

Lyra

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Lyra

Lyra is small and easy to overstate — the whole constellation is a neat little parallelogram trailing off one bright point of light — but that one point is Vega, the fifth-brightest star in the entire sky and, from Central Ohio, the brightest thing riding nearly overhead on a summer or early-autumn evening. The parallelogram represents the sound-box of a lyre; Vega itself sits just off one corner of it, at the top of the instrument's yoke. You don't really need to learn Lyra's shape to find it — you need to find Vega, and the rest follows.

Finding it

Vega supplies the brightest corner of the Summer Triangle, the large landmark asterism it shares with Deneb (Cygnus) and Altair (Aquila); for the full picture of the Triangle and how to use it to orient yourself in the summer sky, see [Cygnus](#). From Ohio (about 40°N), Vega is close enough to the zenith on August and September evenings that "look nearly straight up for the brightest star you can see" will usually find it unassisted. Epsilon and Zeta Lyrae sit just to Vega's east-southeast, marking one short edge of the parallelogram; Sheliak and Sulafat, the constellation's second- and third-brightest stars, mark the far corners.

Lyra is not circumpolar from Ohio's latitude — Vega's declination of +38.78° falls well short of the roughly +50° needed to stay above the horizon all night from 40°N — but because Vega is so bright, it's visible for most of the night across a large part of the year and is essentially unmissable from June through November. Best viewed full dark, roughly 9–11 p.m., in August and September.

The stars

Star	R A (h)	De c (°)	Mag	Distance	Spectral type	Name
Vega	18 .6 15	+3 8. 78	0.03	~25 ly	A0 V	Arabic <i>al-nasr al-waqi'</i> , "the swooping eagle/vulture"
Epsilon Lyrae	18 .7 38	+3 9. 67	4.59 (com bined)	~162 ly	multiple A-type stars	Bayer letter only — see "Double Double," below
Zeta Lyrae	18 .7 46	+3 7. 60	4.36 (com bined)	not verified — omitted	not verified — omitted	Bayer letter only
Sheliak (Beta Lyr)	18 .8 35	+3 3. 36	3.52 (variable)	~960–1,080 ly	B6–B8 II + B0.5 V, semidetached	Arabic <i>al-shilyaq</i> , "the harp/lyre"
Sulafat (Gamma Lyr)	18 .9 82	+3 2. 69	3.25	~620 ly	B9 III	Arabic <i>al-sulahfat</i> , "the tortoise"

Vega does a lot of work for one star, and three of its distinctions have nothing to do with brightness:

- **It was the pole star, and will be again.** Earth's axis traces a slow circle across the sky over a roughly 26,000-year cycle (precession). Around 12,000 BCE, that circle brought the north celestial pole within

about five degrees of Vega — the brightest pole star there will ever be across the whole cycle. The wobble carries it back to within similar range around the year 13,727 CE. Right now we're near the opposite point in the cycle, with Polaris standing in for the job.

- **It is the star the brightness scale hangs from.** Modern photometry measures every other star's brightness relative to Vega: by definition, its magnitude was set to 0.0, the zero point of the standard scale. Refinements since then have nudged Vega's own listed magnitude to 0.03 — it isn't perfectly zero any more — but the whole apparatus for measuring stellar brightness is still calibrated against this one star.
- **It was the first star ever photographed.** On the night of 16–17 July 1850, William Bond and John Adams Whipple pointed Harvard College Observatory's 15-inch refractor at Vega and exposed a daguerreotype plate for 100 seconds — the first photograph of any star besides the Sun.

Two more stars in the parallelogram are worth a stop. **Epsilon Lyrae**, just northeast of Vega, is a naked-eye double to sharp eyes under a dark sky — and a small telescope splits each of those two points into a further pair, making it a genuine quadruple system nicknamed the **Double Double**. All four stars are gravitationally bound: the two inner pairs orbit each other on timescales of a few hundred to about 1,800 years, while the pairs orbit a shared centre on a much longer scale still.

Sheliak (Beta Lyrae) is a different kind of interesting: an eclipsing binary so close that the more evolved of its two stars overflows onto its companion, wrapping the pair in a disk of transferred gas. That ongoing mass transfer is slowly stretching their 12.9-day orbital period longer, year by year — it was 12.89 days when the star's variability was first recognized in 1784, and about 12.94 days by 1978. The light curve this produces — smooth, continuous brightening and dimming rather than sharp eclipse dips — is distinctive enough that astronomers now call this entire class of semidetached, mass-transferring eclipsing binaries "Beta Lyrae variables," after it.

Myth and history

Lyra is one of Ptolemy's 48 constellations in the *Almagest*; Ptolemy knew the brightest star simply as Lyra, the same name as the constellation. Mythologically it is the lyre of Orpheus, the greatest musician of the Greek world — but the instrument has a first owner before Orpheus ever touched it. It was invented by Hermes, who as a child found a tortoise browsing outside his cave on Mount Cyllene, cleaned out its shell, and strung it with seven cow-gut strings — one for each of the Pleiades. Hermes used the lyre's beautiful sound to talk his way out of trouble after stealing some of Apollo's cattle: Apollo, charmed, let him keep the cattle and took the lyre in trade. Eratosthenes says Apollo later gave the lyre to Orpheus.

Orpheus could charm rocks, rivers, and the Sirens with his playing; when his wife Eurydice died from a snakebite, he descended into the Underworld and persuaded Hades to release her, on the single condition that Orpheus not look back at her until they'd both reached daylight. He looked back too soon, at the very edge, and lost her a second time, for good. Accounts of his own death differ — Ovid has him torn apart by spurned local women, Eratosthenes has the god Dionysus set his followers on him for a slight — but both end the same way: the Muses placed his lyre among the stars.

The star names carry an older, separate layer. Vega comes from Arabic *al-nasr al-waqi'*, "the swooping eagle" — Arab astronomers saw Vega together with Epsilon and Zeta Lyrae as a bird of prey diving with folded wings, a mirror image of the eagle with wings outstretched that they saw in Altair and its neighbours over in [Aquila](#). Sheliak and Sulafat are Arabic too: "the harp" and "the tortoise," after the shell the lyre was built from.

In China, Vega and its two nearest neighbours were Zhinü, the Weaving Girl — a figure at the centre of one of the best-known stories in Chinese folklore, paired across the Milky Way with Altair as the Cowherd. That story, and the Qixi festival built on it, belongs to [Aquila](#) in full, since Altair is its other half.

Deep sky

- **The Ring Nebula (M57, NGC 6720)**, one of the best-known planetary nebulae in the sky, sits between Sheliak and Sulafat. A small telescope shows it as a soft, slightly elongated smoke-ring — the shell of gas a Sun-like star sheds as it dies, lit up by the hot white-dwarf remnant at its centre. Its distance was poorly known for decades; Gaia-era parallax measurements put it at roughly 2,300–2,600 light years, with an apparent magnitude around 8.8.
- **M56 (NGC 6779)**, a globular cluster on the Lyra–Cygnus border, fainter and less showy than M57 at magnitude 8.3, about 32,900 light years away.

Key dates

Date	Event
c. 275 BCE	Aratus's <i>Phaenomena</i> names the constellation; Ptolemy later calls the brightest star simply "Lyra."
c. 150 CE	Ptolemy catalogues it in the <i>Almagest</i> .
1784	Beta Lyrae's variability is first recognized, later making it the namesake of its own class of eclipsing binary.
16–17 July 1850	William Bond and John Adams Whipple photograph Vega — the first star ever photographed.
1930	The IAU adopts Eugène Delporte's precise boundaries for the 88 constellations, fixing Lyra's borders on the sky.
2009–2013	NASA's Kepler mission stares at the Cygnus–Lyra field, finding most of the exoplanets known today.

Related

- [Cygnus](#) — the second corner of the Summer Triangle, and where the Triangle itself is explained in full.
- [Aquila](#) — the third corner; Vega's counterpart in the Chinese Qixi festival, told in full there.
- [Delphinus](#) — the small figure just southeast of the Triangle.