

Stars over Sisters

By Ron Thorkildson
Correspondent

The arrival of late summer and early fall brings with it the opportunity to view with the unaided eye a galaxy that lies beyond our own Milky Way.

The great Andromeda Galaxy, so named because it resides in the constellation of Andromeda, is a large spiral galaxy situated only 2.5 million light-years away. It is also referred to as M31, the 31st entry in Charles Messier's catalog of non-stellar objects.

Under extremely dark skies, some sharp-eyed observers have reported seeing M33, a nearby galaxy in Triangulum, and M81, a galaxy in Ursa Major, without optical aid, but the Andromeda Galaxy can be detected under average conditions of transparency, away from the interfering effects of city lights and moonlight.

Galaxies are not distributed uniformly throughout the universe, but are instead found in clumps. Small aggregations of them are called groups, while larger collections are called clusters and superclusters. There are more than 50 galaxies in our local group, the largest of which are the Andromeda Galaxy, the Milky Way Galaxy and the Triangulum Galaxy. The biggest of the three galaxies, by far, is the Andromeda Galaxy, with a

mass about 76 percent greater than our Milky Way.

The Andromeda Galaxy is so large and so near to us that it spans a distance in the sky equal to six full moons, though long exposures with super-sensitive cameras are necessary to image the outer portions of this giant stellar metropolis. Real-time views through a pair of binoculars or a telescope reveal just the central region of the galaxy.

Current observational data indicates that groups and clusters of galaxies are moving away from each other due to the expansion of the universe, but that individual galaxies within these aggregations may actually be approaching each other. Such is the case with the Andromeda Galaxy and our own Milky Way Galaxy. Astronomers estimate the two galaxies will collide in another three to four billion years, eventually merging to form an even larger single galaxy.

At the summer solstice last June 21, the sun stood 69 degrees above the southern horizon here in Sisters. Since that time the sun has progressively drifted farther to the south. At 1:22 a.m. PDT on September 23, the sun will lie on the celestial equator (autumnal equinox),

marking the first day of fall for all those who live in the northern hemisphere.

At about 1 p.m. PDT on that day, the sun will be almost 46 degrees above the southern horizon as it continues to sink lower in the sky over the next three months.

On the evening of September 27 most of the country will be treated to a total lunar eclipse. By the time the moon rises in the east at 6:51 p.m. PDT, the earth's shadow will have already taken a big bite out of the full moon. Mid-eclipse occurs at 7:47 p.m. Though fully enveloped by the earth's shadow at this time, the moon will not completely disappear from view, but instead should give off a dull, orangish glow. Totality ends at 8:23 p.m.

Of the five naked-eye planets, three of them have migrated to the morning sky. Venus and Mars reside in the constellation of Cancer during the first half of September, but join Jupiter in Leo later in the month. Venus will greatly outshine both Jupiter and Mars, attaining its maximum brilliance of the year on September 21. Mars will lie 0.8 degrees due north of Regulus, Leo's brightest star, on September 24.

Mercury lies low on

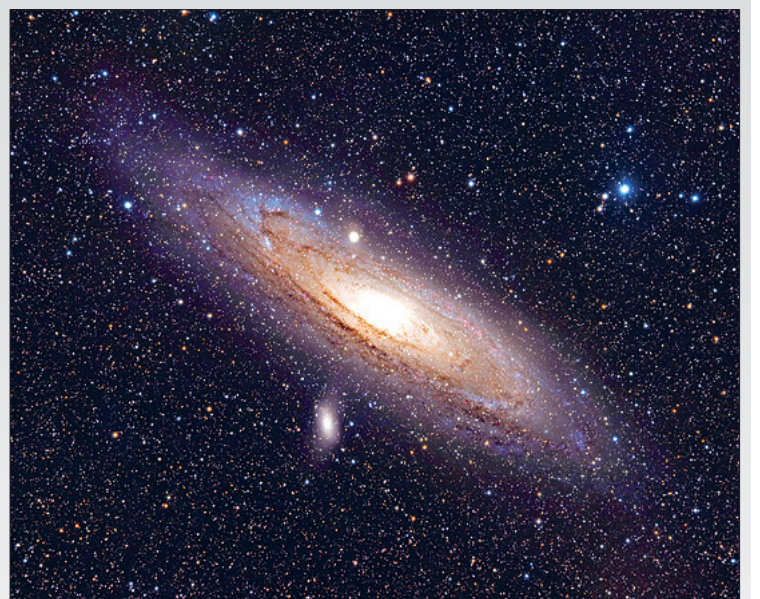


PHOTO BY ADAM EVANS

The Andromeda Galaxy can be seen with the unaided eye.

the western horizon during the first half of the month. Although the swiftly moving planet will be a full 27 degrees from the sun, it will appear just three degrees above the horizon half an hour after sunset. This is because the ecliptic makes a shallow angle with the western horizon during the autumn season.

Located in Libra, Saturn is still putting on quite a show. It is about 20 degrees above the southwestern horizon at nightfall. Its ring system is currently inclined 24 degrees to our line of sight, making it and Saturn's largest moon Titan, an easy target

in almost any telescope.

The month begins with a fading moon, reaching last quarter on September 5. It goes dark on September 12, waxing to first quarter on September 21. The full Harvest Moon will shine brightly on September 27, interrupted only briefly by the aforementioned total lunar eclipse.

To learn more about viewing the night sky, join the Sisters Astronomy Club on Saturday evening, September 19, for a star watch at the Sisters Park & Recreation District building. A pre-star-watch presentation begins at 7:30 p.m.

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