

Two Double Stars to have a go at. Dave Eagle FRAS

Gamma Virginis.

Lying right in the middle of Virgo, this double star is becoming easier as time goes by.

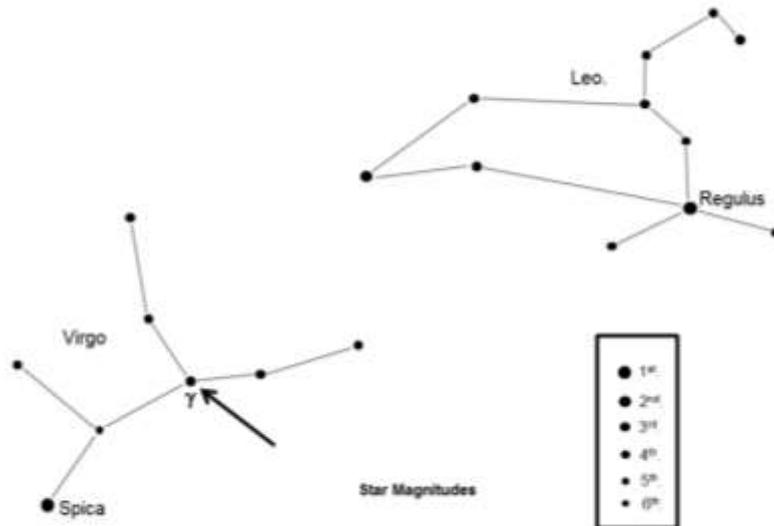


Fig 1. The location of Gamma Virginis.

Lying about 39 light years away this bright double star has been unresolvable by amateur astronomers for a number of years now while the stars were closer together.

It is composed of two yellow stars both of equal brightness at magnitude 3.5 and have an orbital period of 169 years. In 2010 the two stars were at their closest to one another (periastron) separated by only 0.9". The fact that the stars are so bright made it difficult to separate them, as the glare tended to fill the intervening space. At this time a fairly large telescope was required to split them. The distance between the two stars is now widening, so it is becoming much easier to separate them in an amateur sized scope.

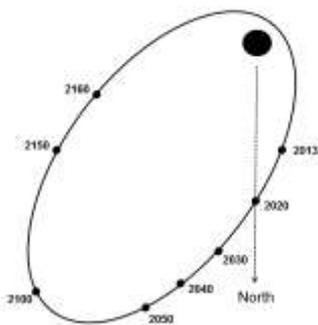


Figure 2. The orbit of Gamma Virginis as seen from Earth.

Good optics and a high magnification are still required. The task will become easier over the next few years as the stars continue to separate at their widest (apastron) of 5.1" in 2050.

Sirius - How to catch The Pup. Something a little more challenging.

The brightest star in the whole sky has long been known to be a double star. Its presence was suspected in 1844 by Friedrich Bessel by Sirius' proper motion and was first observed directly by Alvin Clark in 1862. It has an extremely small white dwarf companion, called "The Pup" sharing its common motion in space. The primary star we are familiar with has a magnitude of -1.5, The Pup has a more diminutive magnitude of 8.5. Having a magnitude bright enough to be seen in a modest telescope you would think it would be fairly easy to spot. Unfortunately the biggest problem to viewing the companion star is Sirius itself. Its sheer brilliance tends to dazzle your field of view, flooding light around the telescope and preventing the observer from seeing it. In northern latitudes the star never rises very far above the horizon, so we have the added complication of a very turbulent atmosphere. As a result the primary star flashes and shakes violently in the high powered field of view necessary to split the companion. Fortunately we are now at a time where in its 50 year orbit the companion star is now starting to move well away from the primary. As the distance between the two stars increases over the next few years, The Pup should become easier to spot. In 1993 the two stars were at periastron and only 2.5" apart so it was virtually impossible to spot the faint companion so close to the dazzling primary. In 2023 the two stars will be at apastron, so for a few years either side of this date gives the greatest opportunity. They will then slowly move towards one another. In 2044 the two stars will be reach periastron once more.

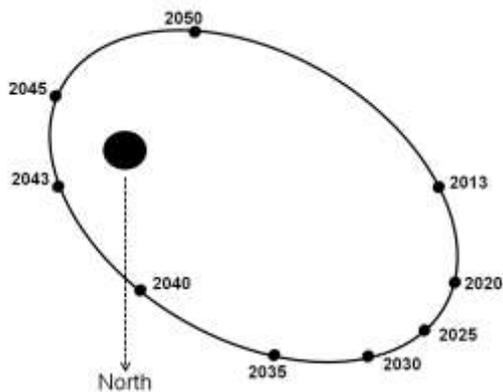


Figure 3. The orbit of Sirius as seen from Earth.

Try observing Sirius as the sky is just getting dark. Alternatively try and observe with the full Moon in the sky, or through thin cloud. These all help to reduce the glaring effect of the primary star, enabling you to see the dimmer companion more easily. An occulting bar in the eyepiece will definitely help in seeing The Pup. When you do spot this famous white dwarf star, you are viewing a very dense star with a diminutive size comparable to the Earth. Not bad going for an object over 8 and half light years away. Keep trying over the next few years as they become wider apart.

There are many more double stars scattered around the sky that are just as compelling or challenging to observe.

So go on, give them a go.

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