


Writing Effective Titles

PHYSICAL REVIEW LETTERS
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The title is a key element of any form of scientific communications.

The quality and effectiveness of your title is critical in attracting a reader's attention and in getting appropriate "hits" in electronic databases.

Here, we focus on how to write a title for maximum effect.



Busy scientists employ three criteria when deciding if they will invest their time in reading a paper or attending a talk:

1. The information conveyed in the title.
2. The reputation of the author—if you're a young scientist without a reputation yet, see #1 and #3.
3. The abstract (more about abstracts next...)

The title must accurately and succinctly convey the content of the paper.

Effective titles are *concise*, *descriptive* and *interesting*.

Worst title I have ever seen:

“Towards the Observation of Signal over Background in Future Experiments”

Second-worst title: “Report of the Subgroup on Alternative Methods and New Ideas”

One of the best for a popular-science article (although it's too long):

“Active Galactic Nuclei: Georgia Tech Astrophysicists Use X-ray Fingerprints to Study the Eating Habits of Giant Black Holes”

<http://gtresearchnews.gatech.edu/active-galactic-nuclei/>



The title must accurately and succinctly convey the content of the paper.

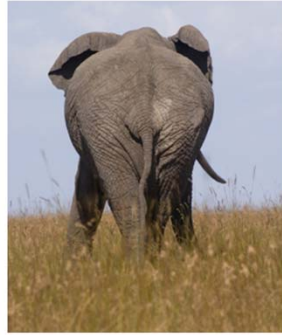
Play fair; don't "trick" people into reading your paper by a misleading title.

Wastes their time.

Ruins your reputation (see point #2 on the previous slide).

**Make it interesting, but not
*too interesting...***

**“Looking from the East at an Elephant Trotting
West: Direct CP Violation in B^0 Decays”**



I am not making this up—<http://arxiv.org/abs/hep-ph/0203157>

Keep titles as short as possible



**Limit titles to <12 words;
<10 is even better.**

Scientists scan down a list of titles in the table of contents in a journal or the latest postings to one of the electronic archives; you have <1 sec to capture their attention.

Limit titles to <12 words; <10 is even better. That's about the span of words the human eye can recognize and process as it is scanning down a list.

Important papers don't have to have long, "impressive" titles:

"Theory of superconductivity," J. Bardeen, L. Cooper, and J.R. Schrieffer, *Phys. Rev.* **108**, 1175 (1957). Three words--cited 2963 times.


"Localized magnetic states in metals," P.W. Anderson, *Phys. Rev.* **124**, 41-53 (1961). Five words--cited 1878 times.

"Ground state of the electron gas by a stochastic method," D.M. Ceperley and B.J. Alder, *Phys. Rev. Lett.* **45**, 566 (1980). Ten words--cited 4046 times.

"Dynamics of the dissipative two-state system," A.J. Leggett et al., *Rev. Mod. Phys.* **59**, 1 (1987). Seven words—cited 1337 times.

"Spin echoes," E.L. Hahn, *Phys. Rev.* **80**, 580 (1950). Two words--cited 1118 times.

Try an experiment. Go to <http://xxx.lanl.gov/list/physics/recent>, and see how much time you spend looking at the titles of each article as you read down the list.



No introductory fluff

~~Observation of~~ resonance condensation of fermionic atom pairs

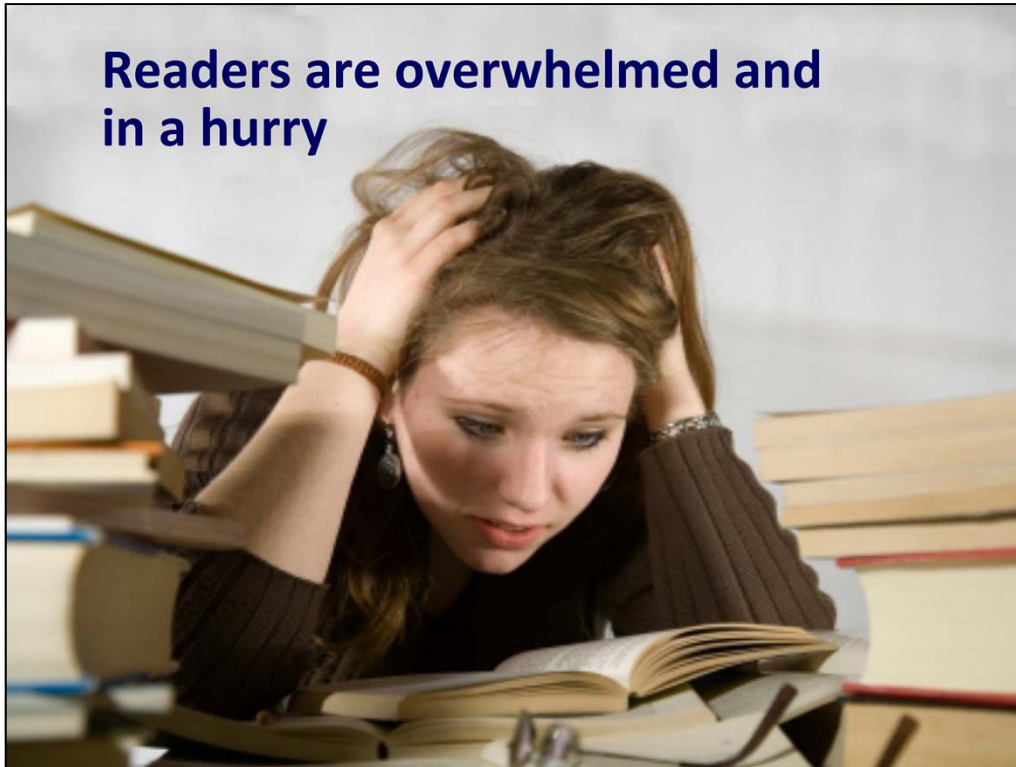
~~Capabilities of~~ parallel analyses of the structure of materials by field ion and scanning probe microscopy

~~On the~~ Electron-Electron Interactions in Two Dimensions

Good advice from AIP: “Words that do not carry information, such as “The...,” “A...,” “On...,” “Investigation of...,” “Study of...” should be omitted from titles.”

The *Phys. Rev.* journals also proscribe

“More about...”, “...revisited”, and dangling participles (“...using...”)



Make it easy for them to understand the subject of your paper immediately.

To capture a busy reader's attention, put key words first ("front load").

Help them out; put keywords first



Original Title: Application of the time-dependent local density approximation to conjugated molecules

IMPROVED Title: *Time-dependent local density approximation for conjugated molecules*

Original Title: A novel approach to estimate the stability of one-dimensional quantum inverse scattering

IMPROVED Title: *New stability estimate for 1D quantum inverse scattering*

Write down key words that define and describe your paper. These are the words that belong in your title.

Front load the key words to attract a busy reader's attention.

A title doesn't have to capture every nuance of every detail of the paper, but it should accurately represent "the big picture."

Examples:

Original Title #1: 11 words, introductory fluff

Improvement #1: 8 words, keywords front loaded

Original Title #2: 13 words, introductory fluff, "a novel approach" will be discussed next...

Improvement #2: 8 words, keywords first

Do not use qualitative words



“precise” “accurate” “important”

Do not use words in the title that make qualitative statements about the work being reported:

“precise,” “accurate”

“important,” “influential”

“innovative,” “unique,” “unprecedented,” “ground-breaking,” “brilliant”

“new”--maybe

Quantitative statements are okay, e.g., “Measurement of the negative muon anomalous magnetic moment to 0.7 ppm,” G.W. Bennett et al., *Phys. Rev. Lett.* **92**, 161802 (2004).

**Do not use the names of people,
places, coined words, equations**



The *Phys. Rev.* journals also proscribe the name of the accelerator or the type of detector used in paper titles (but the high-energy and nucs seem to violate this rule constantly and with impunity—cme).

“people’s names”—unless they are a common adjective, “Fourier transform,” “Green’s function,” “Auger spectroscopy,” “Brillouin limit.” are fine “New Results from the Greene Laboratory at the University of Illinois” is not.

“coined words”—if the word isn’t used outside your own research group, don’t put it in the title; same thing goes for narrow, technical jargon. Exception: “Mottness,” P. Phillips, *Ann. Phys.* **321**, 1634-1650 (2006). **BUT**—he’d written about 10 papers on this topic before publishing “Mottness,” and the editor fought him on it anyway.

“equations”—don’t put anything in a title that cannot be rendered in straight ASCII text.



No unfamiliar acronyms

Original Title: One-dimensional SPH method

IMPROVED Title: *Smoothed-particle hydrodynamics 1D method for gas dynamics applications*

Original Title: Application of CVS filtering to mixing in two-dimensional homogeneous turbulence

IMPROVED Title: *Coherent-vortex-simulation filtering for 2D homogeneous turbulence*

“unfamiliar acronyms”—the AIP Style Guide provides a list of acronyms that are so common they don’t have to be defined at first use; anything else, leave out of the title.

Examples of allowed acronyms: BCS, bcc, cw, EPR, ESR, fcc, ir, NMR, QCD, QED, rf, RNA, uv

Original Title: One-dimensional SPH method

IMPROVED Title: *Smoothed-particle hydrodynamics 1D method for gas dynamics applications*

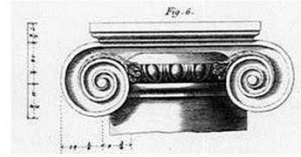
NOTE: Although this title is longer than the original, it avoids the unfamiliar acronym and provides specific information that may be needed by the reader; the original title is probably too generic to be useful.

Original Title: Application of CVS filtering to mixing in two-dimensional homogeneous turbulence

IMPROVED Title*: *Coherent-vortex-simulation filtering for 2D homogeneous turbulence*

**This example may or may not be an “improved” title; it depends on what the author deems is most important and would be of most interest to readers.*

Capitalization: “Title” or “sentence”?



Nuclear Physics B

Five-loop ε expansion for $O(n) \times O(m)$ spin models

Physical Review Letters

Complexity of Small Silicon Self-Interstitial Defects

Physical Review B

Electronic excitations on silver surfaces

Science

Making Nanoscale Materials with Supercritical Fluids

Just look it up...

There's no consistency to the use of capitalization in paper titles—not even among journals published by the same publisher. Just look it up. If you're sure you know, look it up anyway. You will learn humility.

Acta Crystallographica

Crystallography of a new metastable phase in Zr-N alloy

Nuclear Physics B

Five-loop ε expansion for $O(n) \times O(m)$ spin models

Physical Review Letters

Complexity of Small Silicon Self-Interstitial Defects

Physical Review B

Electronic excitations on silver surfaces

Science

Making Nanoscale Materials with Supercritical Fluids