

Chapter 27: Stars and Galaxies

Small-Scale Investigation: Parallax

Chapter
30.1

You can demonstrate the principle of parallax by viewing an object from several locations.

Materials

5 paper or plastic plates, about 15 cm in diameter (1 ~~blue~~ ^{Blue}; 4 ~~red~~ ^{Red}); thread; scissors; masking tape; meter stick; ladder

Procedure

1. Cut five 1-m lengths of thread. Tape one end of each piece of thread to the edge of a paper plate.
2. Tape the free end of each piece of thread to the ceiling at various vertical heights about 30 cm apart in a random pattern with the red plate in front.
3. Stand directly in front of and directly facing the red plate at a distance of several meters.
4. Close one eye and sketch the position of the red plate relative to the blue plates in the background.
5. Take several steps back and to the right of your original position. Repeat Step 4.
6. Take several more steps directly back and make another sketch.
7. Repeat Step 6 once again.

Analysis and Conclusions ^{Blue}

1. Compare your drawings. Did the ~~red~~ ^{Blue} plate change position as you viewed it from different locations? Explain your answer.

2. What kind of results would you expect if you continued to repeat Step 6 at greater and greater distances? Explain your answer.

3. If you noted the positions of several stars with a powerful telescope, what would you expect to observe about their positions if you sighted the same stars several months later? Explain.

Transparency Worksheet 45

Parallax

1. Is parallax more pronounced with nearby stars or with distant stars?

2. Why do astronomers use a six-month period to study parallax?

3. Describe a simple method by which you could demonstrate parallax.

4. Could you use parallax to measure the distance to distant galaxies? Explain.

5. What distance must astronomers know before using parallax to determine the distance to a star?
