

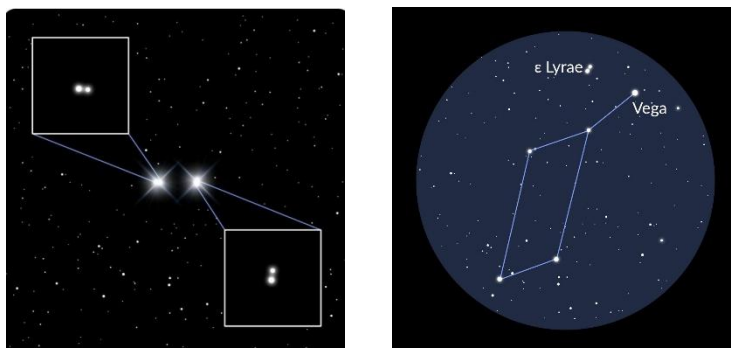
ASSA SHALLOW AND DEEP SKY OBSERVING BULLETIN

TARGET: EPSILON LYRAE – THE DOUBLE-DOUBLE STAR IN LYRA

Observer's window: Best viewed from late Winter through Spring.

Location: Near Vega in the Constellation of Lyra.

Type: Multiple Star System (visual Double-Double).



1 OVERVIEW

Epsilon Lyrae, affectionately known as the “Double-Double” is a stellar gem nestled just northeast of Vega, the fifth brightest star in the night sky. To the unaided eye, Epsilon Lyrae appears as a single point of light. But through binoculars, it splits into two stars – Epsilon 1 and Epsilon 2. With a medium to large telescope, each of those reveal itself as a close binary pair, making four stars in total.

2 CO-ORDINATES

Epsilon 1 Lyrae

RA: 18h 44m 20.34589s

Dec: +39°40'12.4533"

Magnitude: (V) 4.66

Epsilon 2 Lyrae

RA: 18h 44m 22.78056s

Dec: +39°36'45.7851"

Magnitude: (V) 4.59

3 SHALLOW AND DEEP SKY HIGHLIGHTS AND INSIGHTS

- Visibility: Easily spotted near Vega, which dominates the north sky during Spring nights.
- Binocular view: Resolves into two stars separated by 208 arcseconds.
- Telescope view: Each component splits into a tight binary – Epsilon 1 (A and B) and Epsilon 2 (A and B) – with separations of 2.3-2.6 arcseconds.
- Challenge: Resolving both pairs is a classic test of telescope optics and seeing conditions.
- Distance: 160 light years.

- Orbital Periods:
 - Epsilon 1 AB: 1800 years
 - Epsilon 2 AB: 724 years
- Spectral types:
 - Epsilon 1 A: A3V (hot, white main-sequence star)
 - Epsilon 1 B: FOV (cooler, white dwarf).
- Bonus component: A fifth star was discovered orbiting one of the Epsilon 2 pair via speckle interferometry in 1985.
- Astrophysical interest: Epsilon 1 B is a Gamma Doradus-type variable star pulsating with a period of -0.415 days.

4 OBSERVING TIPS

- Best time: August to October when Lyra is high in the northern night sky after sunset.
- Equipment:
 - Binoculars (10x50 or better) for initial split.
 - Telescope ($\geq 100\text{mm}$ aperture) with a high magnification ($\geq 150\times$) to resolve individual pairs.
- Conditions: Nights with steady seeing and minimal atmospheric turbulence.

5 CONCLUSION

Epsilon Lyrae is more than just a visual treat – it's a gateway to understanding stellar multiplicity, orbital mechanics and variable star behaviour. Whether you're a beginner with binoculars or a seasoned observer with a high-powered scope, the Double-Double offers a rewarding challenge and a glimpse into the dynamic lives of stars.

May you have clear skies and happy observing!

Colin Steyn

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ACKNOWLEDGEMENTS

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