

Pre-Lab -Report of Physics 331

There is a pre-lab-report for each lab, except speed of light. You must submit at least 5 pre-lab-reports. The pre-lab-report will be limited within 1 page. General questions you need to address are:

- 1. What is the general purpose of lab? (2 points)*
- 2. What are the quantities you will directly measure and how to measure? (5 points)*
- 3. What are the quantities you will derive from the measurement and what are formulas for derivation? (3 points)*

Example of Pre-Lab-Report

Speed of Light

Date: Month/Date/Year; Name: XX XXX

- 1. What is the general purpose of lab? (2 points)*

The purpose of this experiment is to measure the speed of light using the time-of-flight method.

- 2. What are the quantities you will directly measure and how to measure? (5 points)*

In order to get the speed of light, we need to know two quantities, L and t. Here, L is the distance that the light will travel and t is the time for light to travel. The light is emitted by a pulsed laser and then bounced back by a mirror to the detector. L can be measured by a tape measure from pulsed laser ->mirror->detector.

t is measured by an oscilloscope. When laser pulse is emitted by the pulsed laser, there is a trigger signal sent to the oscilloscope simultaneously. The returned pulse will be picked up by the detector and displayed by the oscilloscope. We can read out the time t directly from the oscilloscope.

- 3. What are the quantities you will derive from the measurement and what are formulas for derivation? (3 points)*

We will derive the light speed c . $c=L/t$. For a good measurement, we will measure a few pairs of $\{L,t\}$ and the slope will be the speed of light.