**Problem 1.** If you were to travel to a star 135 light-years from Earth at a speed of 2.80$×10^{8}m/s$ what would you measure this distance to be?

**Problem 2.** A certain star is 18.6 light-years away. How long would it take a spacecraft traveling 0.950*c* to reach that star from Earth, as measured by observers: (*a*) on Earth, (*b*) on the spacecraft? (*c*) What is the distance traveled according to observers on the spacecraft? (*d*) What will the spacecraft occupants compute their speed to be from the results of (*b*) and (*c*)?

 **Problem 3.** Suppose a news report stated that starship *Enterprise* had just returned from a 5-year voyage while traveling at 0.74*c*. (*a*) If the report meant 5.0 years of *Earth time*, how much time elapsed on the ship? (*b*) If the report meant 5.0 years of *ship time*, how much time passed on Earth?

**Problem 4.** A spaceship passes you at a speed of 0.850*c*. You measure its length to be 38.2 m. How long would it be when at rest?

**Problem 5.**  An observer on Earth sees an alien vessel approach at a speed of 0.60*c*. The *Enterprise* comes to the rescue (Fig. below), overtaking the aliens while moving directly toward Earth at a speed of 0.90*c* relative to Earth. What is the relative speed of one vessel as seen by the other?

****