

Technical writing: Titles and Abstracts

The title should be informative but not too wordy. “Microwave Wavelengths” doesn’t convey enough information; “Measurement of the Wavelength of a Microwave Transmitter by Means of a Michelson Interferometer Consisting of Two Metal Mirrors and a Masonite Beam Splitter” is too wordy.

The abstract is a brief summary (4-5 sentences) of your work. There is usually a length limit on abstracts; we will set a length limit of 600 characters for this assignment. The abstract should state the significant items, including what you did and how you did it, the results (giving any numerical results, if applicable) and the main conclusions. Because abstracts are sometimes published without the accompanying paper, this section should be able to stand on its own (no references to figures, etc., that aren’t in the abstract). The main purposes of the abstract are to help others decide whether to read the rest of your paper, and to serve as a summary of the main points of your paper. You might often choose to write this section last, after the rest of the paper is complete.

Some sample titles and abstracts:

Direct Measurement of the L/K Ratio in ${}^7\text{Be}$ Electron Capture

The ratio of L- to K-shell electron captures in light nuclei is particularly sensitive to electron overlap and exchange effects. Calculations of these effects in ${}^7\text{Be}$ disagree by more than 20%. We report a measurement of the L/K ratio in ${}^7\text{Be}$, using a cryogenic microcalorimeter which clearly separates L- and K-shell captures. The obtained L/K ratio of 0.040 ± 0.006 is less than half that of existing predictions for free ${}^7\text{Be}$. The discrepancy is likely due to in-medium effects distorting the L-shell electron orbitals.

(reference: Physical Review Letters, 88, 012501 (2002))

Search for Anomalously Heavy Isotopes of Helium in the Earth’s Atmosphere

Our knowledge of the possible existence in nature of stable exotic particles depends solely upon experimental observation. Using a sensitive laser spectroscopy technique, we searched for a doubly charged particle accompanied by two electrons as an anomalously heavy isotope of helium in the Earth’s atmosphere. The concentration of noble-gas-like atoms in the atmosphere and the subsequent very large depletion of the light ${}^3,4\text{He}$ isotopes allow stringent upper limits to be set on the abundance: 10^{-12} – 10^{-17} per atom in the solar system over the mass range of 20–10 000 amu.

(Phys. Rev. Lett. 92, 022501 (2004))

Assignment:

By class on Thursday, Feb. 12: Bring a hard copy of a draft of a title and an abstract for one of the first three experiments. It should be word-processed, double-spaced, and written in good standard English.