

Homework Assignment #5, Explaining Physics Concepts to Non-Scientists—Draft

The purpose of this assignment is to give you practice in explaining scientific research in a way that is clear, concise, and meaningful for non-experts. You'll read a recent paper by one of our faculty and then write a news story about one aspect of it. For this assignment, your audience is non-scientists who have a general interest in physics and may have taken introductory physics in college but have no specific knowledge of physics research. Your job is to pick one aspect of work described in the paper (the method, the instrument, the experimental technique, the theory behind the work) and explain it in terms that an ordinary person could understand. DO NOT simply regurgitate the whole paper. This assignment consists of several parts (enumerated below). Be sure to complete all parts!

First select one of the papers on the next page. You should choose a paper where you have a solid grasp of the physics; the point of this assignment is to communicate that understanding to a general audience, not necessarily to learn some new physics. Read the [great advice](#) from Professor Mason before you start writing, and look at [UI News Bureau stories](#) for examples of this style of science writing.

Each of the papers on the list has been written recently by a member of our faculty. We recommend that you talk to someone in the research group for additional insight about the work being reported in the paper. (Look at the author list and the affiliations to see who might be here in the department and then use the [campus directory](#) to find contact information for that person. The name of the supervising faculty member is underlined in the citation for each paper.)

1. Based on the September 18 lectures, write a five-sentence synopsis and full-sentence outline for your story. (The synopsis and outline are for the story that you're going to write, **not** the paper you read.) Remember that each sentence in your outline will equal about one paragraph in your story, and you are limited to three pages total in the final paper, including and figures and references. Thus, you should have no more than six to nine sentences in your outline.
2. Find at least two figures that illustrate your story. You might get these figures from the paper itself, from other sources, or even ones you draw yourself to help the reader visualize and understand your story. If you use someone else's figure, be sure to credit the source. Insert the figures in your document and provide a brief caption for each.
3. Identify four sources of supplemental information on the Internet that would help a reader understand your story or could provide supplemental information. Be sure these sources are written at an appropriate level for your target audience. Provide the URLs for these sources.

You will receive feedback on this assignment to help you strengthen your final paper for Homework #6.

Due: **Friday, October 2, 9:00 p.m.** Email copies to phys496@physics.illinois.edu. Assignments submitted after the deadline will have points deducted. This assignment is not eligible for rewrite points.

Total—50 points

List of Papers:

M. Shankla and A. Aksimentiev, “Conformational transitions and stop-and-go nanopore transport of single-stranded DNA on charged graphene,” *Nature Communications* **5**, 5171 (2014).

K. Yagi and N. Yunes, “I-Love-Q: Unexpected Universal Relations for Neutron Stars and Quark Stars,” *Science* **341**, 365–368 (2013).

L.K. Shalm, et al., “Strong Loophole-Free Test of Local Realism,” *Phys. Rev. Lett.* **115**, 250402 (2015). (Professor Kwiat is a co-author of this paper, which also has a Viewpoint here: <https://physics.aps.org/articles/v8/123>.)

Y. Zhang, Y. Kim, M.J. Gilbert, and N. Mason, “Electronic transport in a two-dimensional superlattice engineered via self-assembled nanostructures,” *npj 2D Mater Appl* **2**, 31 (2018).