Figure credit: John A. Peterson

The Closest Stars

Essay by Joseph M. Peterson and John A. Peterson

There are hundreds of billions of stars in the Milky Way Galaxy. Only one is the closest to us. The closest star is our own sun, which is a 4.5-billion-year-old, yellow dwarf G2 star on the main sequence. It is 93 million miles away (1 astronomical unit) and is about 865,000 miles in diameter.

The next closest star is Proxima Centauri, part of the Alpha Centauri system. The Alpha Centauri system is a trinary star – three stars that orbit each other. Only about 20% of stars are single stars like our sun. We cannot see Proxima Centauri without a telescope, but Alpha Centauri A (Rigel Kentaurus) and Alpha Centauri B (Toliman) are a binary star that look like one star, even in a telescope – the brightest star in the constellation Centaurus and the third brightest point of light in any constellation. It is a southern hemisphere constellation best viewed between March and August and can be seen from the southernmost parts of the United States.

The Alpha Centauri star system is about 4.3 light years from the earth. The two brightest stars are, on average, 23 astronomical units (AU) apart, but range from the distance between the sun and Saturn (11 AU) to the distance between the sun and Pluto (40 AU).

Proxima Centauri averages about 9,000 AU from the other two stars. It takes about 550,000 years to orbit around Rigel Kentaurus and Toliman. In about 30,000 years it will be closest to the Earth, so it has been the closest star since *homo sapiens* started to spread across the Earth around 250,000 years ago and will be for almost 300,000 years into the future. Before and after that time, Rigel Kentaurus and Toliman switched places as the nearest star every 40 years.

Rigel Kentaurus (Alpha Centarui A) is also a G2 main sequence yellow dwarf star that is slightly bigger (120%) and brighter (150%) than the sun. Toliman (Alpha Centauri B) is a K1 orange dwarf main sequence star and is slightly smaller (90%) and dimmer (50%) than the sun. Proxima Centarui is a M5 main sequence red dwarf star that is much smaller (15%) and much, much dimmer (0.16% for all light, 0.005% for visible light) than the sun. Proxima Centauri is believed to have at least two exoplanets (planets that orbit another star) and possibly a third. Although one is in the habitable zone, where water can be in liquid state, none of the planets are thought to be likely to have life because Proxima Centauri is a variable star and sometimes emits much more radiation. Rigel Kentaurus might also have an exoplanet.

It takes more than four years for light to travel from the Alpha Centauri system to Earth. Using the fastest rockets ever built on earth, it would take more than 70,000 years to visit these nearby stars.

--The Petersons are members of the Chippewa Valley Astronomical Society. Joseph Peterson will be a third-grade student at Lakeshore Elementary School in the fall.