

Writing assignment - PH315 Physics of Contemporary Challenges

Due on Monday March 11, 2019 (12 noon). Upload your assignment via Canvas.

Option 2: Science Writing for Political Advocacy

You are an intern working for the American Association for the Advancement of Science (AAAS). Your group at AAAS writes science and technology reports for politicians at the local, state or federal level (<https://www.aaas.org/focus-areas/advocacy-evidence>). The reports use science-based arguments to influence public policy. Your report will discuss the physics and implications (costs and benefits) of a promising idea or new technology. Some possible examples include fusion, quantum cryptography, direct air capture of CO₂, manned missions to Mars, building a Dyson sphere, energy-efficient building design, generating electricity from wave power etc. These AAAS reports use numbers to support their main points. To make the information meaningful, numbers are put in context using sense making and comparisons to familiar quantities. Remember that you are writing to an audience of decision makers. Think about what decision you are advocating, and what information is needed for a fair argument. You should assume that your audience is mathematically literate and familiar with interpreting graphs. The most effective reports are clear, concise and readable.

The AAAS editing department will type set your text and figures, therefore, your submission will be in manuscript format. The report should be between 1400 - 2000 words.

Manuscript format: 12 point Times or 11 point Arial. Line spacing 1.5x. Margins 1.25". Figures are presented on separate pages. Figure pages are located directly after the page of text where the figure is first mentioned. Each figure has a caption underneath the figure. The first sentence of the caption is the figure title.

Required structure of the report

- **Introduction:** Explains why the topic is relevant (motivation) and what the reader will get from reading your article.
- **Background:** Answers any questions the reader might have about the background and context of the topic. Explains the key jargon (if you need to use jargon).
- **Analysis**
 - One or more physics equations (mathematical relationship between quantifiable physical variables). Accompanying text should define the variables in the equation, and explain the origin and/or meaning of the mathematical relationship.
 - One or more "original" calculations (using numbers that you think are relevant). You are strongly encouraged to present calculations in the form of a quantitative sketch. This will give the reader clear/concise insight into the overall calculation. Aim for a final answer that is correct within $\pm 30\%$.
- **Conclusion**
 - Relates back to points made in the introduction.
 - Interprets what your analysis means for the reader
 - Calls out any challenges that remain unsolved

Other Criteria

- One or more schematics ([conceptual diagrams](#)), created by you, that illustrate a physics idea
- One or more graphs, created by you, that shows the relationship between two physical variables. I'm looking for graphs that help the reader visualize important feature(s) of the physical relationship. Ideally the graph will show that you have "a taste for interesting physics".

As long as you have 1 original graph and 1 original conceptual diagram, you are welcome to include additional figures that are reproduced from other sources (always cite the source).