

General Physics Laboratory I

Week 03: Report Guideline

Experiment 3. Conservation of Momentum and Impulse

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General Report Guideline

1. You can use either Korean or English.
2. I suggest you to write a report with a language with which you can write rigorously. (There is no need to be shy about writing in Korean)
3. However, do not mix two languages. (ex: newton's law는 다음과 같이... → X)
4. No more than 5 pages. The font size must be greater than 9 pts.
5. Only *.doc, *.docx, *.hwp extensions are allowed.
6. Do not make a cover page.
- 7. Do not repeat the details in the manual.**
8. Make the report simple but it should contain rigorous answers. / **You should merge different data in one plot.**
- 9. If you suggest the origin of the error, please show your quantitative justification. (No quantitative explanation → No points)**
10. You have to cite every source of theory and information beyond the manual.
11. Clarify a theme and a purpose of each part.

3. Conservation of Momentum and Impulse

Conservation of Momentum Impulse

1. Abstract (5pts, < 300 words)
2. Introduction (10pts): Show your conceptual understanding about the subject.
3. Theoretical Background (10pts)
 - ✓ (5pts) Explain about a conservation of momentum and state the experimental situation as an equation.
 - ✓ (5pts) Explain about an impulse and state the experimental situation as an equation.
4. Methods (5pts)
5. Results (20pts)
 - ✓ (5pts) **Plot v-t graphs** for each measurement, and **find the velocities** of two carts before and after collision. (explosion, inelastic, elastic)
 - ✓ (5pts) **Calculate the total momentums and total kinetic energies** before and after collision, and **find the difference** between them.
 - ✓ (5pts) **Plot v-t and F-t graph** for each trials(bumpers).
 - ✓ (5pts) **Find the initial velocity & momentum, the final velocity & momentum, and the impulse.**
 - ✓ Each graph should include **the axis labels**.
6. Discussion (30pts)
 - ✓ (5pts) Was total momentum and total energy of the system conserved for all types of collisions?
 - ✓ (5pts) If it is not true, what is a reason? (5pts) Describe your theories quantitatively.
 - ✓ (10pts) Discuss how the collision process for three kinds of bumper are different. (5pts) Discuss about the kinetic energy conservation.
 - ✓ (Additional) Discuss about your own question and analysis. ex) How much is the kinetic friction force? Does it explain Exp 2 data?
7. Conclusion (10pts): Summarize the report effectively.
8. References (10pts)