

Experiment Design: Converging Mirror

1 Goal

- Measure the focal length of the curved mirror
- Verify the Lens Equation for both real and virtual images (you may need to use a lens to find the virtual image).

Try to go beyond the obvious method and create ways you can achieve as high precision and accuracy as possible.

2 Equipment

- Converging mirrors
- Converging lens
- Light source in Optical System Package
- Lasers
- Rulers and measuring tapes

3 Setup

Describe your setup in details, preferably with diagrams.

4 Procedure

Describe (step by step, not in one big paragraph) how you collect the data. Specifically what physical quantities do you measure, and how? How many trials are there? You need to explicitly explain how you measure the focal length and back up your method with a theoretical explanation.

5 Data

Typically you organize all your data in the form of a table. Design a table based on the data your are planning to measure.

6 Analysis

Show your calculations in your verification of the lens equation. What experimental quantities are you comparing to the theoretical quantities? What is the percentage error? What additional ideas can you learn from the experiment?

7 Experimental Errors

Describe any possible experimental errors.

8 Improvements

If you have more sophisticated equipment or more time, how would you improve the experiment? Justify your answer by explaining how your suggestion could improve the precision.