

= Vega =

Vega (α Lyr , α Lyrae , Alpha Lyrae) is the brightest star in the constellation Lyra , the fifth brightest star in the night sky and the second brightest star in the northern celestial hemisphere , after Arcturus . It is a relatively close star at only 25 light @-@ years from Earth , and , together with Arcturus and Sirius , one of the most luminous stars in the Sun 's neighborhood .

Vega has been extensively studied by astronomers , leading it to be termed α arguably the next most important star in the sky after the Sun . α Vega was the northern pole star around 12 @,@ 000 BC and will be so again around the year 13 @,@ 727 when the declination will be $+ 86^{\circ} 14'$. Vega was the first star other than the Sun to be photographed and the first to have its spectrum recorded . It was one of the first stars whose distance was estimated through parallax measurements . Vega has served as the baseline for calibrating the photometric brightness scale , and was one of the stars used to define the mean values for the UBV photometric system .

Vega is only about a tenth of the age of the Sun , but since it is 2 @.@ 1 times as massive its expected lifetime is also one tenth of that of the Sun ; both stars are at present approaching the midpoint of their life expectancies . Vega has an unusually low abundance of the elements with a higher atomic number than that of helium . Vega is also a suspected variable star that may vary slightly in magnitude in a periodic manner . It is rotating rapidly with a velocity of 274 km / s at the equator . This is causing the equator to bulge outward because of centrifugal effects , and , as a result , there is a variation of temperature across the star 's photosphere that reaches a maximum at the poles . From Earth , Vega is being observed from the direction of one of these poles .

Based on an observed excess emission of infrared radiation , Vega appears to have a circumstellar disk of dust . This dust is likely to be the result of collisions between objects in an orbiting debris disk , which is analogous to the Kuiper belt in the Solar System . Stars that display an infrared excess because of dust emission are termed Vega @-@ like stars .

= = Observation history = =

Astrophotography , the photography of celestial objects , began in 1840 when John William Draper took an image of the Moon using the daguerreotype process . On July 17 , 1850 , Vega became the first star (other than the Sun) to be photographed , when it was imaged by William Bond and John Adams Whipple at the Harvard College Observatory , also with a daguerreotype . Henry Draper took the first photograph of a star 's spectrum in August 1872 when he took an image of Vega , and he also became the first person to show absorption lines in the spectrum of a star . Similar lines had already been identified in the spectrum of the Sun . In 1879 , William Huggins used photographs of the spectra of Vega and similar stars to identify a set of twelve " very strong lines " that were common to this stellar category . These were later identified as lines from the Hydrogen Balmer series . Since 1943 , the spectrum of this star has served as one of the stable anchor points by which other stars are classified .

The distance to Vega can be determined by measuring its parallax shift against the background stars as the Earth orbits the Sun . The first person to publish a star 's parallax was Friedrich G. W. von Struve , when he announced a value of 0 @.@ 125 arcseconds (0 @.@ 125 ?) for Vega . But Friedrich Bessel was skeptical about Struve 's data , and , when Bessel published a parallax of 0 @.@ 314 ? for the star system 61 Cygni , Struve revised his value for Vega 's parallax to nearly double the original estimate . This change cast further doubt on Struve 's data . Thus most astronomers at the time , including Struve , credited Bessel with the first published parallax result . However , Struve 's initial result was actually surprisingly close to the currently accepted value of 0 @.@ 129 ? , as determined by the Hipparcos astrometry satellite .

The brightness of a star , as seen from Earth , is measured with a standardized , logarithmic scale . This apparent magnitude is a numerical value that decreases in value with increasing brightness of the star . The faintest stars visible to the unaided eye are sixth magnitude , while the brightest , Sirius , is of magnitude $-1 @.@ 46$. To standardize the magnitude scale , astronomers chose Vega to represent magnitude zero at all wavelengths . Thus , for many years , Vega was used as a

baseline for the calibration of absolute photometric brightness scales . However , this is no longer the case , as the apparent magnitude zero point is now commonly defined in terms of a particular numerically specified flux . This approach is more convenient for astronomers , since Vega is not always available for calibration .