

No Character Limit (Episode 22)

Ultima Thule (Episode 7) - The Dynamic Heavens

## Resources

### Chapter 4 – The Dynamic Heavens

#### **Hipparchus Finds a Precession**

[Ancient History Encyclopedia – Hipparchus](#)

[Ancient History Encyclopedia – Aristarchus of Samos](#)

[University of Cambridge – Hipparchus on a Poem](#)

[Theoi – Aratus, Phaenomena](#)

[Encyclopedia Britannica – Amalgest](#)

#### **Lodestars**

[Etymology Online - Lodestar](#)

[Grammarist - Lodestar](#)

[EarthSky.org – Polaris is the North Star](#)

[Sky & Telescope – Meet Polaris, the North Star](#)

[University of Michigan – North Star changes over time](#)

[Patch – The Many North Stars of Earth](#)

[EarthSky.org – Thuban is a former Pole Star](#)

[Sailing Stone – Stepping Inside The Step Pyramid of Djoser](#)

[Encyclopedia.com – The North-South Pyramid Complex: King Djoser’s Complex At Saqqara](#)

[Prime Video – The Story of Egypt](#)

[EarthSky.org – Gamma Cephei: A future Pole Star](#)

[StarDate.org – Thuban](#)

[Business Insider – The Egyptian pyramids may align with an ancient north star. NASA scientists found that star undergoes never-before-seen eclipses.](#)

[Space Answers – When was Polaris first discovered as the North Star?](#)

[NASA – Why is Polaris the North Star?](#)

[Star-Facts.com – Polaris](#)

[Science Magazine – North Star May Be Wasting Away](#)

[EarthSky.org – The Guardians of the Pole](#)

[Universe Guide – Kochab](#)

[Universe Guide – Thuban](#)

[The University of Illinois - Thuban](#)

[What's Out Tonight Blog – Thuban, the other North Star](#)

[Universe Guide – Errai](#)

[NASA – Surprise! TESS Shows Ancient North Star Undergoes Eclipses](#)

[Earth-Sky.org – Meet Alpha Cephei, a rapidly rotating star](#)

[Stardate.org – Alderamin](#)

[Universe Guide – Alderamin](#)

[Online Star Register – Alpha Cephei](#)

[The University of Illinois – Alderamin](#)

[EarthSky.org – Deneb is distant and very luminous](#)

[Sky & Telescope – Meet Deneb, the Bright but Distant Star](#)

[The University of Illinois – Deneb](#)

[AstroPixels.com – Deneb](#)

[Universe Guide – Deneb](#)

[Space.com – Deneb: tail of the Swan](#)

[StarDate.org – Delta Cygni](#)

[Space.com – Vega: The North Star of the Past and Future](#)

[Sky & Telescope: Meet Vega, the Jewel of the Lyre](#)

[Solstation.com – Edasich](#)

[Universe Guide - Edasich](#)

[Solstation.com - Edasich](#)

[The University of Illinois – Tau Herculis](#)

[Universe Guide – Iota Herculis](#)

[Publications of the Astronomical Society of the Pacific – The Iron Abundance of Iota Herculis](#)

**A Distant Rhyme - Dolní Věstonice**

[Australian Museum – Dolni Vestonice](#)

[Don's Maps – The Ceramic Venus of Dolni Vestonice](#)

[Ancient-Wisdom.com – Dolni Vestonice](#)

[Don's Maps – Dolni Vestonice and Pavlov burials, including the triple burial](#)

[Bradshaw Foundation – Dolni Vestonice](#)

[ThoughtCo. – Dolni Vestonice \(Czech Republic\)](#)

[NASA - Precession](#)

[It's Just Astronomical! – The Earth is Wobbling: The Precession of the Equinoxes](#)

[Northern Arizona University – Early Astronomy](#)