

NOVEMBER 2024

9:00 pm CDT on November 1
 7:00 pm CST on November 15
 6:00 pm CST on December 1

To use this chart: hold the chart in front of you and turn it so the direction you are facing is at the bottom of the chart.

- **Bright Stars**
- **Medium Bright Stars**
- **Faint Stars**

Scan dark skies with binoculars:

- M-31: The Andromeda Galaxy
- M-15: Globular star cluster
- M-45: Pleiades open star cluster
- The Hyades star cluster in Taurus

As autumn continues, sunrises occur later and sunsets occur earlier. The days are getting shorter! Daylight Saving Time ends at 2:00 am on November 3.

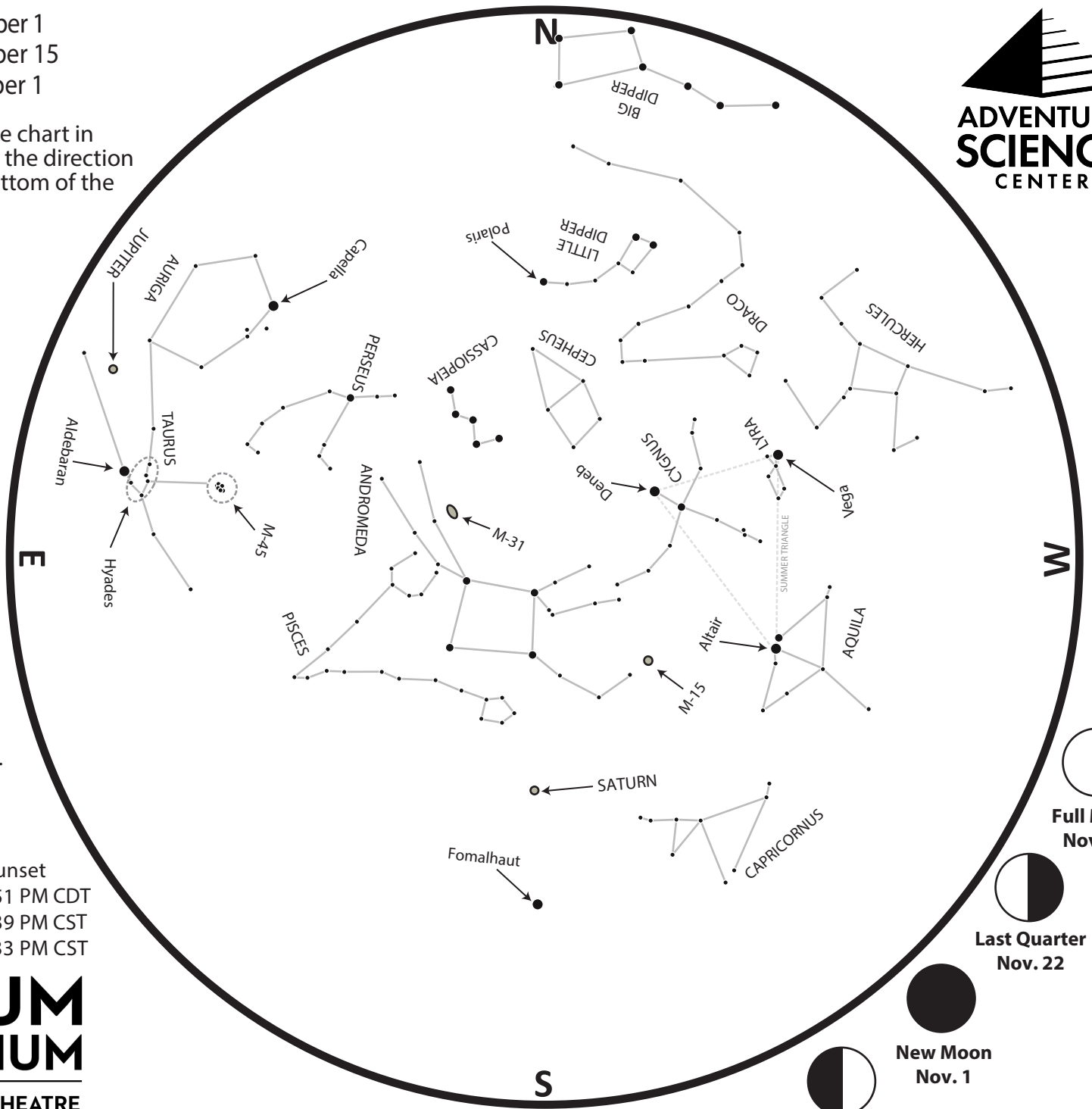
From Nashville:

| | Sunrise | Sunset |
|--------|-------------|-------------|
| Nov 1 | 7:10 AM CDT | 5:51 PM CDT |
| Nov 15 | 6:24 AM CST | 4:39 PM CST |
| Dec 1 | 6:40 AM CST | 4:33 PM CST |

SUDEKUM PLANETARIUM

JUDITH PAYNE TURNER THEATRE

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After Sunset

Just after sunset, look low to the southwest for the brilliant planet **Venus**. It will likely be the first point of light you see as the sky begins to darken.

For much of the year, we use the stars of the **Big Dipper** to help us find **Polaris**, the **North Star**. However, the Big Dipper is harder to find in the autumn. It appears very low to the northern horizon in the early evening. Some of its stars even set below the horizon from our latitude.

Another group of stars can help us find our way. Look for a group of five stars known as **Cassiopeia the Queen**. Whenever the Big Dipper is low to the horizon, Cassiopeia will be high enough to find. The central peak of this constellation's W-shape also points you in the direction of Polaris.

Polaris is not a particularly bright star, but it does remain fixed in the sky throughout the night and throughout the year. When you face the North Star, you're facing due north. Polaris is at the end of the handle of the **Little Dipper**. This group of stars is officially known as **Ursa Minor the Little Bear**.

Look high in the west for the three stars that make up the **Summer Triangle**. Despite the name, the Summer Triangle stars are a great sight for autumn skies and may be the first stars you'll see as the sky begins to darken. The three stars are part of three separate constellations: **Cygnus the Swan**, **Aquila the Eagle**, and **Lyra the Harp**. The Summer Triangle is so named because it's up all night during the summer, from sunset to sunrise. In the autumn, it's already high overhead by sunset, and will be lower in the west by midnight.

Look high in the south for **Saturn**. A small telescope will reveal Saturn's beautiful rings. You might even see its largest moon **Titan**. Watch for the Moon very near Saturn on the evening of November 10.

Stay out a little later for **Jupiter**. You can find it rising low in the northeast a couple hours after sunset. Allow some extra time for Jupiter to rise over trees or buildings that may block your view. Watch for the Moon to pass Jupiter on the nights of November 16 and 17.

Jupiter is currently situated right between the horns of **Taurus the Bull**, a great constellation associated with the winter sky. Look for the bright red star **Aldebaran** marking the bull's eye.

Whenever Jupiter is visible it's always a great target for backyard telescopes. You'll not only see the four largest moons of Jupiter, but also the giant planet's cloud bands. Jupiter has stripes!

You may be even able to see the four **Galilean moons** of Jupiter with just a good pair of binoculars. If you have trouble pointing your binoculars at Jupiter, try leaning them up against the side of a building or another steady surface. Whatever you use to get that close-up view, watch the moons over several nights as they orbit around their parent planet. If you see fewer than four moons, it might mean that some of them are behind or in front of Jupiter.

Stay out even later for a glimpse of **Mars**, visible in the northeast starting an hour or two after midnight early in the month. As December begins it will rise around 9pm. Look for the Moon passing Mars on the evenings of November 20 and 21.

By the time Mars is up you'll also see the greatest constellation of the winter sky, **Orion the Hunter**. Orion's shoulder is marked with a brilliant red star called **Betelgeuse**.

If you see a red point of light in the sky and you're not sure whether it's Mars or a red star, look to see if it's twinkling. Stars twinkle, and planets generally do not. Is that red dot shining steadily? That's Mars.

Mars will continually brighten and appear in our sky earlier and earlier through January, when Earth will pass Mars in its orbit.

From Dark Skies

Bright outdoor lighting can make it hard to see all but the brightest stars. On a clear night, find a dark spot far away from city lights, give your eyes time to adjust to the dark, and look for even more celestial sights. You can begin by looking for the fainter stars of this season's constellations. **Pegasus the Flying Horse**, **Andromeda the Princess**, and the three constellations of the Summer Triangle all become easier to explore.

Look closely for the star that marks the head of Cygnus the Swan, an unremarkable-looking white star called **Albireo**. A small telescope reveals that there are really two stars there, appearing very close to each other. Not only that, but the two stars are different colors, one blue and one yellow!

Early autumn evenings are great for spotting the **Milky Way** coursing from the southwestern horizon through the Summer Triangle and on towards Cassiopeia in the northeast. This hazy band of light is the bulk of our disc-shaped galaxy, as we see it from within.

Near Andromeda, look for **M-31**, the **Andromeda Galaxy**. This massive spiral galaxy is the most distant object visible to the unaided eye, but to find it it requires crisp, dark skies and a little patience. Binoculars or a small telescope can improve the view, but don't expect to see more than a faint, fuzzy, oval blob. If you don't feel impressed, just remind yourself you're looking at the collected light of possibly one trillion stars, all at a distance of 2 million light years away. Now that's impressive!

Early Morning

As the Earth orbits the Sun throughout the year, the constellations rise and set just a little bit earlier every day. You won't see much difference from night to night, but you will over the course of weeks or months. What we see in today's pre-dawn sky is a preview of the early evening sky in later months. Go out before dawn this month for a look ahead at the early winter night sky.

Remember how the Big Dipper was too low to easily find in the early evening? Now it's high in the northeast. Can you find Cassiopeia?

In the hours before dawn, Saturn has set, Jupiter is high in the west, and Mars is nearly directly overhead. Meanwhile, Pegasus and Andromeda are beginning to set in the west. Winter constellations Orion the Hunter and Taurus the Bull are high in the south. Rising in the east is **Leo the Lion**, a reminder that spring is on the way.

Before you set your alarm for the wee hours of the morning, consider planning out your observing. Desktop planetarium software like the free, open-source Stellarium (stellarium.org) can show you more precisely where night sky objects will be on any date and time, and help you plan ahead.

Leonid Meteor Shower

The 'shooting stars' of the annual **Leonid Meteor Shower** peak on the morning of November 18. The darker the sky you're under, the more meteors you'll see. Unfortunately, a bright Moon will be in the morning sky, washing out all but the brightest meteors.

Find a comfortable spot of open sky. Relax, stargaze and meteor-watch! Bring friends, lawn chairs, and make sure to dress warmly! Most of all, be patient. Even under ideal dark-sky conditions, there may only be 10 or 15 visible meteors per hour. Meteors may appear in any part of the sky, but they will seem to be moving in a direction away from the constellation **Leo the Lion**, which rises in the east around midnight.

Meteors from the Leonid shower consist of debris left behind by Comet Tempel-Tuttle. Every year, Earth passes through this trail of tiny particles. These particles burn up as they fall through our atmosphere, resulting in the distinctive swift streaks of light we call meteors.

This Month in the Sudekum Planetarium

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