Alpha Centaurids: The Alpha of Minor Meteor Shower

If you enjoy astronomy, you may want to mark your calendar for February. That is when the Alpha Centaurids meteor shower, a modest but intriguing one, will spike. The Alpha Centaurids are meteors that appear to originate from the Centaurus constellation, which is one of the brightest and most notable in the southern sky. They have a long history of creating brilliant fireballs, dating back to the 1930s. In this blog article, we'll explain all you need to know about the Alpha Centaurids, including how to spot them, where they originate from, and why they're so enigmatic.

Image Credit: Star Walk

What is this Alpha Centaurids Meteor Shower?

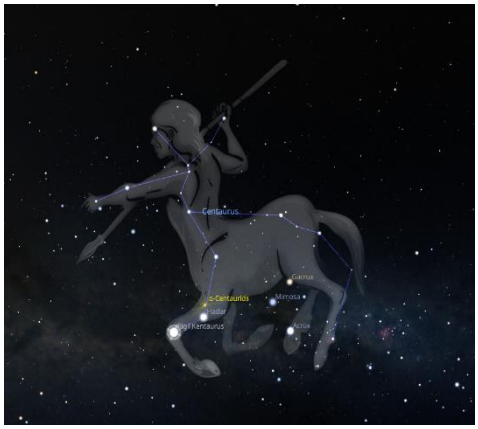


Image Credit: Stellerium

Have you ever wondered what it's like to witness a shooting star in the sky? If you're lucky enough to be in the right place at the perfect time, you could enjoy the sight of Alpha Centaurids, an exquisite meteor shower that comes every February. The Alpha Centaurids is a series of meteors that come from the Centaurus constellation, which is one of the brightest and most significant in the night sky. They are visible from January 28 to February 25, peaking on February 8 with up to three meteors per hour. The Alpha Centaurids has an average magnitude of 2.5, making them fairly bright and simple to detect.

The Alpha Centaurids was first discussed in the book "Southern Hemisphere Meteor Stream List" in 1980, based on observations conducted by M Buhagiar in Western Australia between 1969 and 1980. On February 8, 1979, he measured the maximum magnitude of the shower at the Western Australia Meteor Shower (WAMS) site. However, the earliest likely observation of the Alpha Centaurids occurred on February 2, 1938, when C. Hoffmeister claimed to have witnessed them from South Africa. Along with the Alpha Centaurids, he spotted another meteor shower known as the Beta Centaurids, which had a higher meteor rate than the Alpha Centaurids, but nothing has been documented about this group since then. The Alpha Centaurids and the Beta Centaurids are fascinating events that reveal the beauty and speculate the cosmos. If you ever get a chance to see them, don’t miss it!

Where Can I see it from Indian Skies?

Whilst this is one of the most prominent meteor showers in the southern skies, you may still view this spectacular celestial show in February if you live in the Northern Hemisphere. The Alpha Centaurids Meteor Shower is a rare and stunning event that illuminates the southern sky with brilliant meteors. Although it is best observed from the Southern Hemisphere, it may be seen up to 32°N latitude, allowing Indians residing in Himachal Pradesh and below to catch a glimpse of it. The Alpha Centaurids appears around the Beta Centauri star, also known as Hadar, which is part of the well-known Centauri system. The Centauri system consists of three stars: Rigel Kentaurus, or Alpha Centauri, the closest star to our sun; Hadar, or Beta Centauri, a blue giant star; and Proxima Centauri, the nearest star to Earth.

What makes it stand apart from Rest of the Sky Objects?

The Geocentric Meteor Velocity of Alpha Centaurus Meteor Shower is 56kmph.
The Geocentric Meteor Velocity is referring to the speed and direction of the Meteor traveling in space as seen from the Earth. The point here is we have to consider the Earth's Rotational Velocity as well. i.e., The Geocentric Meteor Velocity is calculated by checking the speed of the meteors traveling in a particular direction, and the speed at which the earth is rotating concerning its center.

Radiant Drift per Solar Longitude of this meteor shower is 0°7’36”.
The Radiant Drift refers to the source of the meteor or any celestial body as a function of solar longitude. The Solar Longitude is nothing but the position of the sun in the ecliptic path. It is often considered as 0° on the vernal equinox i.e., the Sun is present at 0° in the celestial sphere. So, Radiant Drift per solar longitude is the measure of the movement of the sun from one day to another day in the ecliptic path of the celestial sphere. So, when we say Alpha Centaurus has a Radiant drift per solar longitude of 0°7’36’’ we mean to say that in the celestial sphere, along the ecliptic path, this particular object has moved 0°7’36” distance per day when viewed from the position of the sun.

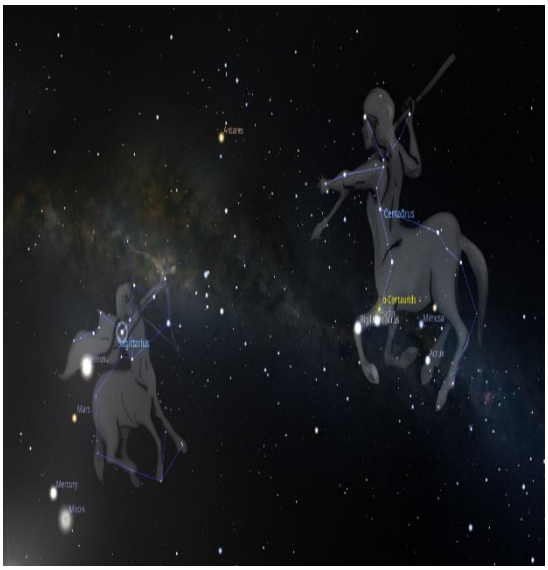
Zenithal hourly rate (ZHR) is 6.
ZHR means, it is the number of meteors that can be seen by an observer when the meteor shower is exactly present at the Zenith point of an observer, and the light pollution is nearly or equal to zero. If ZHR is 6 that doesn’t mean a particular observer can see 6 meteors every hour, it just means that if there is zero light pollution, no air pollution, and the meteor shower is exactly at the zenith point of the observer, only at this point, the observer can see 6 meteors every hour. Even if one criterion fails, the number will become less.
Since ZHR value is very less when compared to other meteor showers, these are considered as minor meteor shower. The major meteor shower has ZHR value 50+ (Quadrantids has ZHR value of 80). This value can be calculated using “ZHR Formula” where several factors like Number of Meteors seen, the altitude, the population index value and other factors are considered.

The Parallactic Angle is nearly 0° at 5hr 13 min 37 sec.
This means that after 5 hours 13 Minutes and 37 Seconds, the meteor shower will cross the Meridian Line of the Earth. This is very important for the observation as at this particular time from India, the visibility of the meteor shower will be maximum.

Digging the Past

The Alpha Centaurus meteor shower may not have a fantastic legendary narrative to go with it. But, for the time being, let's broaden our perspective and look at the broader picture, namely the Centaurus Constellation and its neighbouring constellations. They have highly intriguing tales that you might not have heard before.
As previously said, the night sky is filled with mysteries and legends that have captivated humanity for millennia. One of the most fascinating constellations is Centaurus, a half-man, half-horse beast that appears to be hunting or slaying another animal. But what is the genesis of this unusual figure, and how does it connect with the other constellations around it?

Image Credit: Johann Bayer (Google)



To the right we have Sagittarius with Bow and arrow, to the left we Centaurus with Sphere
Image Credit: Stellerium

Centaurus frequently gets mistaken for Sagittarius, another constellation that resembles a centaur. However, they are not the same, and their mythologies are quite distinct. Some believe Centaurus is Chiron, the wisest and sympathetic of the centaurs, who mentored many heroes, including the Argonauts. The Argonauts were a band of adventurers who set out on a treacherous voyage to obtain the Golden Fleece, a mystical sheepskin capable of granting any wish. It is believed that Chiron created Sagittarius to guide his students on their journey and safeguard them from the dangers of the unknown. However, this tale is not commonly accepted because it contradicts many other interpretations of the constellations.

A more common and old tale connects Centaurus to Lupus, the constellation depicting a wolf-like beast. Lupus is a wolf-like creature. (Different cultures have viewed it differently; I stated it in the sense that it appears like a wolf to me.) The Babylonians dubbed it the Mad Dog and connected it with the sun god and the Bison-man, a strange entity possibly related to Centaurus. The Greeks thought Centaurus was giving Lupus as a sacrifice to the gods on the altar of Ara, another nearby constellation. This Ara Constellation signifies the Altar, where ancient humans sacrificed animals for ritual purposes. This represented the centaurs' attempt to soothe the divine anger for their violent and rebellious behaviour.

To the right: Lupus, To the left: Centaurus,
To the Right Bottom: Ara aka Altar
Image Credit: Stellerium

Why is this Important for us anyway?

Imagine the universe as a grand cosmic calendar. As we turn the page to a new year, the first celestial event to grace our skies is the Alpha Centaurids meteor shower. Just as the Alpha is the first letter of the Greek alphabet, so too are the Alpha Centaurids the first meteor shower of our modern calendar year.

This celestial spectacle is more than just a beautiful display. It's a cosmic time capsule, carrying with it secrets from the dawn of our solar system. Each meteor is a breadcrumb on the trail to understanding our cosmic origins, a tiny piece of the puzzle that helps us unravel the mysteries of the cosmos.

The radiant point of the Alpha Centaurids, the spot in the sky from which the meteors appear to originate, is a mystery yet to be fully uncovered. Current data suggests it lies in the constellation Centaurus, a celestial tribute to the mythological creature with the upper body of a human and the lower body of a horse. This constellation is also home to Rigel Kentaurus and Proxima Centauri, the closest stars to our Sun, making it a fitting stage for this cosmic performance.

So, as we begin another year, let us take a minute to glance up at the night sky and admire the Alpha Centaurids meteors. They are more than just the first meteor shower of the year; they serve as a reminder of our place in the universe and the mysteries that await us in the next year.