

**Publishing your
paper in a
“prestigious” physics
journal**

Samindranath Mitra
Editor, Physical Review Letters

Career Development Workshop for Women in Physics

Trieste

16 September 2013

Landscape

What one looks for your paper

Dos and don'ts of writing one

The peer review process

Some ancillary stuff

Some take-home exercises

*A subjective,
personal take.*



Balancing your target readership

author
referee

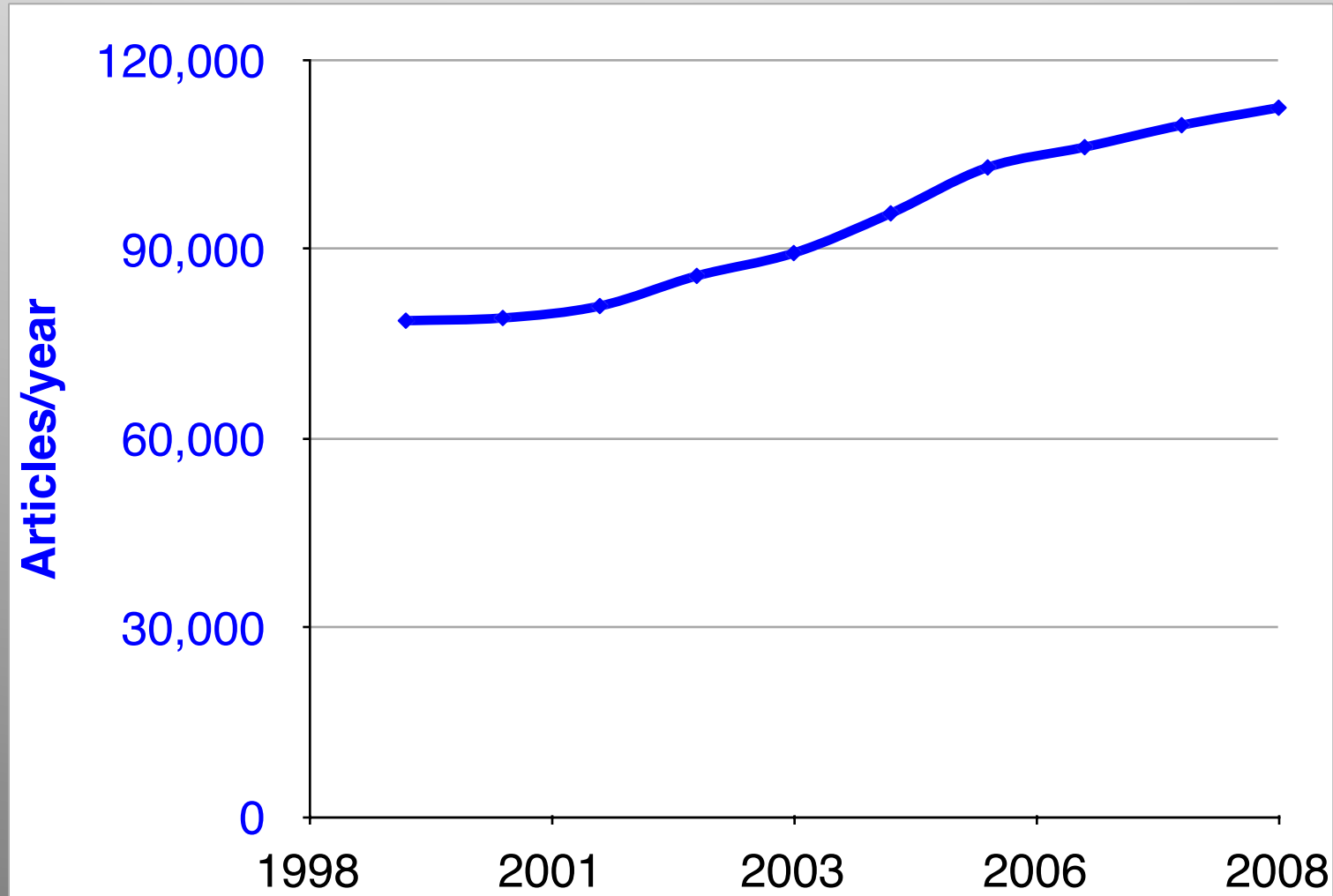
reader

journalist

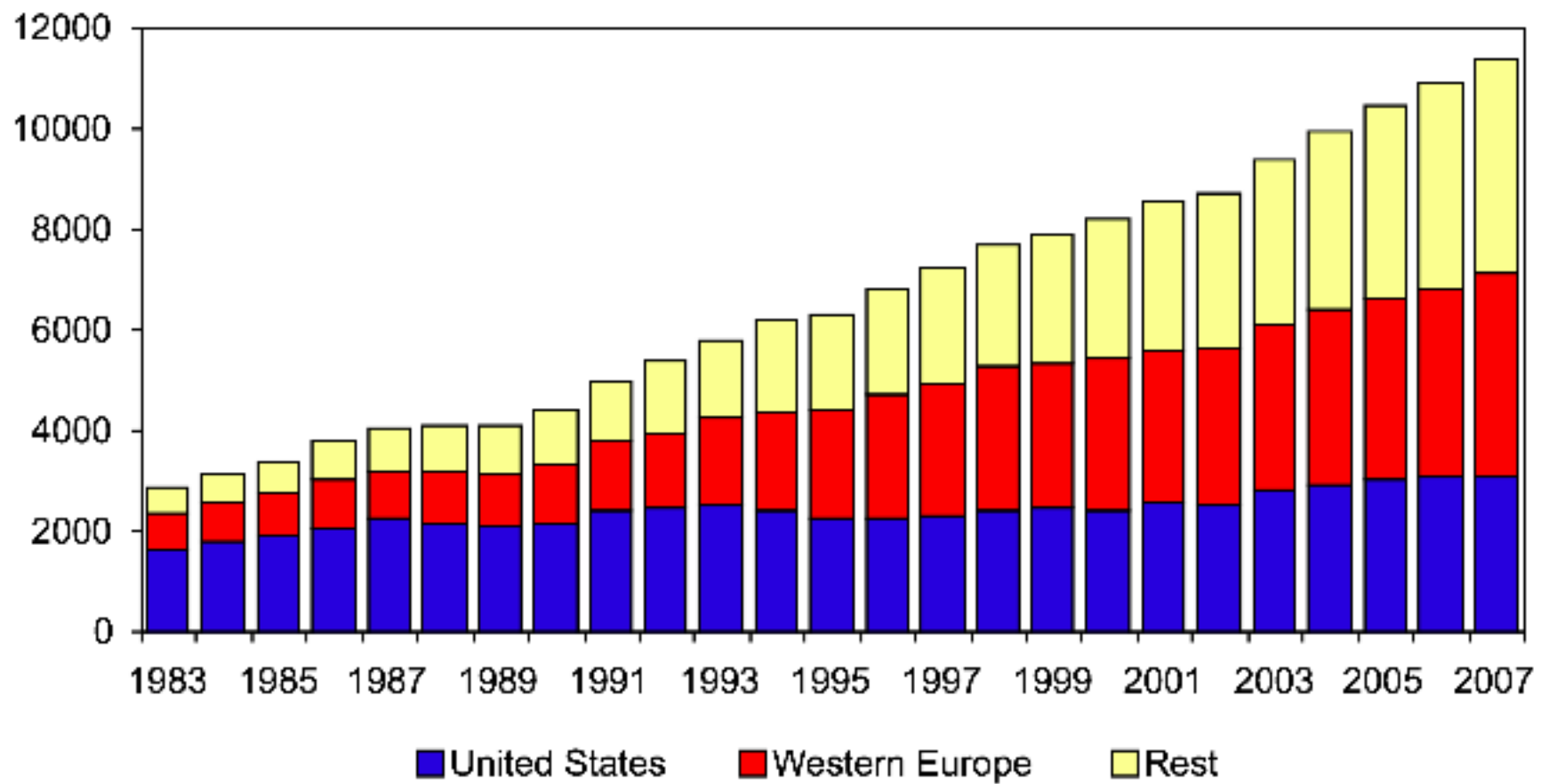
department chair

funding agency

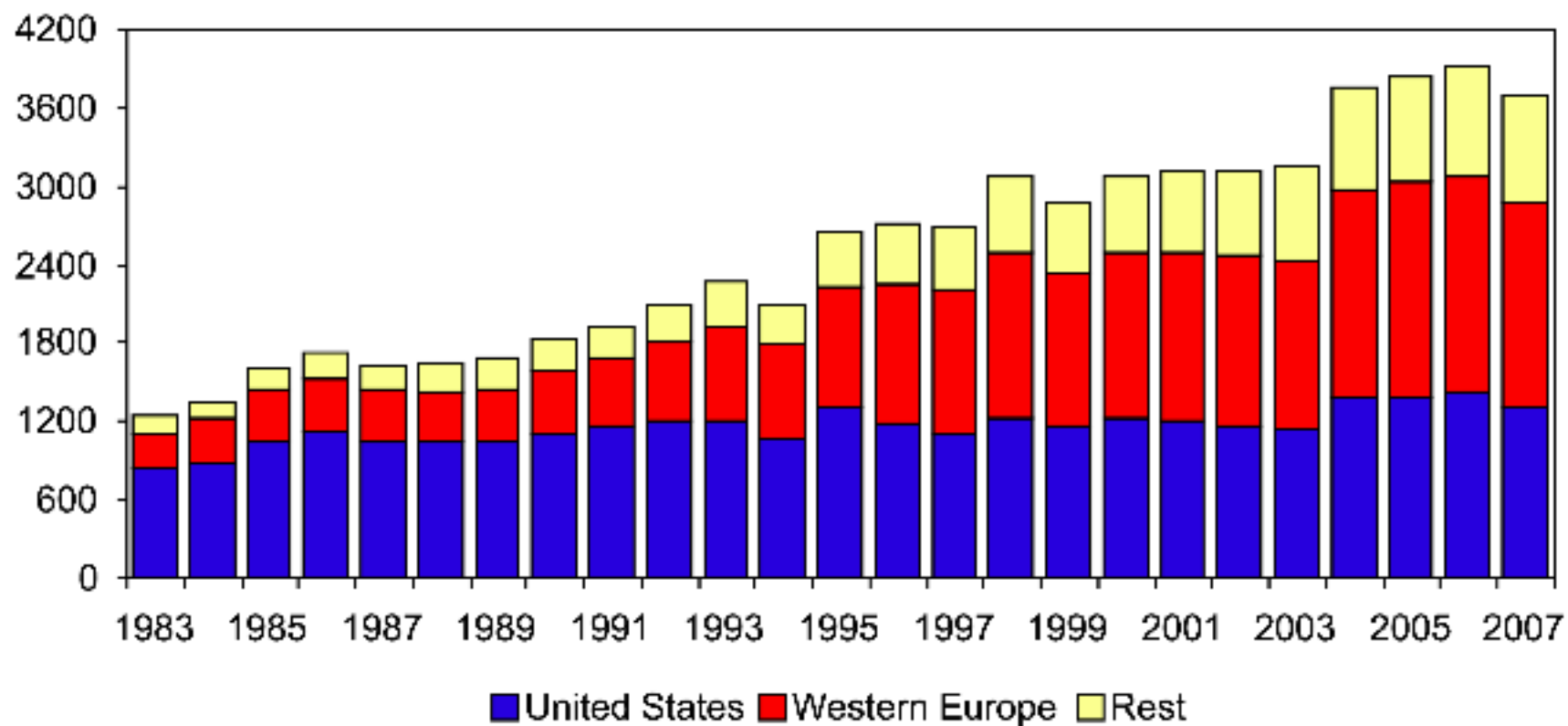
More and more “physics” articles are published each year . . .



Physical Review Letters Submissions 1983 - 2007



Physical Review Letters Published 1983 - 2007



Publishing scientific papers

Software made it easier to *create*

Email to *distribute*

one-to-few

The internet (*arXiv*) to *disseminate*

one-to-all



Your paper 's "responsibilities"

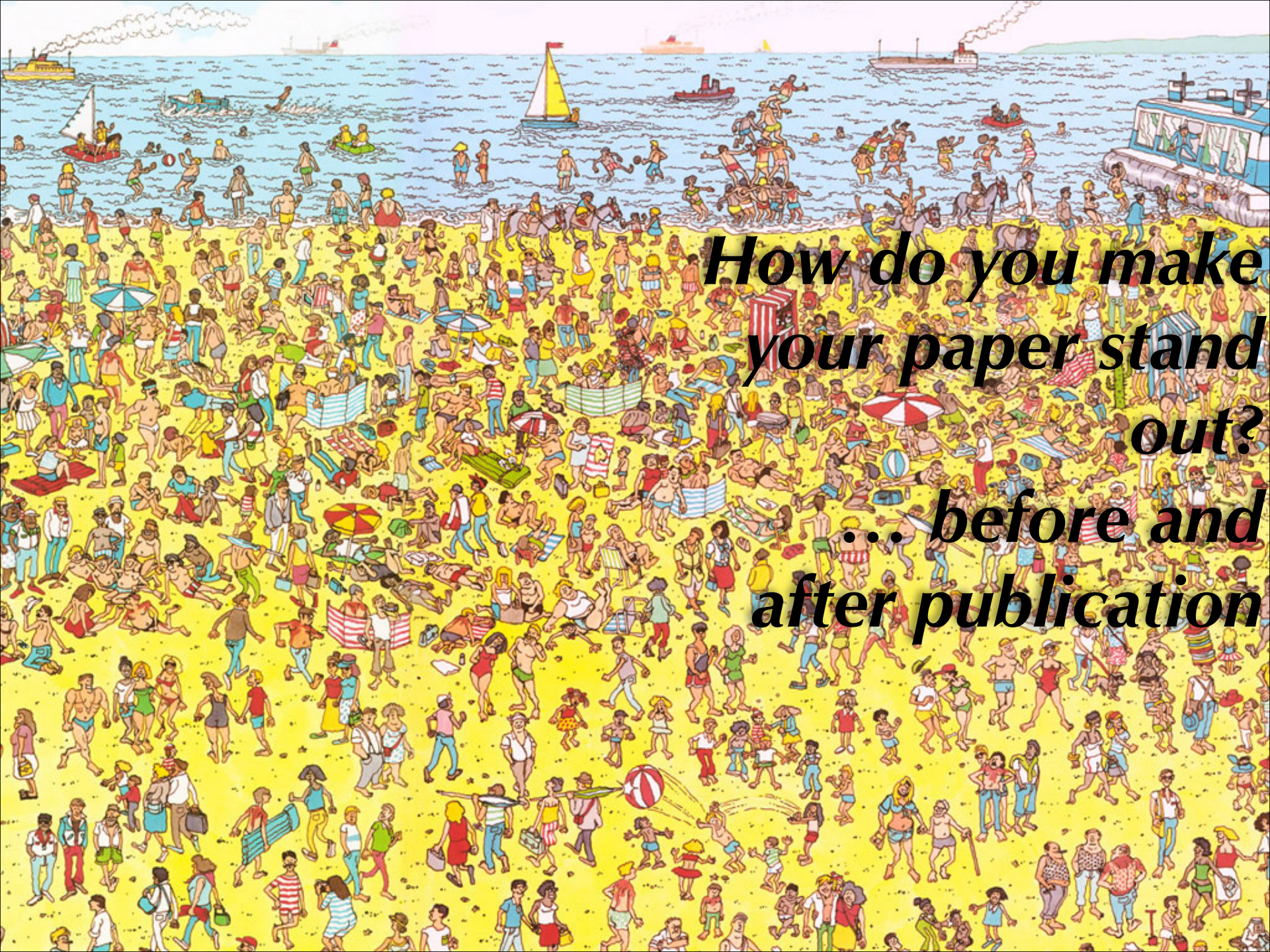
counter the "echo chamber effect"

foster serendipity

provide prestige

provide stamp of peer review/validity

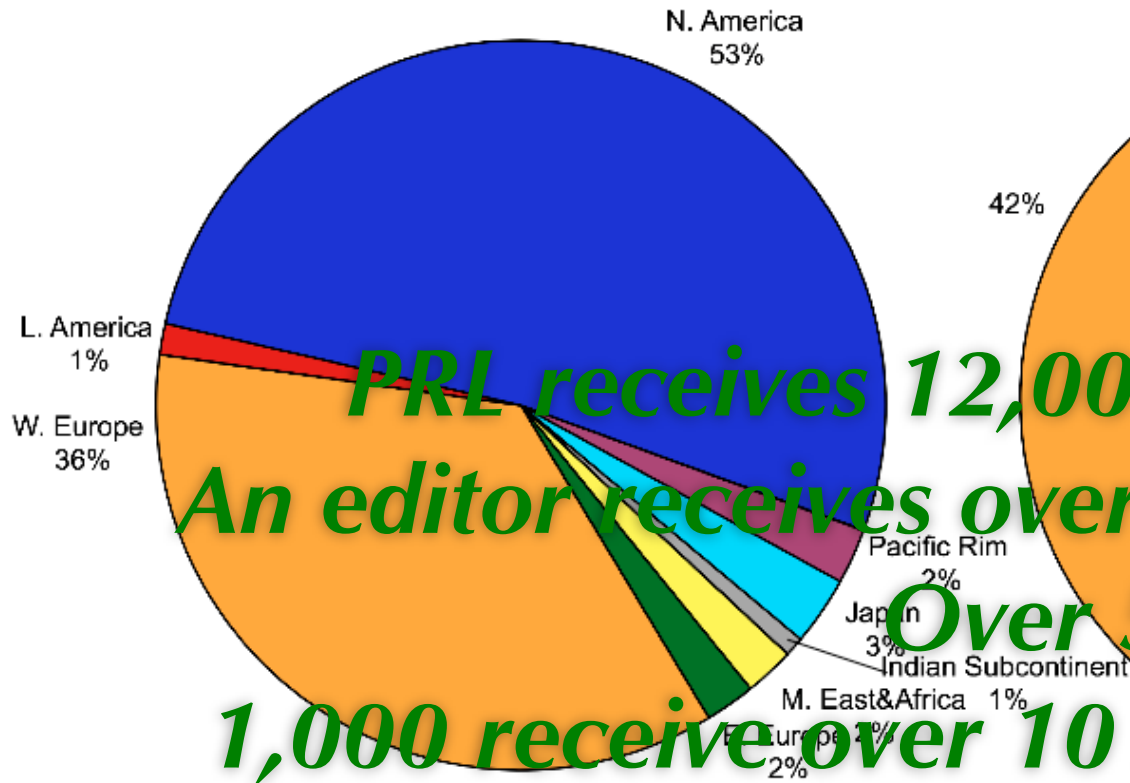
facilitate progress in your career



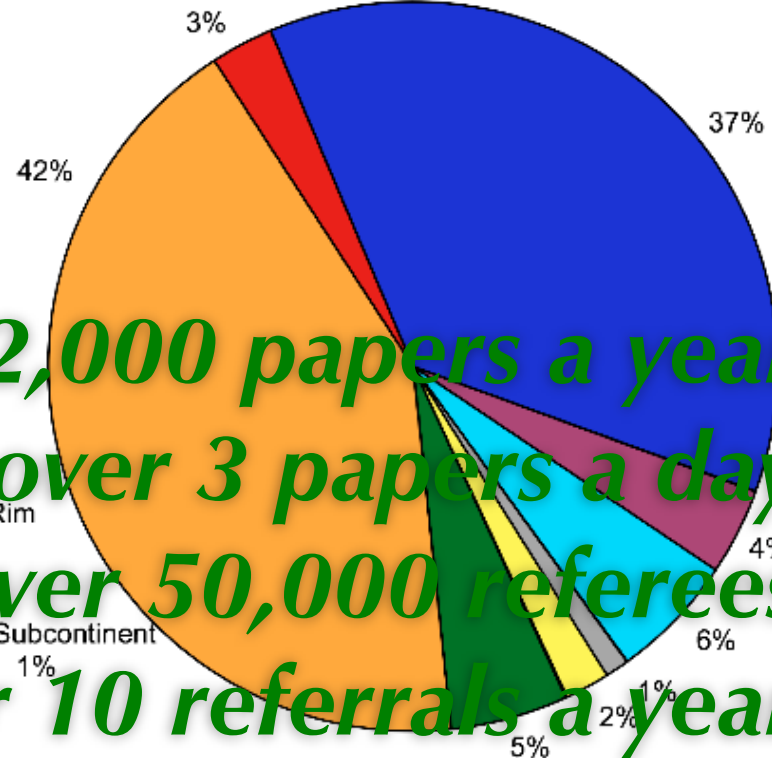
*How do you make
your paper stand
out?
... before and
after publication*

Physical Review and Physical Review Letters Geographic Distribution for Referees Used

1997



2007

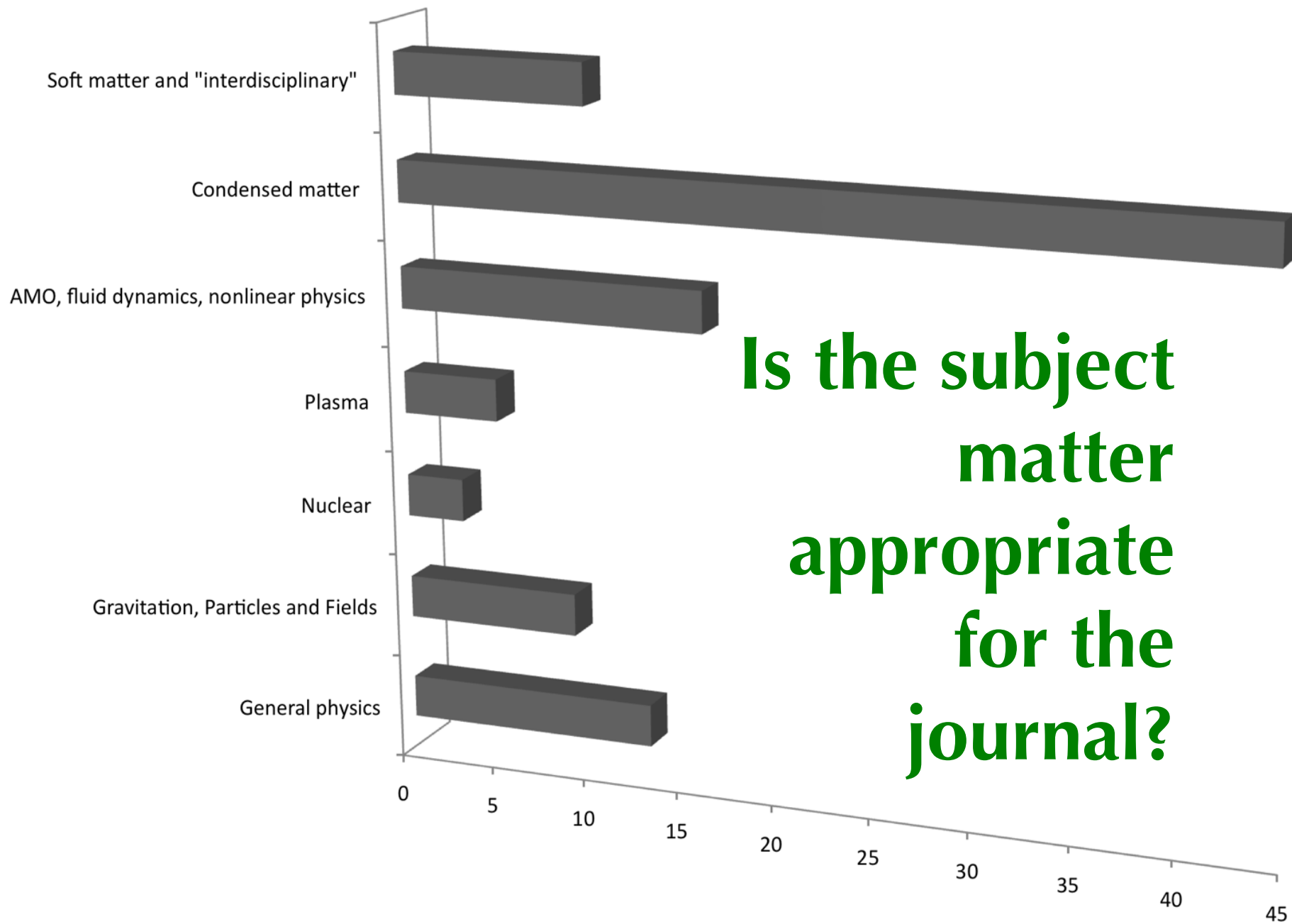


PRL receives 12,000 papers a year
An editor receives over 3 papers a day
Over 50,000 referees
1,000 receive over 10 referrals a year

*So, what does a
journal editor look
for in **your paper**?*

**Is the paper suitable for
the journal?**

Percentage field distribution of published papers in PRL



**Is the subject
matter
appropriate
for the
journal?**

Is it topical?

**Preparing your
paper for
submission**

NEW
EDITION

WILLIAM
STRUNK JR.
AND
E.B. **WHITE**

*"...still a little book, small enough and important enough
to carry in your pocket, as I carry mine."*

— Charles Osgood

The
ELEMENTS
of
STYLE

FOURTH EDITION

FOREWORD BY ROGER ANGELL

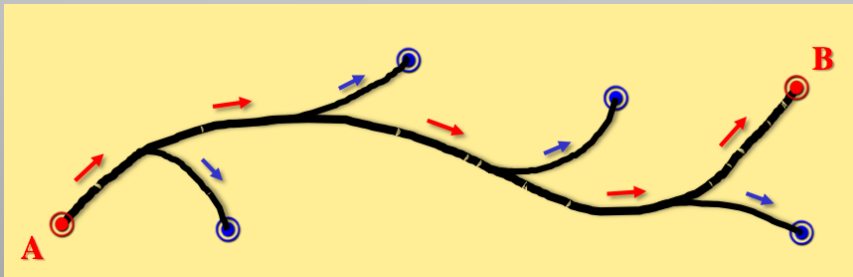
Omit
needless
words

<http://www.bartleby.com/141/>

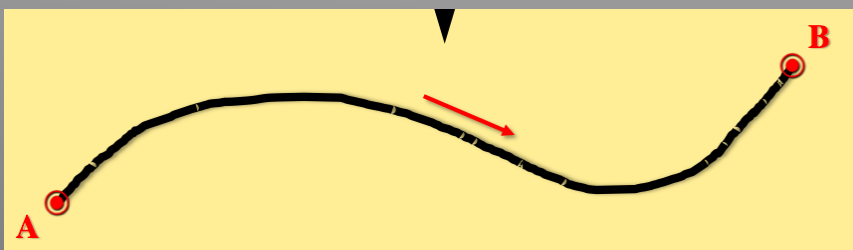
Keep it simple

Avoid jargon, abbreviations, acronyms ...

The measured PL spectra of a single one-micron-long SWCNT that encapsulates a chain-like agglomeration of colloidal ZnS QDs appears to be shifted with respect to the PL spectra recorded for an empty SWCNT.



The measured photoluminescence spectra of an isolated carbon nanotube shifts when the nanotube encapsulates colloidal ZnS quantum dots.



NYT 20 APRIL 1993

The physicist's problem

THE NEW YORK TIMES

Physicists Celebrate Unintelligible Journal

Equation-heavy, Physics Review marks its centenary.

By MALCOLM W. BROWNE

WASHINGTON

IT may be the most impenetrable periodical in the English language, and yet hopeful authors sent it 39,475 manuscripts last year, and its 6,000-odd subscribers paid up to \$1,000 each to read it. It is *The Physical Review*, now celebrating its 100th anniversary.

At a national meeting of the American Physical Society here on April 13, a crowd of prominent physicists from around the world packed a banquet hall to hear "Songs of the Physical Revue," a collection of science parodies written during his student days at Harvard University by the mathematician-turned-satirist Tom Lehrer.

Not always appealing to nonscientists, the Lehrer songs included numbers like "The Derivative," a sprightly ditty based on differential calculus. Other Lehrer songs on the bill were "The Slide Rule Song," which explains to students how to hide exami-

nation crib notes in a slide rule, and "Physicist's Love Song," which begins with the line "I love you, a liter and a gram."

The journal celebrated in the centennial observance rarely offers anything comprehensible to outsiders, however, much less anything to laugh about. It consists of pure, unrelenting science of the highest order.

Generally speaking, physicists do not much care whether outsiders understand what they write, but *The Physical Review* has plumbed new depths of unintelligibility, and its prose has become so opaque that the publishers recently felt obliged to impose new writing rules on some authors.

The rules are not uniformly applied. So many physics papers are published each week that *The Physical Review* comes out in six volumes, each one specializing in a field. (Physical Review A is devoted to atomic physics, optics and related matters; Physical Review B publishes papers on solid-state physics; Physical Review C covers nuclear physics; Physical Review D has to do with astrophysics and relativity, and Physical Review E covers plasma, chaos and complexity.)

None of these volumes is affected by the new intelligibility rule. But another section of the publication, called *Physical Review Letters*, now

Continued on Page C9

Hard-To-Read Journal Is 100

Continued From Page C1

demand a slightly less obscure style of prose. Dr. Benjamin Bederson, chief editor of the American Physical Society, said the lead paragraph of every article in *Physical Review Letters* must now be understandable to any physicist, not just those who happen to be experts in the article's arcane field. After the first paragraph or two, the paper may still be written as a thicket of difficult equations, but at least the average Ph.D. physicist who skims the top can now usually guess what it is about.

Physical Review will soon change the colors of its journals' covers from turquoise green to separate colors for the different sections, so they can be quickly distinguished from each other on library shelves. "We've heard some concern that this change may be too flashy for some of our subscribers," Dr. Bederson said, "but we must move with the times."

Library shelves around the world are groaning under the collected volumes of *Physical Review*, which now consumes about nine feet of shelf space a year; some scientists call the journal "the green plague."

"The theory of relativity," one of the physicists at the meeting joked, "states that nothing can expand faster than the speed of light, unless it conveys no information. This accounts for the astonishing expansion rate of *The Physical Review*." Editors of the journal acknowledge that its alarming growth has prompted them to appoint a watchdog committee, and that at some point, *The Physical Review* will have to be published electronically rather than on paper.

Long Review Process

The society also hopes to speed the publication of meritorious articles. In 1932, the deadline for submission of a

In *Physics Review*, intelligibility is required for only the first paragraph; then the equations begin.

manuscript to *Physical Review Letters* was three days before publication, but today the "referee" process, in which outside experts judge the value of a submitted paper, takes three months to three years.

A recent survey by the journal showed that most of its readers are satisfied. But scientists gave the referees who judged their papers only the equivalent of a C-plus grade.

Whatever its shortcomings, *The Physical Review* is a pillar of world science. Many of the greatest discoveries of modern physics first came to light in *The Physical Review*; among them were the discoveries of transistors, lasers, atomic resonance (which led to nuclear magnetic resonance instruments), the value of Planck's Constant, the fact that electrons can behave like waves and photons can behave like particles, and the invention of the cyclotron and the bubble

chamber. The historic 1935 article by Albert Einstein, Boris Podolski and Nathan Rosen on some of the aspects of quantum theory was published in *The Physical Review*.

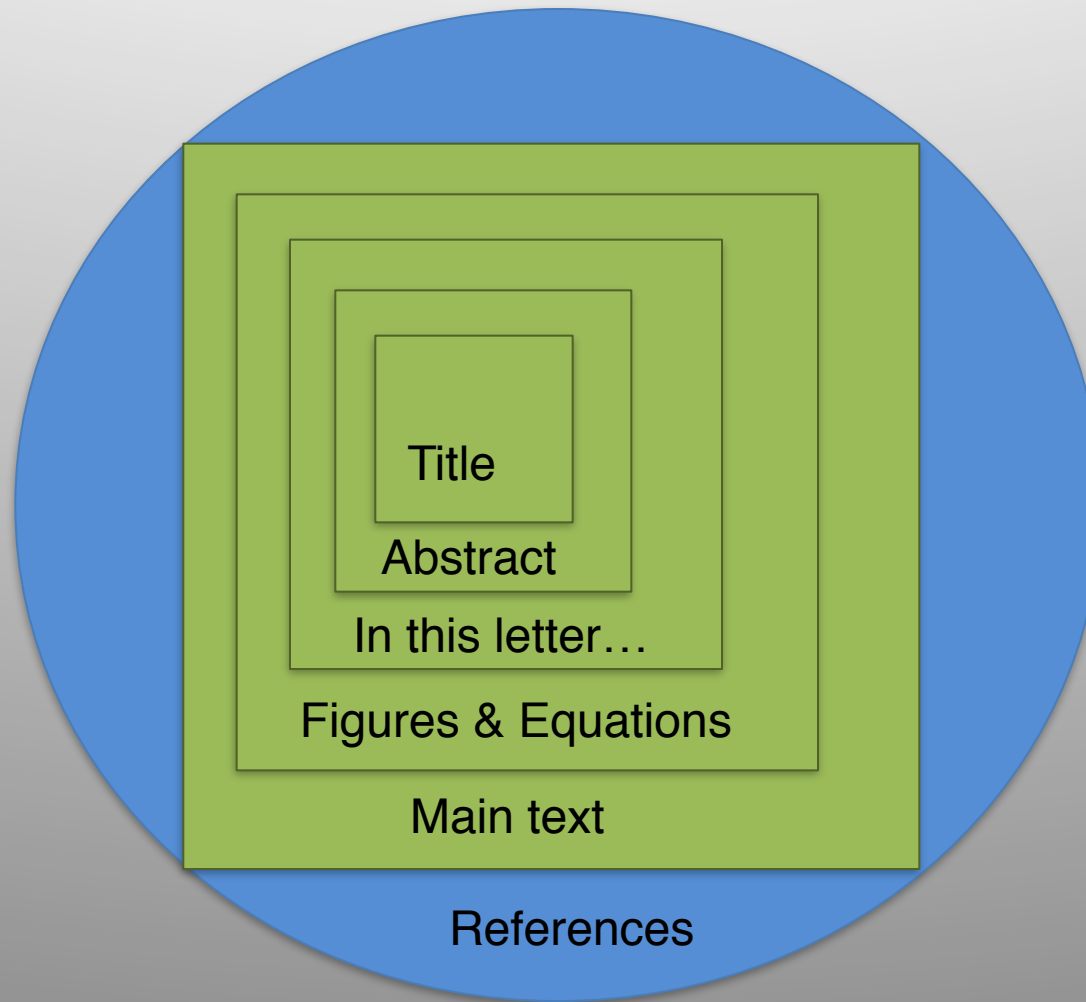
The editors are now trying to compile a volume with the tentative title "Physical Review's Greatest Hits," but the selection process, in which hundreds of physicists are involved, is proving as time-consuming as everything else about the journal.

Until 1931, the German periodical *Zeitschrift für Physik* ranked as the world's leading physics journal, but that year *The Physical Review* moved decisively ahead, and remained the world's premier physics journal ever since. Some 50 percent of the manuscripts it receives now come from abroad, with Germany, Japan and France among the leading contributors. Now that the cold war is over, Russian papers are also flooding the journal's office.

Many words first published in *Physical Review*, including some of the most famous, have found their way into the English language.

"Whatever its readability," Dr. Henry Stroke of New York University, "The Physical Review" class by itself. "We already have 500 candidates for inclusion in *Physical Review's Greatest Hits*, and our problem will be selecting the greatest of the great."

Structure of the typical physics paper



The abstract

Make it clear and brief.

Explicitly state the scientific problem.

Spell out your main result and its implications.

The introduction

Provide the context and motivation.

Adequately reference previous publications — be generous!

Avoid jargon: the introduction should be accessible to a physicist not in your field.

Say why the work is new and important.

The main text

Explain to experts how they can reproduce your work.

Tell nonspecialists why they and experts should care about what you did.

The figures, tables, and images

A picture is worth a thousand words.
These constitute a visual summary of
your results.

(Of course, not all papers are amenable to figures.)

The conclusion

The take-away message is what lingers in the mind of the reader.

The reference list

Credit work that led to yours.

Cite current related work.

Avoid unnecessary self citations.

For that matter, do not over cite!

The style and the language

Keep the language simple and direct.

Correct grammar is *very* important.

Spell check and proof reading are a must.

Ask a colleague — a physicist not in your field — to read the paper.

***Impressions matter,
first impressions matter more.***

The cover letter

Why this journal?

What did you do?

Which referees should and should not the
editors consult?

Are there competing papers/groups?

Readers are *always* busy

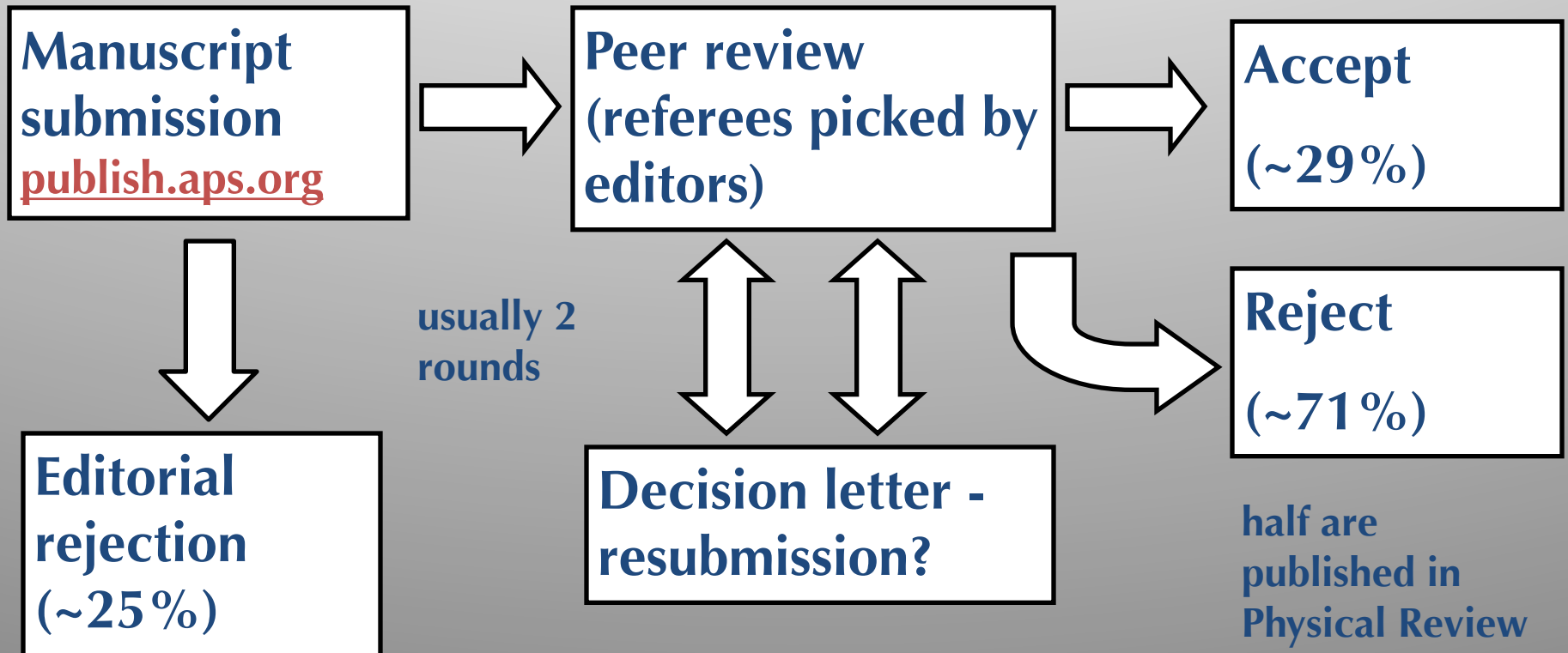
Readers, including editors, often do not read beyond the abstract and introduction.

They will try to assess the main results from included figures.

They will look first at the conclusion and the reference list to figure out what you did and why.

The peer review

PRL's review process



The resubmission

Keep it short!

Respond to referee reports in detail.

Be polite.

Describe revisions you make.

Do make confidential comments to the editors if needed.



It is more in your interest than anyone else's that the paper is published in the journal to which you submitted it. Make things as easy as you can for the editors, the referees, and the readers.

ALONE I JUMP,
TOGETHER WE SOAR

Responding to difficult reports

Sleep on it.

Be collegial.

A resubmission letter that's longer than
the paper is suspect.

A resubmission letter that makes the paper's
case better than the paper itself is suspect.

**Avoid pet
peeves of
editors.**

012 - CABIBBO – KOBAYASHI – MASKAWA MATRIX
013 - CHAPMAN - ENSKOG THEORY
014 - CHERN - SIMONS THEORY
015 - COTTON - MOUTON EFFECT
016 - CURIE TEMPERATURE
017 - DEBYE MODEL
018 - DE HAAS - VAN ALPHEN EFFECT
019 - DULONG - PETIT LAW
020 - EFROS - SHKLOVSKII MODEL
021 - FANO RESONANCE
022 - FERMI SURFACE
023 - FEYNMAN DIAGRAM
024 - FISK STEPS
025 - FULDE – FERRELL – LARKIN - OVCHINNIKOV PHASE
026 - GINZBURG - LANDAU MODEL
027 - GOOS - HANCHEN EFFECT
028 - GREENBERGER – HORNE – ZEILINGER STATE 029 - GROSS - PITAEVSKI EQUATION
030 - GUTZWILLER APPROXIMATION
031 - HAGEN - POISEUILLE FLOW
032 - HALDANE GAP
033 - HALL EFFECT
034 - HASEGAWA - MIMA EQUATION
035 - HEBEL - SLICHTER EFFECT
036 - HEISENBERG PRINCIPLE
037 - HELMHOLTZ OSCILLATOR
038 - HERTZSPRUNG - RUSSELL DIAGRAM
039 - HIGGS BOSON
040 - HUBBARD MODEL
041 - HUBBLE CONSTANT
042 - HUND'S RULE
043 - ISING MODEL
044 - JAHN - TELLER EFFECT
045 - JOSEPHSON JUNCTION
046 - KAUZMANN PARADOX
047 - KLEIN - GORDON EQUATION
048 - KOCHEN - SPECKER THEOREM
049 - KOSTERLITZ - THOULESS TRANSITION
050 - KRETSCHMANN - RAETHER CONFIGURATION

Don't name
stuff that's
already named.

Don't submit a rough draft instead of a finished version.

We would be willing to consider a resubmittal that clarifies the impact, innovation, and interest of the work. If you would like us to reevaluate the paper, we strongly suggest that you revise your abstract, introduction, and conclusion, to make it clear to a general reader why the paper meets our criteria. Jargon should be avoided as much as possible.

**Don't overuse acronyms.
The fewer the better.**

The measured PL spectra of a single one-micron-long SWCNT that encapsulates a chain-like agglomeration of colloidal ZnS QDs appear to be shifted with respect to PL spectra recorded for an empty SWCNT.

What do PRL's editors want?

one of these

Substantial advance.

A new area of research.

A critical outstanding problem.

Singular appeal to all physicists.

i.e. why PRL and not Phys Rev?

What do authors want?

all of these

Rapid, fair review.
Exclusivity.
Highlighting.
Wide visibility.

... if a "yes"?

Sam Goudsmit's statistical justice

*Over the years, if you submit
enough manuscripts, your
acceptance rate will be just about
what you deserve.*

Laurence Passell, *Physics Today*, March 1988

PHYSICAL REVIEW
LETTERS

VOLUME 61

4 JULY 1988

Exclusivity,
Impact factor, Eigenfactor, h-
index, Article influence
score, h-5 index ...

Published by

THE AMERICAN PHYSICAL SOCIETY

How do editors find referees?

APS referee database

WoS, Google Scholar, submissions to
PR/PRL, etc.

References (authors of, referees of)

Author-suggested referees.

The editor's memory.

There are referees to avoid.

coauthors, colleagues, neighbors

acknowledged

competitors

busy and overburdened

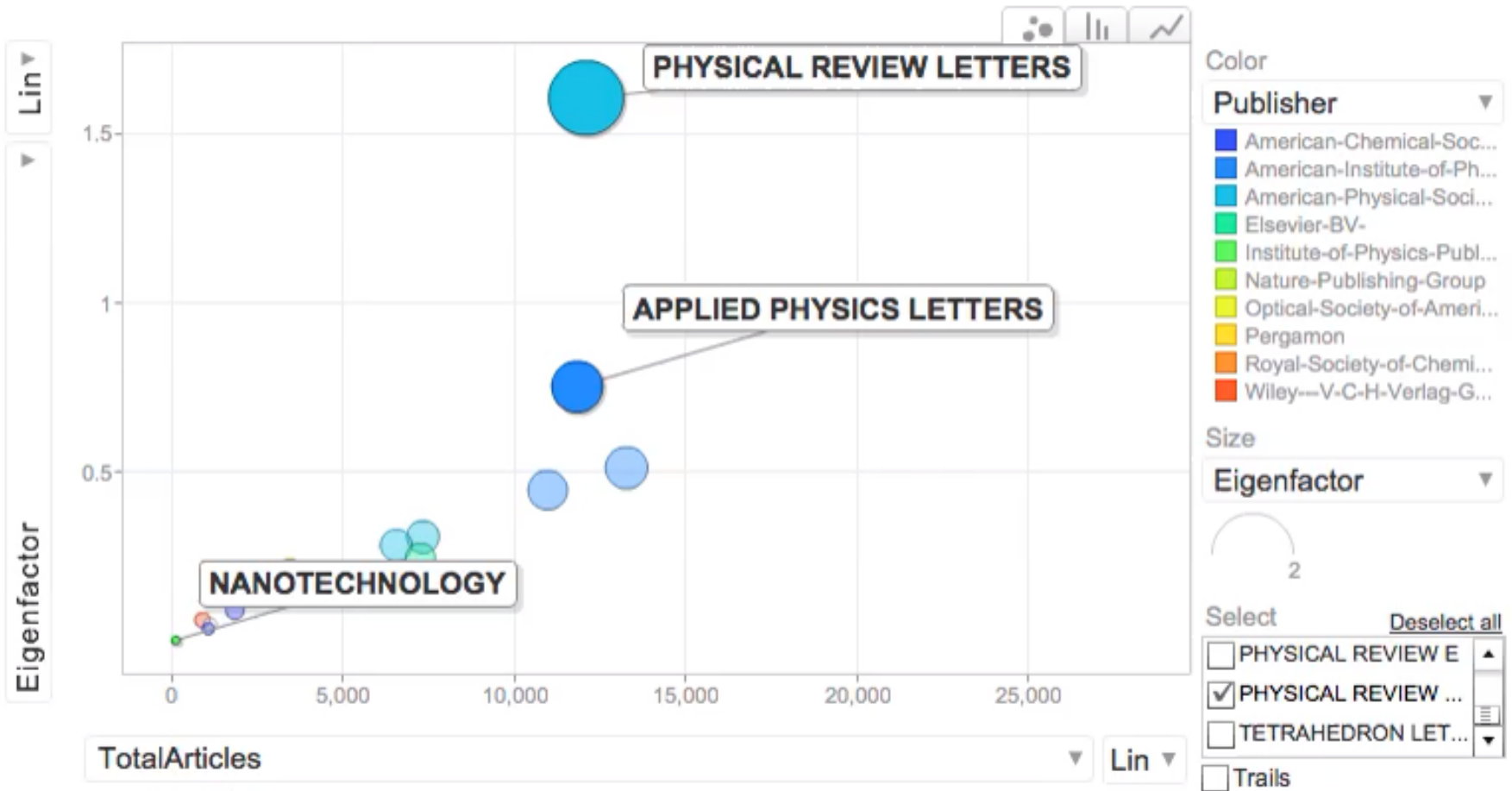
usually slow

don't provide useful reports

lacking relevant recent publications

<http://www.eigenfactor.org/motion/>

PHYSICS



10/19/97



***You are not buying news when
you are buying the New York
Times. You are buying
judgment.***

**Arthur Ochs Sulzberger
Publisher, New York Times**

Exercises to try later.

Find 3 recent PRL, Nature, Science, etc. articles in your field.

For each find the sentence(s) in which the authors tell us what they did.

For each write a 250 word synopsis. And a 3 line "teaser". The synopsis should be understandable to a physicist not in your field, and the teaser to a nonscientist.

Rewrite the title so that is meaningful to those in your field but without jargon.

Do these activities often.

Exercises to try later.

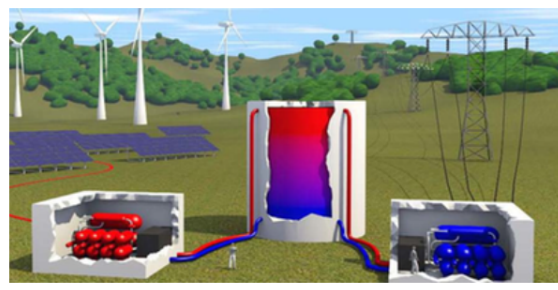
Explain what you do to a colleague who is a scientist in a different field and sense if they understand. How long did that take? Keep trying to make this clear and shorter. Remember, people lose interest quicker than you think.

Practice your "elevator speech".

Read Strunk and White's Elements of Style.

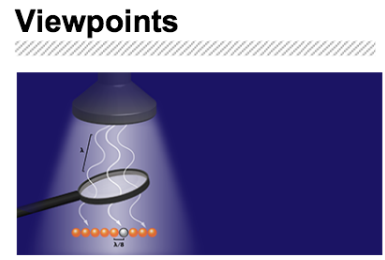
Practice your spoken English. Practice your written English.

Read physics.aps.org each week!



Focus: Packing Heat to Store Energy September 13, 2013 A theoretical analysis explores the efficiency limits of a method for storing electrical energy from a power plant by heating up a tank of fluid.

- Read More About Atomic and Molecular Physics, Chemical Physics, Cosmology, Energy Research, Gravitation, Industrial Physics, Magnetism, Materials Science, Metamaterials, Optics, Optoelectronics, Photonics, Plasmonics, Quantum Information, Quantum Physics, Soft Matter



Localize and Conquer! September 11, 2013 Mauro Paternostro By illuminating atoms with two colors of light that drive interfering transitions, researchers selectively excite the atoms in a region much smaller than the light wavelength.



Cross-Country Time Keeping September 12, 2013 A new distance record is set in the fiber transmission of stable frequency signals capable of synchronizing atomic clocks.



A Faster Liquid Crystal September 6, 2013 A new way to rapidly switch the state of a liquid crystal could be useful for video displays and related technologies.

View All Subjects Keep Up With Physics [Twitter] [RSS] [Email] American Physical Society Sites

Thank you.

To all of the organizers of the
workshop, and particularly
Shobhana.

sami@aps.org