

Dear Beakman,  
 If you traveled as fast as the sun, how fast would you go?  
 Laura Hathorn  
 Spokane, Washington

Beakman or Jax,  
 P.O. Box 30177  
 Kansas City, MO 64112  
 Send your question & address.

Dear Laura,  
 There's no *if* about it. You already are traveling as fast as the sun. That's because where the sun goes, the Earth goes with it. The sun is on a long, strange trip orbiting the center of our galaxy, the Milky Way. The trip takes 250 million years (for 1 orbit) and is really fast – 480,000 miles per hour. But that's just 1 of the speeds we're traveling.

*Beakman*

Beakman Place

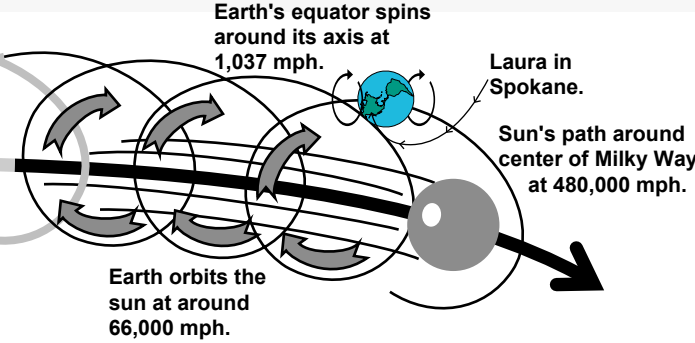
This is the galaxy named M31. Astronomers think the galaxy we're inside of looks a lot like M31. Our galaxy, the Milky Way, is 80,000 light-years wide. A light-year is *NOT* a measure of time. Instead, it's a distance: how far light would travel through a vacuum in 1 Earth year. One light-year is 5,878,000,000,000 miles. 80,000 light-years is 470,240,000,000,000 miles.

M31 is in the constellation Andromeda (an-DROM-e-da) and is about 2,200,000 light-years from Earth.

### everything's ALWAYS moving It's All Relative

Your speed depends on what you are comparing your speed against. Your speed relative to the floor is 0 miles per hour when you're standing still. But since you're on the Earth, you have other speeds: your speed relative to the axis of the Earth, your speed relative to the center of the sun, and your speed relative to the center of our galaxy, the Milky Way.

Here's a way to imagine the route we take through the universe. Imagine you're climbing a spiral staircase, while you're spinning around and around. That's just about what's happening to all of us on Earth right now!



P.S. from Jax: There are about 100,000,000,000 stars in the Milky Way. Now get ready for this: There are billions of galaxies! And they too are all moving all the time!