

Expt. #3 Speed of Light

Overview: Students will be introduced to an oscilloscope's display and test their reaction times to stimulus. Students will then measure the speed of light by using a light source, two photodetectors, and an oscilloscope. This experiment gives the students a hands-on experiment that not only allows them to measure the speed of light, but also reinforces their understanding of the relationships between velocity, distance, and time.

- Students will test their reaction times by having one student press a button and the other pressing their own button immediately as they see it. Students will use the oscilloscope display to find their reaction speeds.
- A laser will be focused on a photodetector by being projected into two mirrors and back beside the source. The source and returned values are shown on an oscilloscope with a noticeable time difference between them.
- The mirrors are then pushed farther back, the distance measured, as well as the time difference. By using the values from the original and the second measurements, the speed of light can be determined (roughly).
- If time permits, the laser will be projected through a tube of water to show the speed of light is based on the medium through which it travels.

