

## Homework Assignment #2, Understanding a Paper

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For this assignment, chose one of the following seminal physics papers:

- R.V. Pound and G.A. Rebka, Jr., “Apparent Weight of Photons,” *Phys. Rev. Lett.* **4**, 337 (1960). [Supplementary information](#).
- R.A. Alpher, H. Bethe, and G. Gamow, “The Origin of Chemical Elements,” *Phys. Rev.* **73**, 803 (1948). [Supplementary information](#).
- F. Reines and C.L. Cowan, Jr., “Detection of the Free Neutrino,” *Phys. Rev.* **92**, 830 (1953). [Supplementary information](#).
- I. Giaever, “Electron Tunneling between Two Superconductors,” *Phys. Rev. Lett.* **5**, 464 (1960). [Supplementary information](#).

The supplementary information for each paper is provided to help you understand the content of the paper, but do the homework exercises on the paper itself.

The purpose of this assignment is to practice active reading techniques that will help you to *understand* physics papers. The assignment consists of multiple parts—be sure to do them all!

1. Select one of the papers (not the supplementary material).
2. Read the first paragraph of the paper, and then, without looking at the rest of the paper, write a several-sentence description of what you think the rest of the paper will say.
3. Look at the figures and tables. Write a new several-sentence description of what you think the main points of the paper will be.
4. Read the first sentence of each paragraph of the paper. (Don’t read anything else, just the first sentence of each paragraph.) Paraphrase the sentences in your own words and write them down. **Highlight** any sentences that you don’t understand and make a note of them for this item.
5. Look at your sentences. Can you see a logical progression of ideas? Summarize the logical argument in a short paragraph.
6. Go back and look at the paper. Pick a random paragraph and answer the following questions about it:
  - a. What is the topic sentence of this paragraph? (contains the main idea)
  - b. What sentence(s) explain the topic sentence?
  - c. What sentence(s) add supporting detail or evidence?
  - d. Identify any summary or transitional sentences.
7. Go back to any of your outline sentences that you highlighted. Study the corresponding paragraph in the paper. Does it answer your questions? If you still don’t understand the sentence you highlighted, write a strategy you could use to find out what it means.
8. Read the conclusions section of the paper. Does it adequately recap the main ideas presented in the paper?
9. Comment on the overall organization of the paper. Were the main points clearly identified and supported by evidence? Could you follow the authors’ logical argument?

Email your completed assignment to [phys496@physics.illinois.edu](mailto:phys496@physics.illinois.edu) by **Friday, September 20, 9 p.m.** Assignments submitted after the deadline will have points deducted. This assignment is not rewrite eligible.

Total—50 points