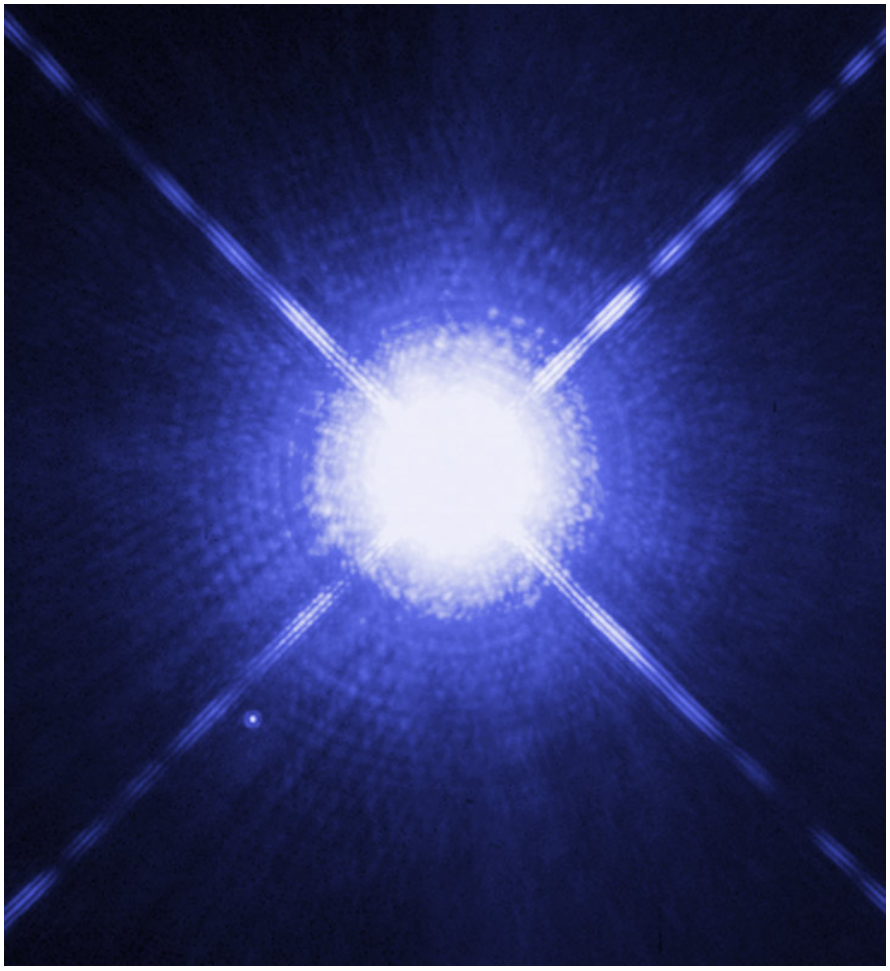
Star Guide: Sirius – the next brightest star



This is a Hubble Space Telescope image of Sirius and the Pup. Photo/Provided

By Tony Berendsen

Every day Earth is immersed in the light of our nearest star the sun and bathed in the lifeblood of its energy. For most life on our planet the proximity of our star provides an environment of nurturing survival. The distance between Earth and the sun is just right for us, not too far or too close. Every night the shade of the Earth darkens the sky and our sight is cast into the depths of space. It is during those hours of night we see the sun's close neighbors, and the next brightest star: Sirius.

One reason for the brightness of Sirius is its closeness to the Earth. It is the seventh closest star at about 8.5 light years and is heading our way as it drifts through the galaxy. So, over the next 60,000 years it will become even brighter, continuing to be the brightest for 200,000 years. Another reason Sirius is so bright is its size and luminosity which is about twice that of the sun.

Rigel Kentaurus (Alpha Centauri) the three-star system, that is the closest to the sun at 4.3 light years, comes in third in brightness after Canopus of the constellation Carina at a whopping distance of 313 light years.

It’s more common than not for stars to have companions, and Sirius is no exception; it’s a binary star. Sirius’ companion isn’t a main sequence star anymore, though. It is a white dwarf. Our sun will become a white dwarf in a few billion years; a star that has depleted its supply of fusionable fuel and gravitationally collapsed. The companion star is called Sirius B, or the Pup.

The Pup orbits around Sirius in a very elliptical path every 50 years at mean distance close to the size of the orbit of Uranus. It once was a hot blue star about five times as massive as the sun, and so bright that during its main sequence stage it would have overshadowed Sirius, possibly casting a shadow on a moonless night here on Earth. But because it was such a massive star, it used up its fuel quickly, in about 250 million years, only completing one orbit around our galaxy before becoming a white dwarf. In comparison the sun, a modest sized star, it has orbited around the galaxy more than 16 times.

Today the Pup is very small and very dim. Its brightness is about one-tenth the brightness of Sirius and it has gravitationally collapsed to about the size of the Earth. Matter is so condensed on the Pup that a piece the size of a sugar cube would weigh more that 2,000 pounds

Sirius is a winter star for us in the northern latitudes rising above the horizon in the east shortly after sunrise, and very easy to find in the night sky because of its brightness. Your favorite star gazing app can help you, or if you can find the belt of Orion use the belt stars pointing to the east to find your way.

On the other hand, the Pup is not easy to find due to the relative brightness of Sirius. To see the Pup you will need a telescope of good optics at high magnification. Florin's blog "How to see Sirius B" describes some excellent procedures for finding the Pup. http://florin.myip.org/blog/how-see-sirius-b

Of the thousands of visual stars in our sky, one supplies us with the gift of life, and the others hold the knowledge of the universe for us to discover. I hope you take a minute to enjoy the view this winter and take some time to wonder about the amazing cosmos we see in the day and at night.

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