

Courtesy of Sky & Telescope

Venus Skirts the Pleiades

The Seven Sisters welcome a brilliant visitor.

The brightest planet and the best-known naked-eye star cluster join forces on the evening of April 3rd for a spectacular conjunction visible just about everywhere. That evening, for observers in North America, Venus tiptoes through the outskirts of the Pleiades and passes only $\frac{1}{4}^\circ$ south of the cluster's brightest star, 3rd-magnitude Alcyone. From other locales farther east, the planet nudges within 11' of Merope. If this very close conjunction feels familiar, it should. A nearly identical one took place on April 3, 2012, and the next will happen on April 3, 2028.

Conjunctions of the cluster and planet aren't unusual — in fact they happen annually — with Venus passing near but rarely *through* the Pleiades. However, every eight years nearly to the day, Venus busts down the door and strolls right in. What strange clockwork is behind this every-eight-year pattern?



Venus most recently gleamed within the Pleiades star cluster (M45) on April 3, 2012. This 13-second exposure (at ISO 200) was captured with a 92-mm refractor (working at f/4.5) and a Canon EOS 7D DSLR camera. A pair of wires taped in front of the lens produced the diffraction spikes.

Over many millions of years, the regular and repeated gravitational interactions between Venus and Earth have caused their orbits to achieve what astronomers call a *near resonance*. For every eight Earth years, Venus circles the Sun almost exactly 13 times. This 8:13 ratio means that Earth and Venus return to nearly the same positions in their orbits at eight-year intervals. Venus then repeats its trek across the evening sky, which always includes a special visit to the Pleiades.

Because neither planet's orbit is a perfect circle, the resonance is imprecise. In addition, Venus's orbit is inclined 3.4° to the plane of the ecliptic. These two factors combine to ensure that each Pleiades passage is similar yet unique.

Finding Venus on April 3rd will be simple — look halfway up the

◀ In Greek mythology, the Pleiades represent the seven daughters of Atlas and Pleione.

western sky, starting about half an hour after sunset. Only 10 days past greatest eastern elongation (which occurred on March 24th), the planet will positively dazzle at magnitude -4.6 . You may even notice a few individual Pleiades stars poking out next to Venus as the sky darkens. But the best way to encompass the unfolding drama of laserlike Venus and its temporary retinue of blue-white diamonds is with binoculars or a small, low-power telescope, both of which offer wide fields of view. If ever there were an event for humble equipment, this is it.

Begin observing early and note Venus's position in relation to the brightest cluster stars. After an hour or two, you should be able to detect the planet's eastward motion. Clipping along at 127,000 km/h (79,000 mph), Venus traverses the Moon's diameter in about 15 hours.

Clouds often have a way of ruining a good conjunction. Not to worry. Venus will shine within 2° of the Pleiades' bright, dipper-like figure from March 31st through April 6th, enough time to appreciate the sweet sight and get a photo. On March 28th, the four-day-old waxing crescent photobombs the picturesque duo. Have your camera ready!