Secrets of PRL

Robert Garisto, Editor
@RobertGaristo

Japan
September 2018

PHYSICAL REVIEW JOURNALS 125 YEARS

60 YEARS PRL

APS/JPS Joint Symposium

celebrating the 60th anniversary of

Physical Review Letters

Japanese Physical Society Autumn Meeting at Shinshu University

September 15, 2018, from 13:30 to 17:10, room S10

Physical Review Letters is celebrating its 60th anniversary. Over the years, PRL has become truly global, and the Japanese physics community has contributed many noteworthy papers.

This special symposium celebrates PRL's 還暦 and pays tribute to papers published by Japanese physicists. The selected talks reflect the diversity and quality of the physics PRL publishes. We hope you will enjoy them and come celebrate with us!

Program:

13:30-14:00 Robert Garisto (Editor, *Physical Review Letters*)
60 years of PRL: Looking back and forward

14:00-14:25 Shoji Torii (Waseda University)
The Calorimetric Electron Telescope (CALET) Experiment on the International Space Station

14:25-14:50 Tom Melia (Kavli-IPMU, University of Tokyo)
Lovely phase space

14:50-15:15 Takahiro Kawabata (Osaka University)
Nuclear experimental approach toward the nucleosynthesis in the universe

15:15-15:30 Break

15:30-15:55 Kyo Tsukada (ELPH, Tohoku University)
The SCRIT electron scattering facility: Toward the world's first study of unstable nuclei by electron scattering

15:55-16:20 Masato Takita (ICRR, University of Tokyo)
Observation of high-energy cosmic rays with the Tibet air shower array

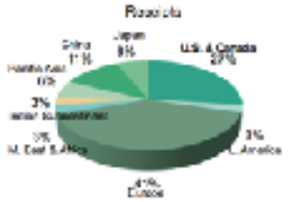
16:20-16:45 Kenkichi Miyabayashi (Nara Women's University)
From CP violation to XYZ particles

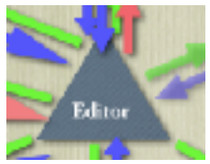
16:45-17:10 Atsuko Ichikawa (Kyoto University)
Quest for CP violation in neutrino oscillation

APS physics

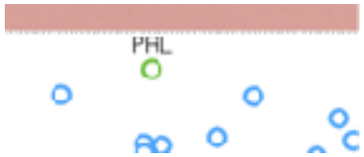
Outline

- **Physical Review Family**
- **Statistics**
- **How PRL Works**
- **PRL Standards**
- **Highlighting Papers**
- **Journal Metrics**
- **Publication Enhancements**
- **Open Access**
- **Lessons from Correspondence**
- **LIGO!**





Impact, **Innovation** and **Interest**



PhySH

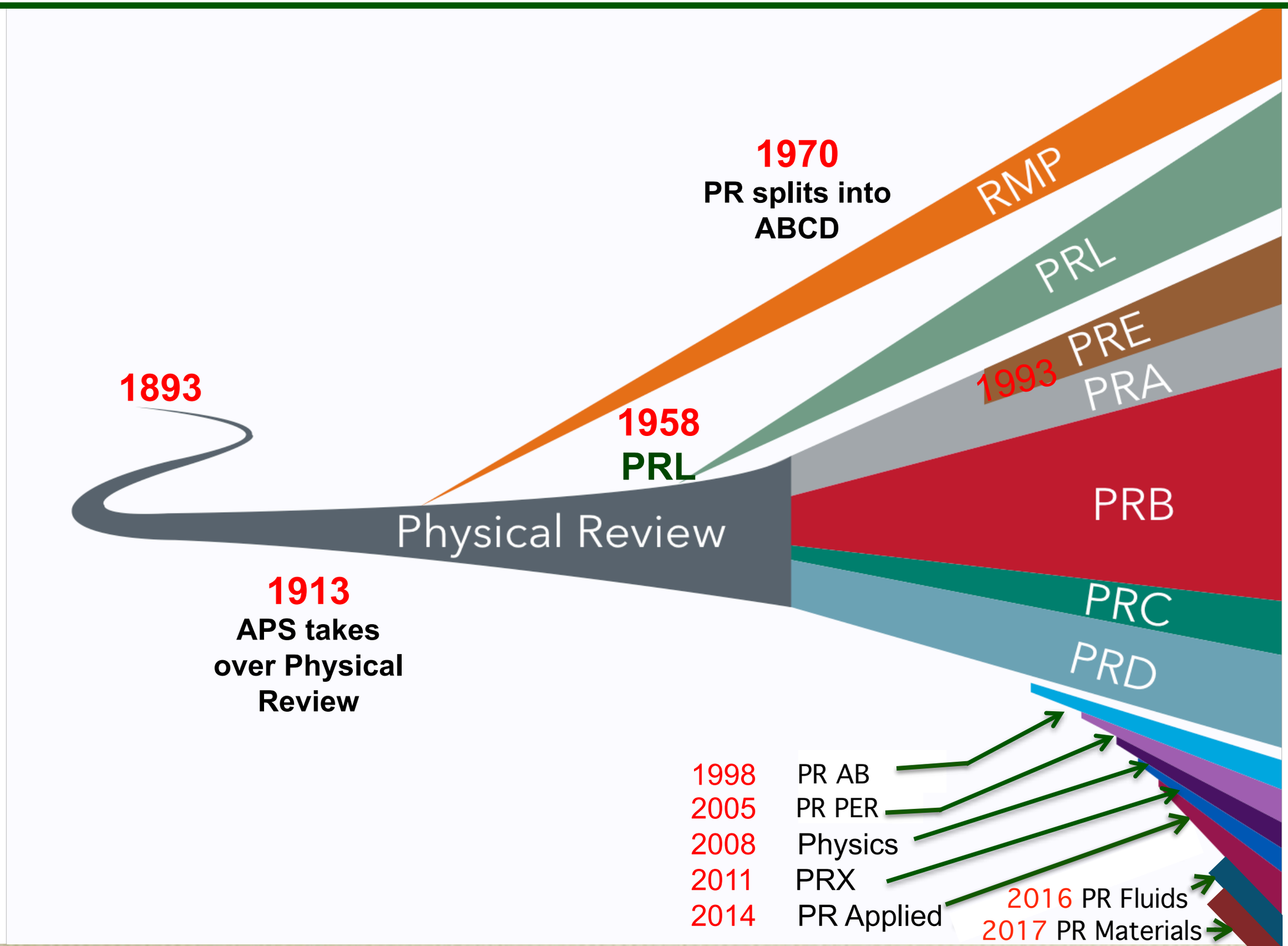
Physical Review Family

end

The **A**merican **P**hysical **S**ociety

- The Physical Review journals
- physics.aps.org: Viewpoints, Focus, Synopses
- Media Outreach (*e.g.* Tip Sheet)
- Conferences
- Prizes & Awards
- Divisions, Topical Groups & Forums
- Public Advocacy (*e.g.* Climate Change, Diversity)
- Education
- Careers
- Global Cooperation (*e.g.* International Research Travel Award Program)

The Physical Review Family



Sections:

General Physics: Statistical & Quantum Mechanics, Quantum Info

Gravitation and Astrophysics

Elementary Particles and Fields

Nuclear Physics

Atomic, Molecular, and Optical Physics

Nonlinear Dynamics, Fluid Dynamics, Classical Optics

Plasma and Beam Physics

Condensed Matter: Structure

Condensed Matter: Electronic Properties

Polymer, Soft Matter, Biological, & Interdisciplinary Physics

PRL Editors & Associate Editors: 13 full time, 8 part time

Physical Review Letters seeks an Assistant Editor

Physical Review Letters seeks a dynamic and personable member for its team of editors. The primary responsibility is to manage the peer review process and decide which papers meet PRL criteria and merit publication.

A PhD in physics or a closely related field and postdoctoral research experience are required. We have a preference for someone with experience in soft matter and quantum or classical statistical physics. An excellent command of written and spoken English is essential. We will train the new editor to develop needed editorial skills.

PHYSICAL REVIEW LETTERS

PHYSICAL REVIEW LETTERS

Materials Physics

U. Diebold, F. Liu, J. Neaton, M. Payne, S. K. Streiffer, H. Zabel

Nuclear Physics

C. N. Davids, C. Gale, R. Liotta, M. Rho, J Velkovska

Particles and Fields

A. de Gouvea, T. A. DeGrand, R. Gopakumar, V. Luth, W. Vogelsang, C. E.M. Wagner

Physics of Beams

I. Ben-Zvi

Plasma Physics

J. Chittenden, M. L. Goldstein, T. C. Luce, J-P. Matte, G. Morales, P. A. Norreys, V. Tikhonchuk

Polymer Physics

M. W. Matsen., P. Olmsted, G. Reiter

Foundations of Quantum Mechanics

R. Jozsa

Quantum Information

C. M. Caves, J-W. Pan, F. K. Wilhelm

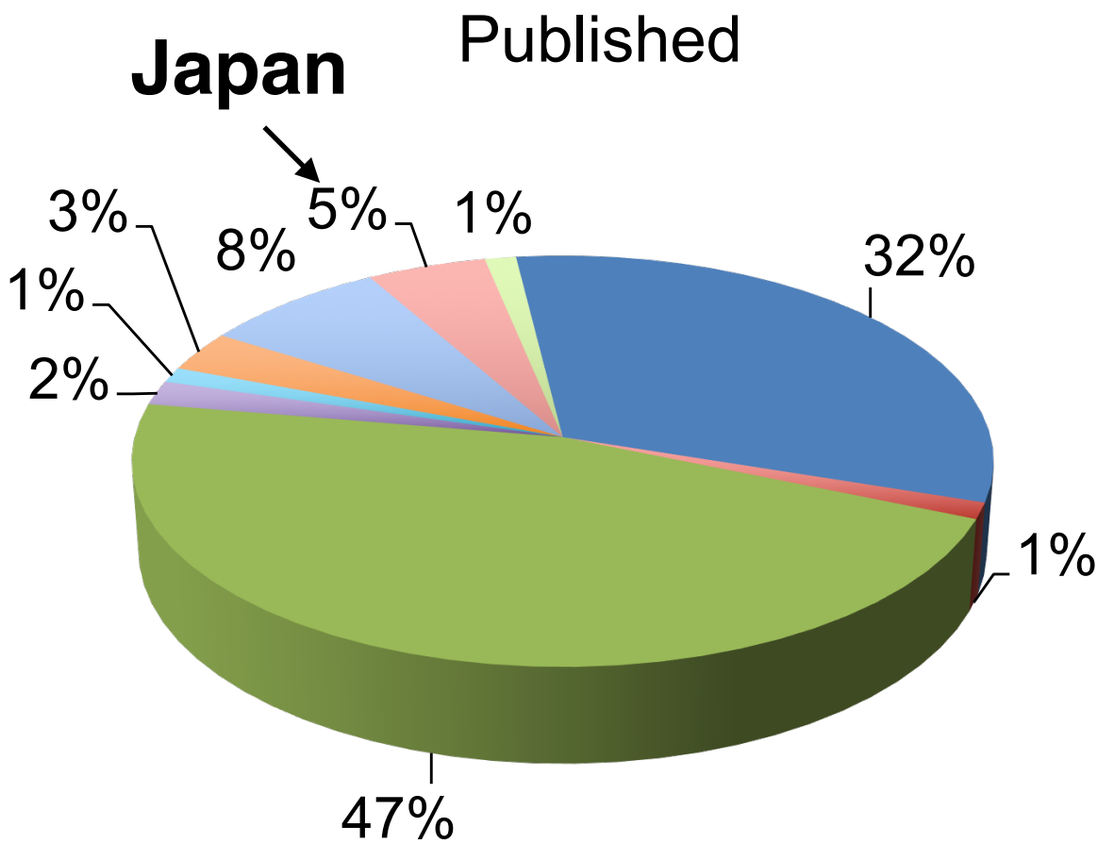
Statistical Physics and Nonlinear Dynamics

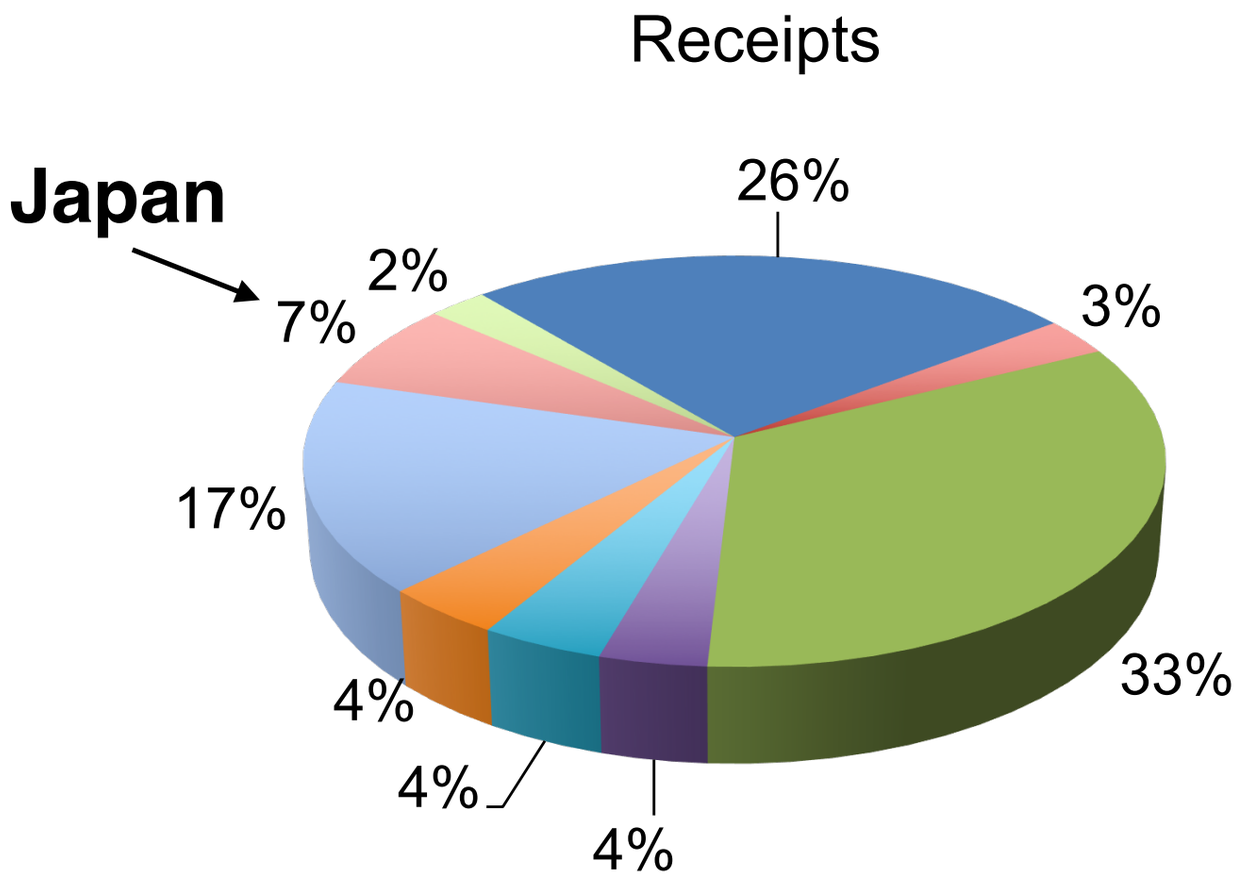
R. A. Blythe, K. Daniels, R. Golestanian, R. Klages, Y. Moreno, S. Redner, P. Reimann, K. Sneppen

Statistics

end

Physical Review Letters
2017

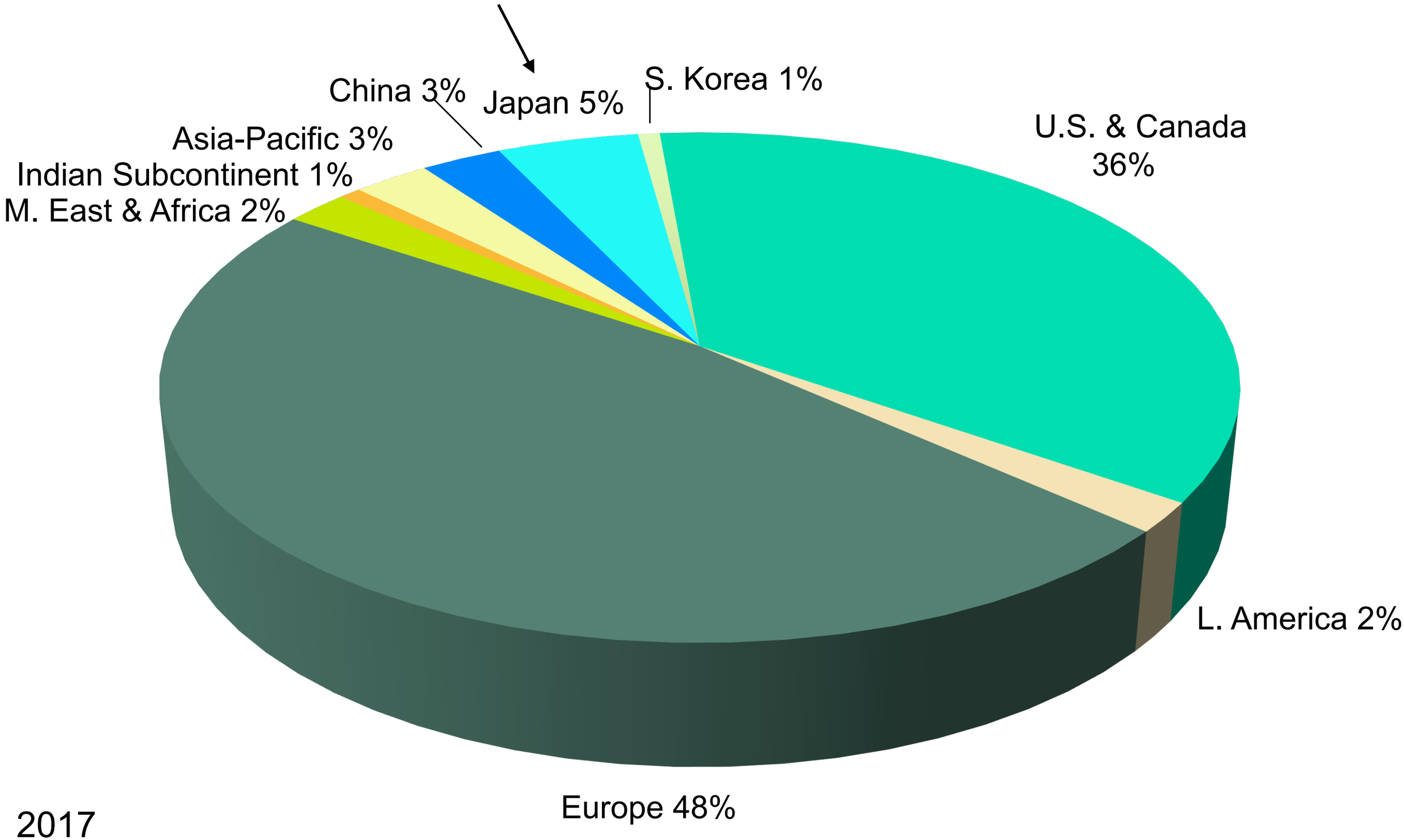




#Letters published from Japan 1980-2017: 5449

- U. S. & Canada
- L. America
- Europe
- M. East & Africa
- Indian Subcontinent
- Pacific-Asia
- China
- Japan
- S. Korea

Physical Review Letters
Referees Used for Published Articles



2017

Referee for us?

If

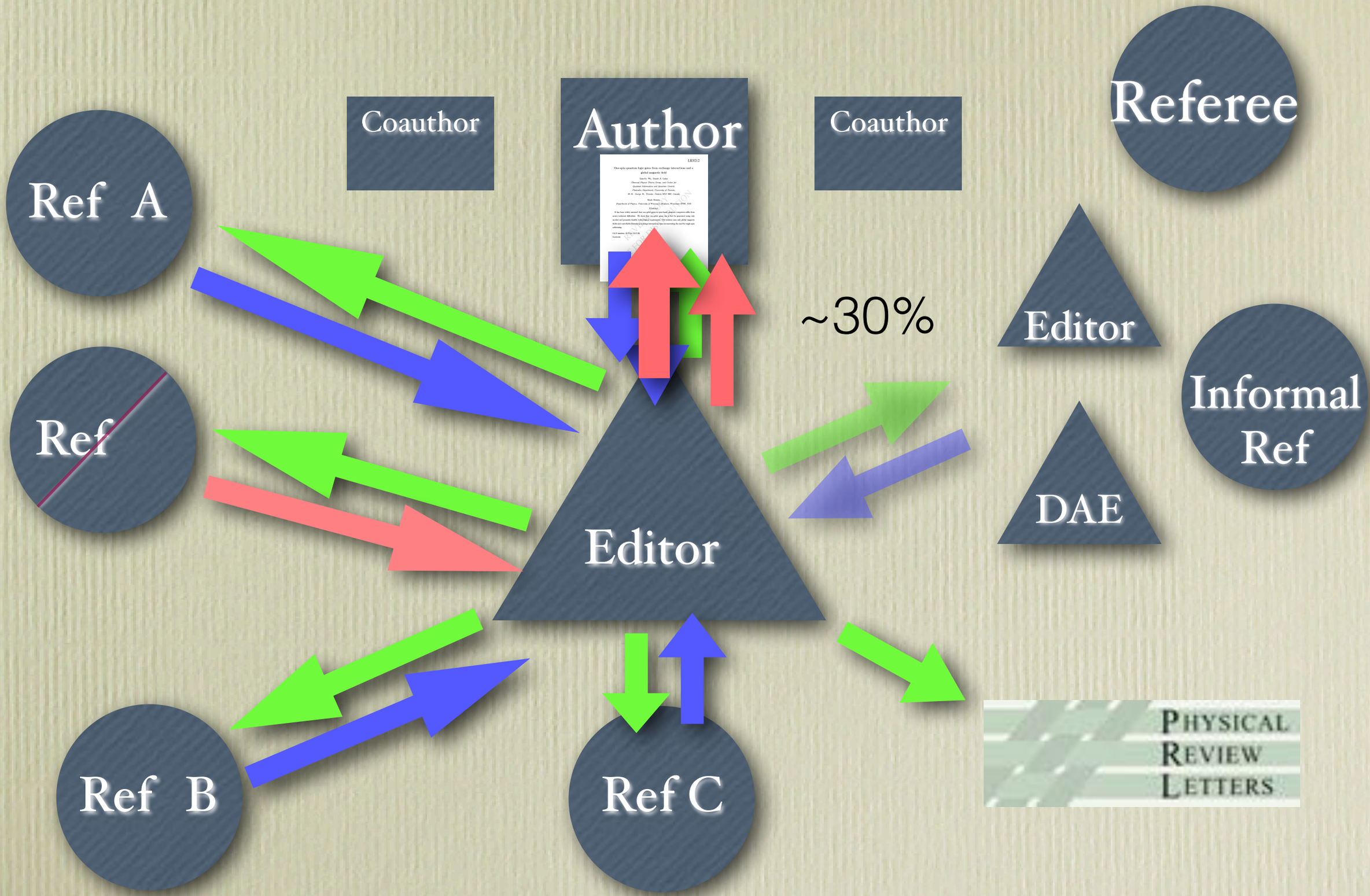
- you have submitted at least 3 papers to our journals
- at least 60% of them have been accepted
- you think you would make a good referee

then please send a message to **prl@aps.org** with your full name, ORCID ID if you have one, contact information, and a brief list of your areas of expertise.

How PRL Works

end

Roles in the Review Process



next

Congratulations, you're in good company!

The Nobel Prize in Physics 2015

Takaaki Kajita

Featured in Physics | PRL Milestone | Free to Read

Evidence for Oscillation of Atmospheric Neutrinos

Y. Fukuda *et al.* (Super-Kamiokande Collaboration)
Phys. Rev. Lett. **81**, 1562 – Published 24 August 1998

Physics See Focus story: Nobel Prize—Neutrinos Oscillate; See Focus story: Neutrinos Have Mass

An article within the collection: Letters from the Past - A PRL Retrospective

Featured in Physics | Free to Read

Measurement of the Rate of $\nu_e + d \rightarrow p + p + e^-$ Interactions Produced by ^8B Solar Neutrinos at the Sudbury Neutrino Observatory

Q. R. Ahmad *et al.* (SNO Collaboration)
Phys. Rev. Lett. **87**, 071301 – Published 25 July 2001

Physics See Focus story: Nobel Prize—Neutrinos Oscillate

An article within the collection: Letters from the Past - A PRL Retrospective

Arthur B. McDonald

Featured in Physics | Free to Read

Direct Evidence for Neutrino Flavor Transformation from Neutral-Current Interactions in the Sudbury Neutrino Observatory

Q. R. Ahmad *et al.* (SNO Collaboration)
Phys. Rev. Lett. **89**, 011301 – Published 13 June 2002

Physics See Focus story: Nobel Prize—Neutrinos Oscillate

An article within the collection: Letters from the Past - A PRL Retrospective

PRL 116, 061102 (2016) Selected for a Viewpoint in *Physics* PHYSICAL REVIEW LETTERS week ending 12 FEBRUARY 2016

LIGO!

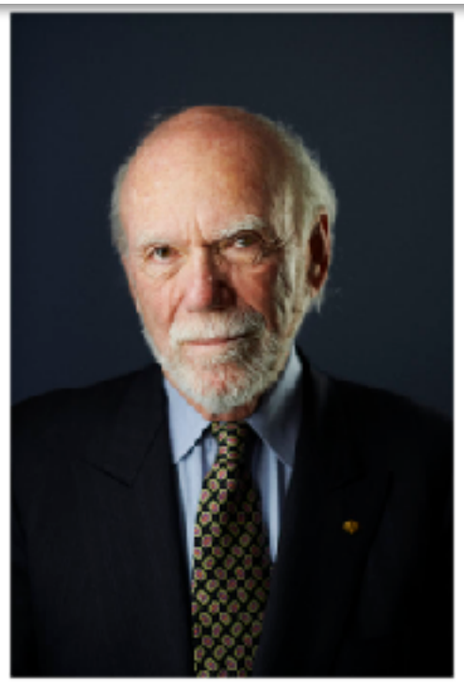
Observation of Gravitational Waves from a Binary Black Hole Merger

B. P. Abbott *et al.*[*]
(LIGO Scientific Collaboration and Virgo Collaboration)
(Received 21 January 2016; published 11 February 2016)

On September 14, 2015 at 09:50:45 UTC the two detectors of the Laser Interferometer Gravitational-Wave Observatory simultaneously observed a transient gravitational-wave signal. The signal sweeps upwards in frequency from 35 to 250 Hz with a peak gravitational-wave strain of 1.0×10^{-21}. It matches the waveform predicted by general relativity for the inspiral and merger of a pair of black holes and the ringdown of the resulting single black hole. The signal was observed with a matched-filter signal-to-noise ratio of 24 and a false alarm rate estimated to be less than 1 event per 203 000 years, equivalent to a significance greater than 5.1σ. The source lies at a luminosity distance of 410^{+160}_{-180} Mpc corresponding to a redshift $z = 0.09^{+0.03}_{-0.04}$. In the source frame, the initial black hole masses are $36^{+5}_{-4}M_{\odot}$ and $29^{+4}_{-4}M_{\odot}$, and the final black hole mass is $62^{+4}_{-4}M_{\odot}$, with $3.0^{+0.5}_{-0.5}M_{\odot}c^2$ radiated in gravitational waves. All uncertainties define 90% credible intervals. These observ… the first direct detection of …

The Nobel Prize in Physics 2017

Rai Weiss



Barry Barish

Kip Thorne

READERS' FORUM

Commentary

How gravitational waves went from a whisper to a shout

On 11 February 2016, the Laser Interferometer Gravitational-Wave Observatory (LIGO) and its sister collaboration, Virgo, announced their earthshaking observation of Albert Einstein's ripples in spacetime. LIGO had seen the death dance of a pair of massive black holes. As the behemoths circled each other faster and faster, the frequency and amplitude of the spacetime waves they produced grew into a crescendo as the black holes became one. Then the new doubly massive black hole began to ring softer and softer like a quieting bell. The escalating chirp and ringdown is also a metaphor for public information flow about the discovery. It could have unfolded differently.

When scientists make a discovery, they must choose how to disseminate it. A big decision they must make is whether to reveal the results before or after peer review. Reveal before peer review—sometimes even before the paper is written—and the community can use the results right away, but there is an increased risk that problems will be found in a very public way. Reveal after peer review, and the chance of such problems decreases, but there is more time for a competitor to announce first or for rumors to leak. At *Physical Review Letters* (*PRL*), where I am an editor, we allow authors to choose when they want to reveal their results. The LIGO collaborators chose to wait.

Just before LIGO's experimental run began in September 2015, the team held a vote on which journal they would pick if they made a discovery. They picked *PRL*. Five days after the vote, LIGO's detectors seemed to hear the universe sing out for the first time.

Had LIGO just confirmed a 100-year-old prediction made by Einstein? Had they discovered the first black hole binary? Had they opened a new era of astrophysics? With the stakes so high, the collaborators wanted to keep their results secret while they determined if the results were real. It was unfortunate that some onlookers chose to publicize vague rumors when the internal vetting had just begun.

By early December the collaboration was convinced that the results were real, and LIGO spokesperson Gabriela "Gaby" González let me know that we would be receiving a paper from the group in mid- to late January. When she told me that they had convincingly observed gravitational waves, that it was not a test, and that the source was the merger of two huge black holes, my jaw dropped.

Gaby stressed LIGO's desire for strict confidentiality, so for a month I told only one other person in the world: my fellow editor Abhishek Agarwal. By

Nobel Prize Research Published in *Physical Review Letters*

Physics 2018: Optical tweezers (Ashkin) PRL **24** 156 (1970), PRL **40** 729 (1978), PRL **57** 314 (1986)
Physics 2017: Direct observation of gravitational waves (Weiss, Thorne, Barish) PRL **116** 061102 (2016); **116** 241103 (2016); **118** 221101 (2017)
Physics 2016: Topological phases of matter (Thouless, Haldane, Kosterlitz) PRL **39** 1201 (1977); **49** 405 (1982); **50** 1153 (1983); **61** 2015 (1988)
Physics 2015: Discovery of neutrino oscillations (Kajita, McDonald) PRL **81**, 1562 (1998); PRL **87**, 071301 (2001) & **89** 011301 (2002)
Chemistry 2014: Super-resolved fluorescence microscopy (Moerner; Betzig & Hell) PRL **62**, 2535 (1989)
Physics 2013: Gauge Symmetry Breaking (Englert & Higgs): PRL 13, 321 (1964), PRL **13**, 508 (1964)
Physics 2012: Manipulation of Individual Quantum Systems (Haroche & Wineland): PRL **76** 1796 (1996); PRL **76**, 1800 (1996)
Chemistry 2011: Quasicrystals (Shechtman): PRL **53**, 1951 (1984)
Physics 2008 pt1/2: Dynamical Symmetry Breaking (Nambu): PRL **4**, 380 (1960); also Quark Mixing (Kobayashi & Maskawa)
Physics 2007: Giant Magnetoresistance (Fert & Grünberg): PRL **61**, 2472 (1988), PRB B **39**, 4828 (1989)
Chemistry 2007: Chemical Processes on Solid Surface (Ertl): PRL **54**, 1725 (1985), PRL **65**, 3013 (1990), PRL **93**, 188302 (2004)
Physics 2005 pt1: Frequency Combs (Hall & Hänsch): PRL **84**, 5102 (2000), PRL **84**, 3232 (2000)
Physics 2005 pt2: Quantum Theory of Optical Coherence (Glauber): PRL **10**, 84 (1963)
Physics 2004: Asymptotic Freedom (Gross, Wilczek & Politzer): PRL **30**, 1343 (1973), PRL **30**, 1346 (1973)
Physics 2003: Superfluid Theory (Leggett; Abrikosov & Ginzburg): PRL **29**, 1227 (1972)
Physics 2002 pt1: Neutrinos from SN87A (Koshiba): PRL **58**, 1490(&1494) (1987)
Physics 2002 pt2: Solar Neutrino Oscillations (Davis): PRL **20**, 1205 (1968) (and PRL **20**, 1209 (1968))
Physics 2002 pt3: Cosmic X-ray Sources (Giacconi): PRL **9**, 439 (1962)
Physics 2001: Bose-Einstein Condensation (Ketterle, Wieman & Cornell): PRL **75**, 3969 (1995), PRL **77**, 420 (1996)
Chemistry 2000: Conducting Polymers (Heeger, MacDiarmid, Shirakawa): PRL **39**, 1098 (1977)
Physics 1998: Fractional Charged Excitations & Quantum Hall Effect (Störmer&Tsui, Laughlin): PRL **48**, 1559 (1982), PRL **50**, 1395 (1983)
Physics 1997: Laser Cooling (Chu, Phillips, Cohen-Tannoudji): PRL **55**, 48 (1985), PRL **61**, 169 (1988), PRL **61**, 826 (1988)
Physics 1996: Superfluid Helium-3 (Osheroff, Richardson & Lee): PRL **28**, 885 (1972), PRL **29**, 920 (1972)
Physics 1995: Tau Lepton (Perl); Neutrino (Reines): PRL **35**, 1489 (1975), PR **117** 159 (1960)
Physics 1990: Discovery of Quarks (Taylor, Friedman & Kendall): PRL **23**, 930 (1969), PRL **23**, 935 (1969)
Physics 1988: Muon Neutrino (Lederman, Schwartz & Steinberger): PRL **9**, 36 (1962)
Physics 1986pt1/2: Scanning Tunneling Microscope (Binnig & Rohrer): PRL **49**, 57 (1982); also Electron Microscope (Ruska)
Physics 1985: Quantum Hall Effect (von Klitzing): PRL **45**, 494 (1980)
Physics 1982: Renormalization Group (Wilson): PRB 4, 3174&3184 (1971), PRL **28**, 240&548 (1972)
Physics 1980: CP violation (Cronin & Fitch): PRL **13**, 138 (1964)
Physics 1979: Electroweak Theory (Weinberg; Glashow & Salam) : PRL **19**, 1264 (1967)
Physics 1976: Discovery of J/ψ particle (Ting/Richter): PRL **33**, 1404 (1974), PRL **33**, 1406 (1974)
Physics 1973: Electron Tunneling between Superconductors (Giaever; Esaki & Josephson): PRL **5**, 147 (1960), PRL **5**, 464 (1960)

PRL Standards

end

PRL Criteria

All physics journals require papers to be

- valid
- novel
- in accordance with ethical standards
- supported by sufficient evidence and argumentation
- clearly written for the readership of the journal

PRLs must also meet our criteria of

Impact, **Innovation** and **Interest**

⇒Papers that are Likely to Substantially Advance Research

Editorial: Review Changes

October 2013

In a recent editorial, we discussed the need to enforce the acceptance criteria of *Physical Review Letters* more rigorously, and our intention to engage in an ongoing conversation with the physics community to determine the best way forward.

Recently a committee of senior and early career scientists from all major areas of physics spent two days at the Ridge Editorial Offices for in-depth discussions about the role and evolution of PRL. They provided us with a series of recommendations for all aspects of the journal. Most importantly, they endorsed the main point of our recent editorial. The committee affirmed that the present situation, with continued growth in both submissions and published Letters, is unsustainable. In particular, the committee indicated that the number of PRL submissions that undergo the full review process must decrease.

In the coming weeks we will respond with some important changes in the way papers are submitted and reviewed.

We will ask both authors and referees to address more explicitly than in the past how the paper (i) substantially advances a particular field; or (ii) opens a significant new area of research; or (iii) solves a critical outstanding problem, or makes a significant step toward solving such a problem; or (iv) is of great general interest, based, for example, on scientific aesthetics.

Authors will be required to submit a brief plain-language argument to support why their paper meets the PRL criteria in a new box on the manuscript submission server. Editors and any referees may use this text as an aid in reaching an editorial decision.

As always, we encourage authors to submit a very short summary of their paper for the nonspecialist reader. In the near future, we will offer a new feature: some of these summaries will be selected for publication along with the associated Letter.

We make an initial evaluation of all papers we receive. Eight years ago we greatly increased the fraction of papers we reject without external anonymous review—papers we judge are not suited for PRL under the presumption that the work is technically valid. The committee has asked us to significantly increase the fraction of such papers. We will accomplish this by soliciting more informal advice, including from our Divisional Associate Editors, though the volume of submissions precludes doing this for all cases. We are confident that a stronger emphasis on this approach will both significantly refocus the unique place of PRL in the APS publication landscape, and also more rapidly clarify for authors the status of their submissions.

Finally, we will soon implement a new option for authors suggested by the committee. There will be a place on the manuscript server for authors to provide us with contact information, for instance, to an institutional press office to which notification can be made if a Letter is accepted for publication.

The committee made additional recommendations about other aspects of PRL, which include issues that range from how Letters are presented and accessed to how we editors may deepen our contact with the community of authors and reviewers. We will discuss and/or announce these as they come about, but for now we aim at the most important first step to make PRL both a better and more sustainable journal.

Pierre Meystre
Editor

Published 29 October 2013
DOI: 10.1103/PhysRevLett.111.180001
PACS numbers: 01.30.Ww

Editorial: Review Changes

October 2013

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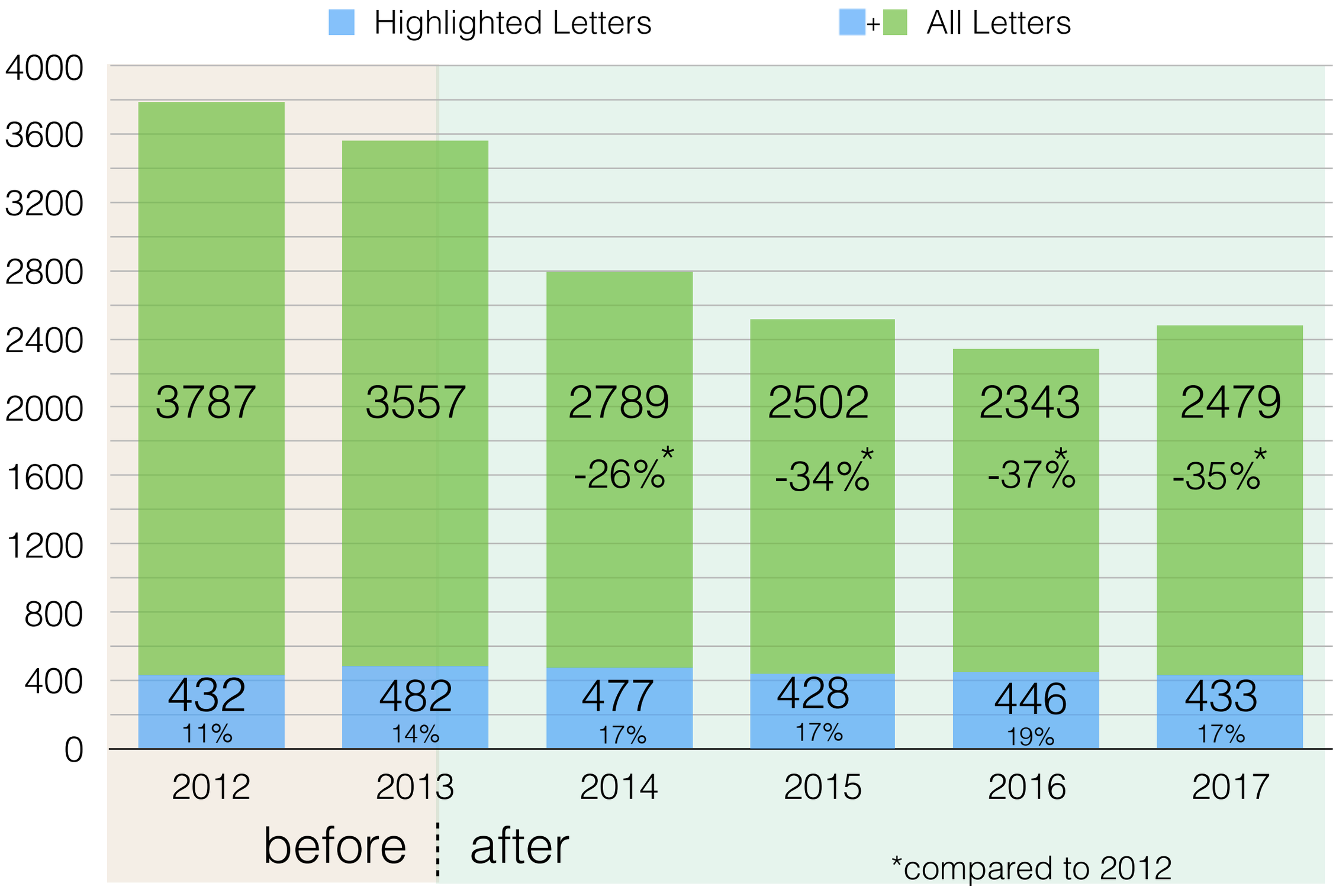
Before and After Reaffirmed Standards



How to Write a PRL

Title: Be clear & specific. Do not claim too much or too little.

Abstract: Explain what the result is and why is important, plus possibly a sentence or two of introduction, motivation, methods, caveats. What is the take-home story?

Justification: Explain what the result is and why is important, particularly arguing how the paper will move physics forward. Like the abstract, but shorter and with a focus on WHY not HOW.

Intro: Give sufficient background so the general reader can understand what you did and why you did it. Lay out the structure of the paper.

How to Write a PRL

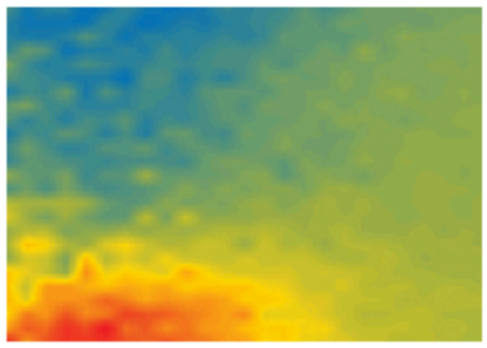
Body: Try to be clear, e.g. use heuristic explanations. But making a strong case for the result takes precedence. You can submit Supplemental Material or, better, an accompanying longer paper.

Conclusion: Summarize what you did, note key equations and specific results. If there is a main numerical result, quote it there. Then go back and make sure the abstract contains the most important results. Say what's next.

References: Cite background work, work that led to yours, particularly anything which might bear on the novelty of your work. Not too many of your own papers. Not too many review articles. References do *not* count towards length.

Highlighting Papers

end



ON THE COVER

Black Hole Disks in Galactic Nuclei

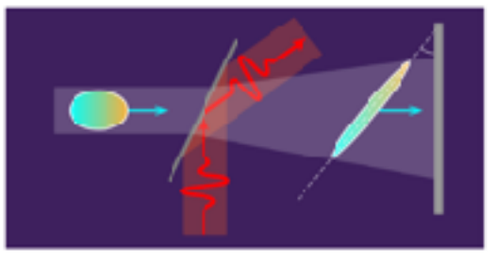
September 7, 2018

A 180°-rotated distribution of orbital planes of objects orbiting around a supermassive black hole as a function of object mass.

Ákos Szölgyén and Bence Kocsis

Phys. Rev. Lett. **121**, 101101 (2018)

Issue 10 Table of Contents | More Covers



Physics NEWS AND COMMENTARY

Shaping Electron Bunches at the Femtosecond Level

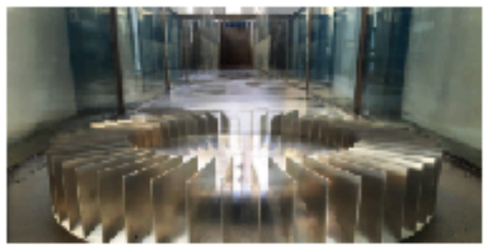
August 29, 2018

By crossing an electron beam with a terahertz light pulse, researchers are able to generate a tilted electron bunch, which could provide improved temporal resolution to electron microscopy.

Viewpoint on:

Dominik Ehberger, Andrey Ryabov, and Peter Baum

Phys. Rev. Lett. **121**, 094801 (2018)



Physics NEWS AND COMMENTARY

More Energy from Ocean Waves

September 7, 2018

A new structure concentrates water wave motion and could lead to improved techniques for harvesting this renewable energy.

Current Issue

Vol. 121, Iss. 10 — 7 September 2018

View Current Issue

Previous Issues

Vol. 121, Iss. 9 — 31 August 2018
Vol. 121, Iss. 8 — 24 August 2018
Vol. 121, Iss. 7 — 17 August 2018
Vol. 121, Iss. 6 — 10 August 2018

Browse All Issues »

Viewpoint: Shaping Electron Bunches at the Femtosecond Level

Jérôme Faure, Laboratory of Applied Optics, ENSTA-CNRS-École Polytechnique, Palaiseau, France

August 29, 2018 • *Physics* 11, 87

By crossing an electron beam with a terahertz light pulse, researchers are able to generate a tilted electron bunch, which could provide improved temporal resolution to electron microscopy.

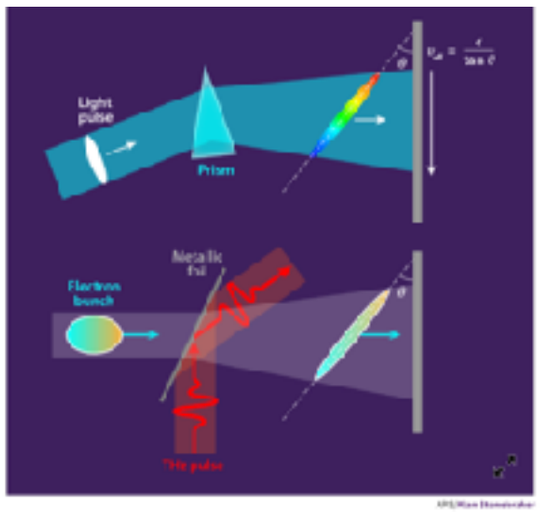


Figure 1: Illustration of a pulse front tilt: in optics (top), in which a prism deflects light waves at different angles based on their frequencies. A new experiment has demonstrated a similar tilt for an electron bunch (bottom) by directing the electrons through ... Show more

Microscopy is an extremely powerful tool for scientists. While biologists use light-based microscopes to observe cells, material scientists often rely on electrons, whose shorter wavelengths offer direct visualization of atoms with

Focus: Neutrinos Have Mass

Published September 1, 1998 | Phys. Rev. Focus **2**, 10 (1998) | DOI: 10.1103/PhysRevFocus.2.10

Neutrinos dart through matter and space at a pace indistinguishable from the speed of light, so they were initially thought to be massless. And although there have been indications from experiments for many years that these neutral particles actually have a small mass, there has been no definitive proof. But evidence reported in the 24 August *PRL* has convinced many that atmospherically produced neutrinos oscillate–switch from one variety to another–which would imply that neutrinos indeed have mass. This small mass would require an extension to the Standard Model of particle physics and may provide a window on the remote grand unification scale where the forces of

Evidence for Oscillation of Atmospheric Neutrinos

Y. Fukuda *et al.* (Super-Kamiokande Collaboration)
Phys. Rev. Lett. 81, 1562 (1998)
Published August 24, 1998

• • •

–Robert Garisto

Robert Garisto is an Assistant Editor for *Physical Review Letters*.

Vehicles for Highlighting PRLs

Editors' Suggestions: Letters which are judged to be quite important, interesting, and well written. Placard with blurb. *Fraction of Letters*: 16% *of Receipts*: 3.5%

***Physics* Synopses:** Results which are judged to be very important. Short piece written by an editor or science writer. *Fraction of Letters*: 4% *of Receipts*: 1%

***Physics* Viewpoints:** Results which are judged likely to be very influential. Long piece written by an expert in the field. *Fraction of Letters*: 2.5% *of Receipts*: 0.5%

(***Physics* Focus:** Interesting results, about 1/week.)

end

Path to Suggestions & *Physics*

Handling Editor

22%

PHYSICAL REVIEW LETTERS

SUGGESTION

3.5%

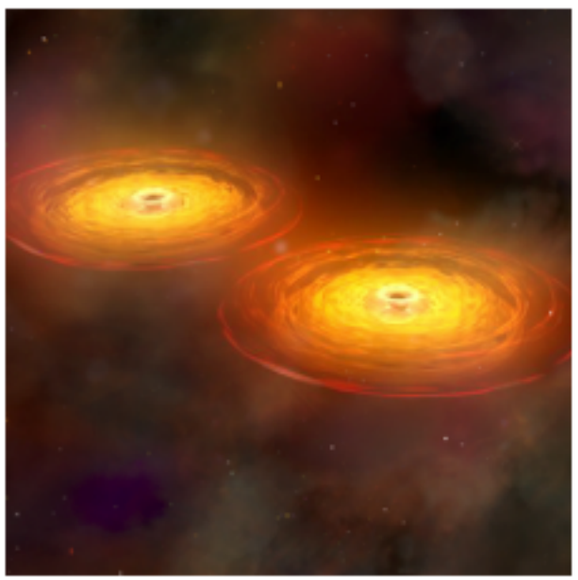
Other PRL Editors

Viewpoint

0.5%

Physics Editors

end



2015 - General Relativity's Centennial

The editors of the *Physical Review* journals have curated a collection of landmark papers on General Relativity to celebrate its centennial. These papers are currently free to read.

INTERNATIONAL YEAR OF LIGHT 2015

The *Physical Review* Journals Celebrate The International Year of Light

The editors of the *Physical Review* journals revisit papers that represent important breakthroughs in the field of optics.

50 years PRL moving physics forward

Letters from the Past - A PRL Retrospective

2008 marked PRL's 50th anniversary. As part of the celebrations a collection of milestone Letters was started. The collection contains Letters that have made long-lived contributions to physics, either by announcing significant discoveries, or by initiating new areas of research.

end

Celebrating 125 years of *The Physical Review*

The American Physical Society (APS) is proud to celebrate the 125th anniversary of the *Physical Review* journals. To commemorate this milestone, the editors present a timeline of select papers and events that are of significance to physics and to the history of the APS. From Robert Millikan's famous oil drop experiments to the discovery of gravitational waves, the *Physical Review* journals have published a wide range of important results, many of which have been recognized with Nobel and other notable prizes. The papers in the timeline, along with landmark events in the history of the *Physical Review*, will be highlighted on our journal websites and in social media throughout 2018.

PHYSICAL REVIEW JOURNALS 125 YEARS

1893

1893
The Physical Review begins publication at Cornell University's Franklin Hall in Ithaca, New York

1899
The American Physical Society is founded

1910s

1913
The American Physical Society takes over *The Physical Review*

1913

Millikan determines the electron's charge

Millikan's oil-drop experiment proves that electric charge comes only in discrete, integer multiples of a fundamental constant, rather than in a continuum of values. Millikan determines this constant—the charge

Physical Review Letters

125 YEARS

@PhysRevLett

Tweets 1,125 | Following 149 | Followers 7,647 | Likes 397 | Lists 0 | Moments 0 | Edit profile

Physical Review Lett
@PhysRevLett

Flagship journal of the nonprofit APS. The most cited physics journal, publishing Letters which substantially move physics forward.

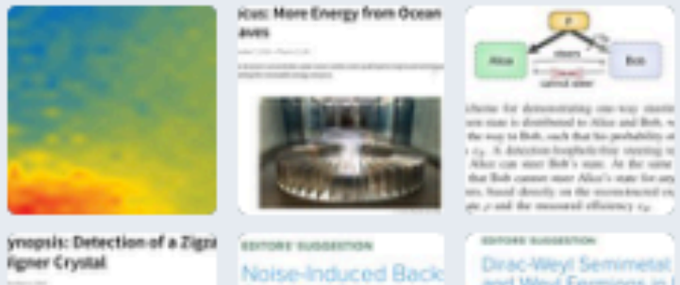
Earth

journals.aps.org/prl/

Joined February 2015

Born on July 1, 1958

741 Photos and videos



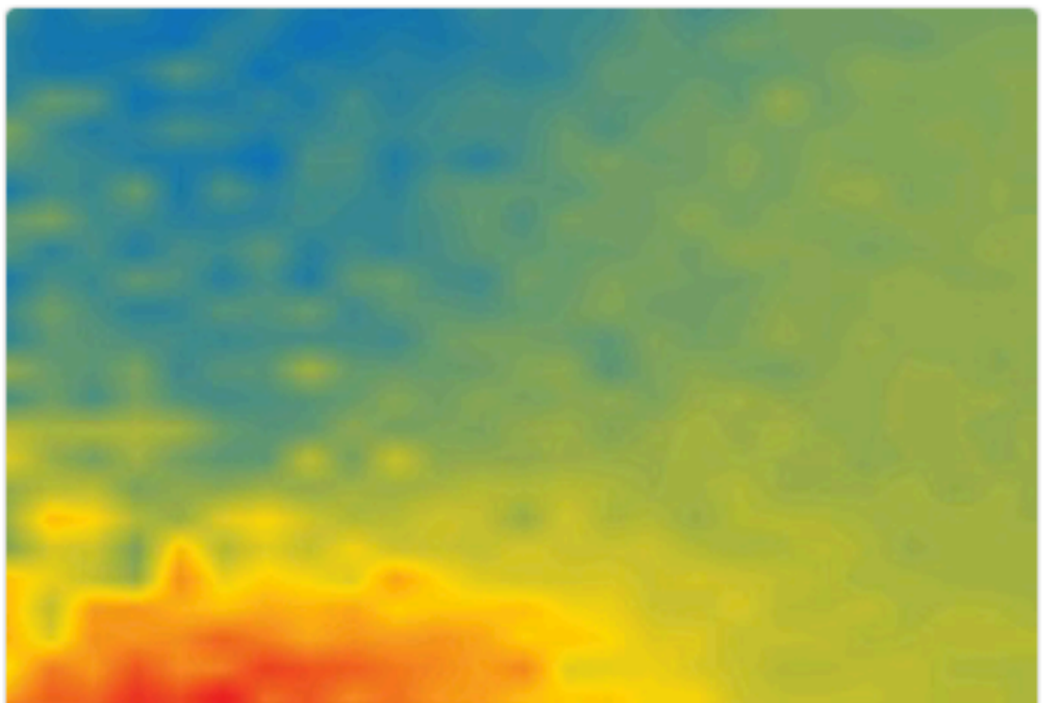
Tweets | Tweets & replies | Media

Physical Review Lett @PhysRevLett · Sep 7

Volume 121, Issue 10

go.aps.org/2oPIC3M

Cover: A 180°-rotated distribution of orbital planes of objects orbiting around a supermassive black hole as a function of object mass



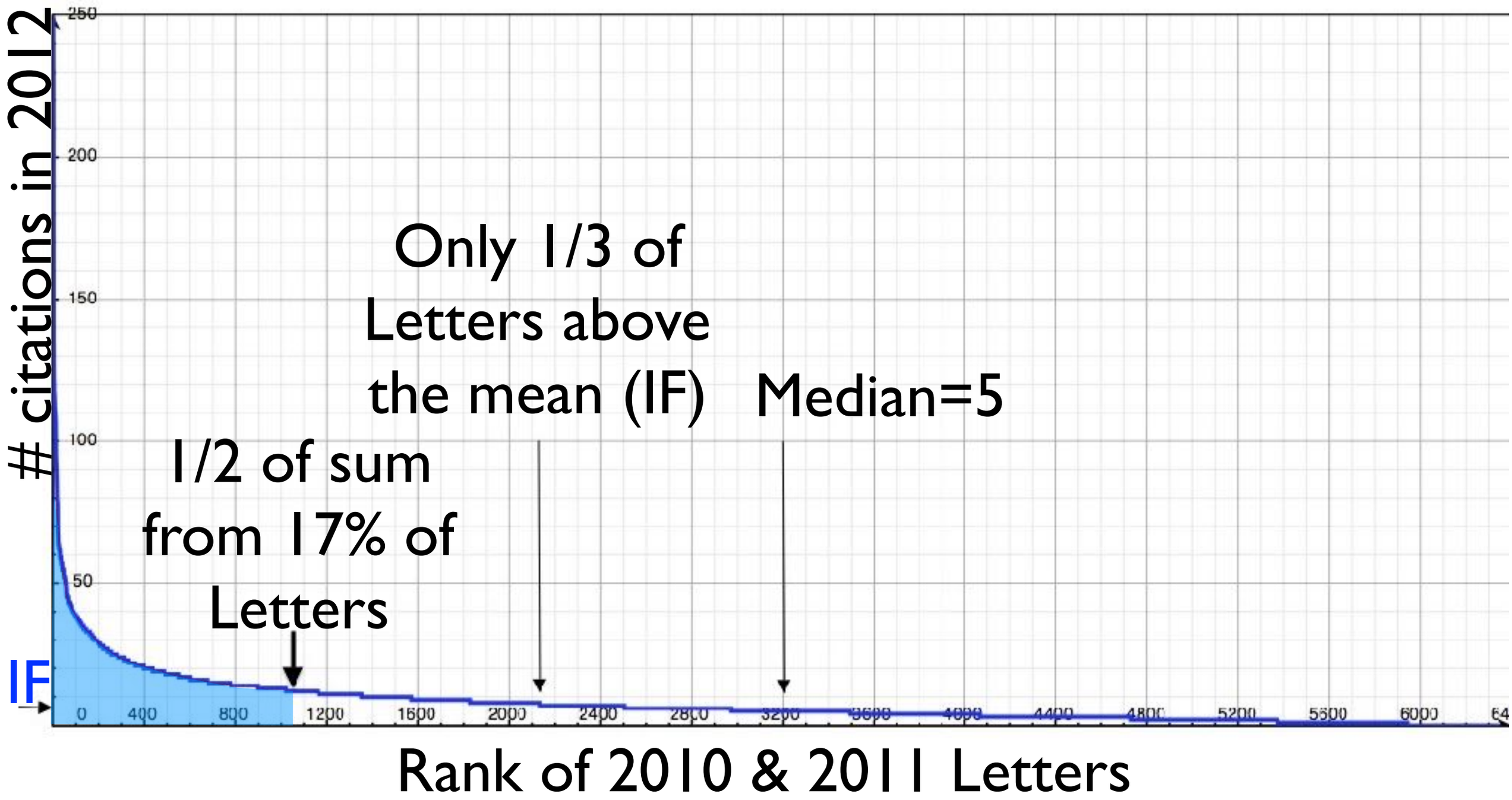
Journal Metrics

end

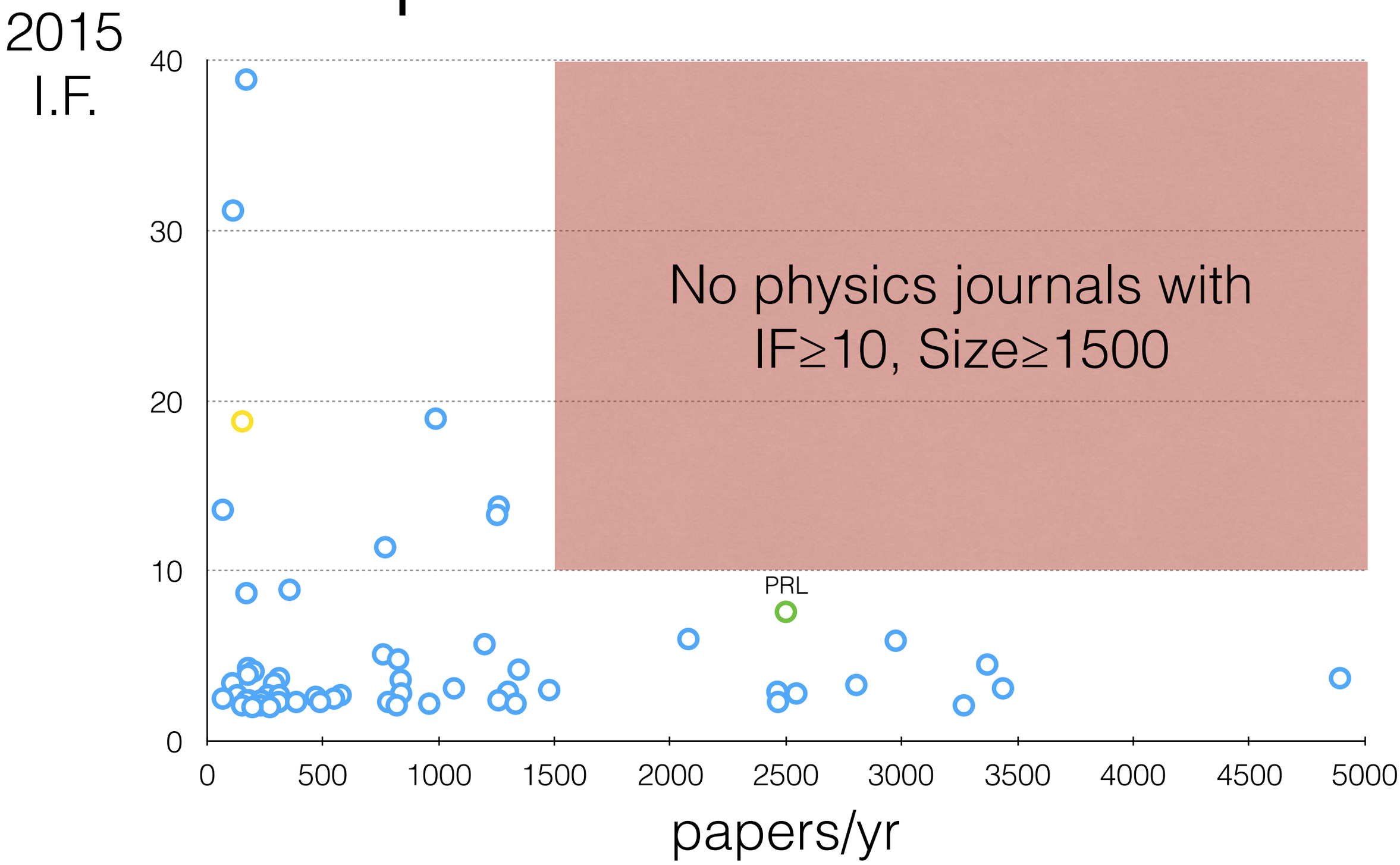
Impact Factor

Citation Curve

$$\text{2012 IF} = \frac{\#\text{citations in 2012}}{\#\text{ Letters in 2010 \& 2011}} = 7.9$$

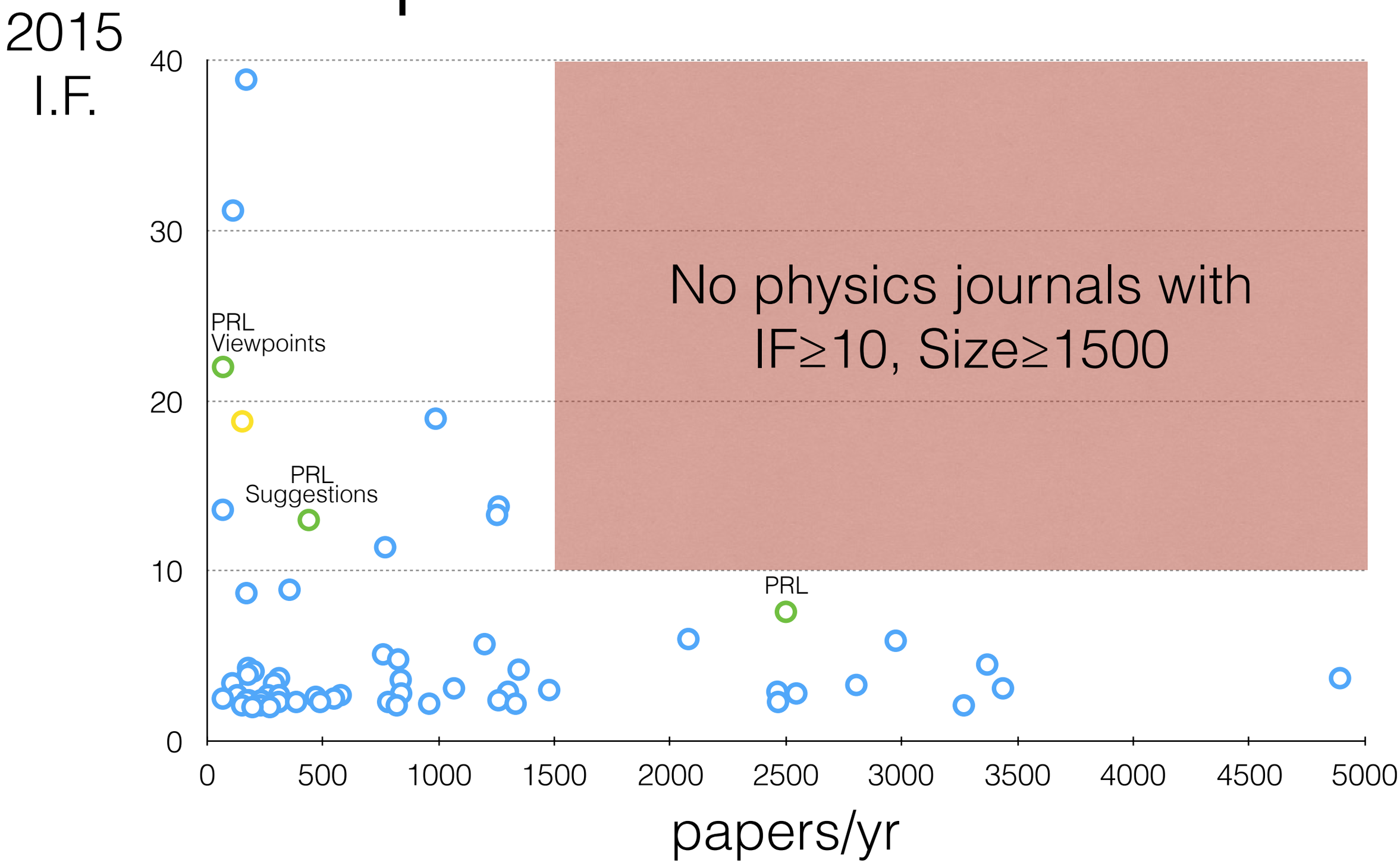


Physics Journals*
Impact Factor vs Size



*excludes multidisciplinary & review journals, size<50, IF<2.

Physics Journals*
Impact Factor vs Size



*excludes multidisciplinary & review journals, size<50, IF<2.

Impact Factor is a *Journal* Metric

However much you value the Impact Factor as a metric for journals, please do not use it to measure the worth of *papers*.

end

The Back Page (of APS News, Nov. 2014)

High-impact-factor Syndrome

By Carlton M. Caves

You are surprised to find that you have been tasked with evaluating minor-league pitchers eager to get into major-league baseball. You interview applicants, collect information, and observe their performance. But, being a physicist, you know next to nothing about evaluating pitching skill, so to make your life easier, you fix on a single figure of merit, the pitcher's heat (fastball speed). Although you have access to each applicant's fastball speed, you elect to rank the candidates in terms of the average speed of all the pitchers on an applicant's current minor-league team. Using this as a proxy for individual pitching ability, you assemble a pitching staff. As the season wears on, your pitchers are drubbed in game after game. You see the general manager approaching with a frown on his face, and...the alarm goes off.

end

h index

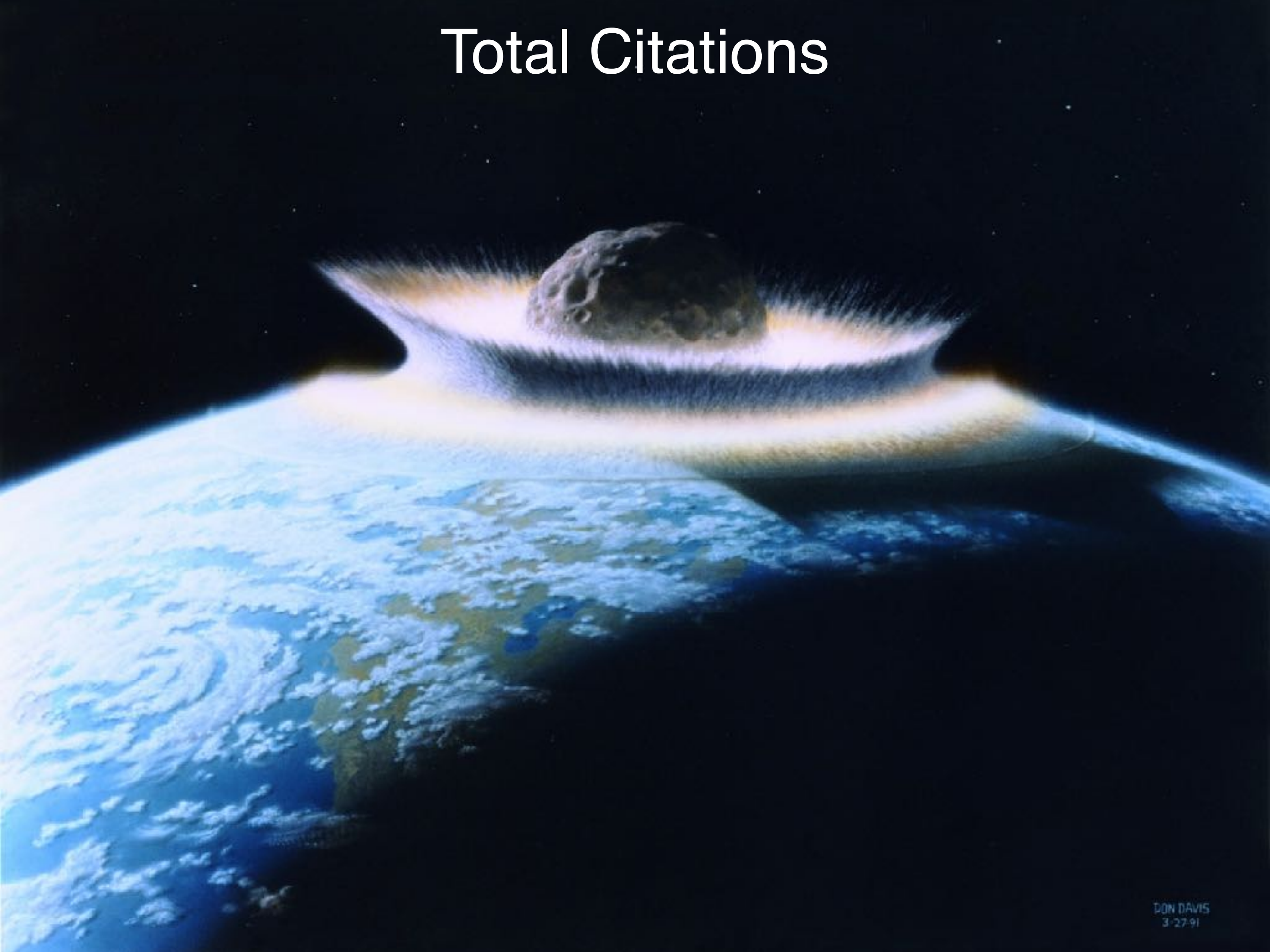
← Physics & Mathematics

Google Scholar

Subcategories

	Publication	h5-index	h5-median
1.	Physical Review Letters	197	286
2.	The Astrophysical Journal	163	222
3.	Journal of High Energy Physics	161	226
4.	Nature Photonics	157	264
5.	Physical Review D	145	202
6.	Monthly Notices of the Royal Astronomical Society	135	181
7.	Physical Review B	130	168
8.	Nature Physics	127	179
9.	Physics Letters B	116	149
10.	Astronomy & Astrophysics	115	163
11.	The European Physical Journal C	107	228
12.	Applied Physics Letters	103	131
13.	Optics Express	103	129
14.	Reviews of Modern Physics	97	213
15.	IEEE Transactions on Automatic Control	91	130
16.	Journal of Cosmology and Astroparticle Physics	91	126

Total Citations



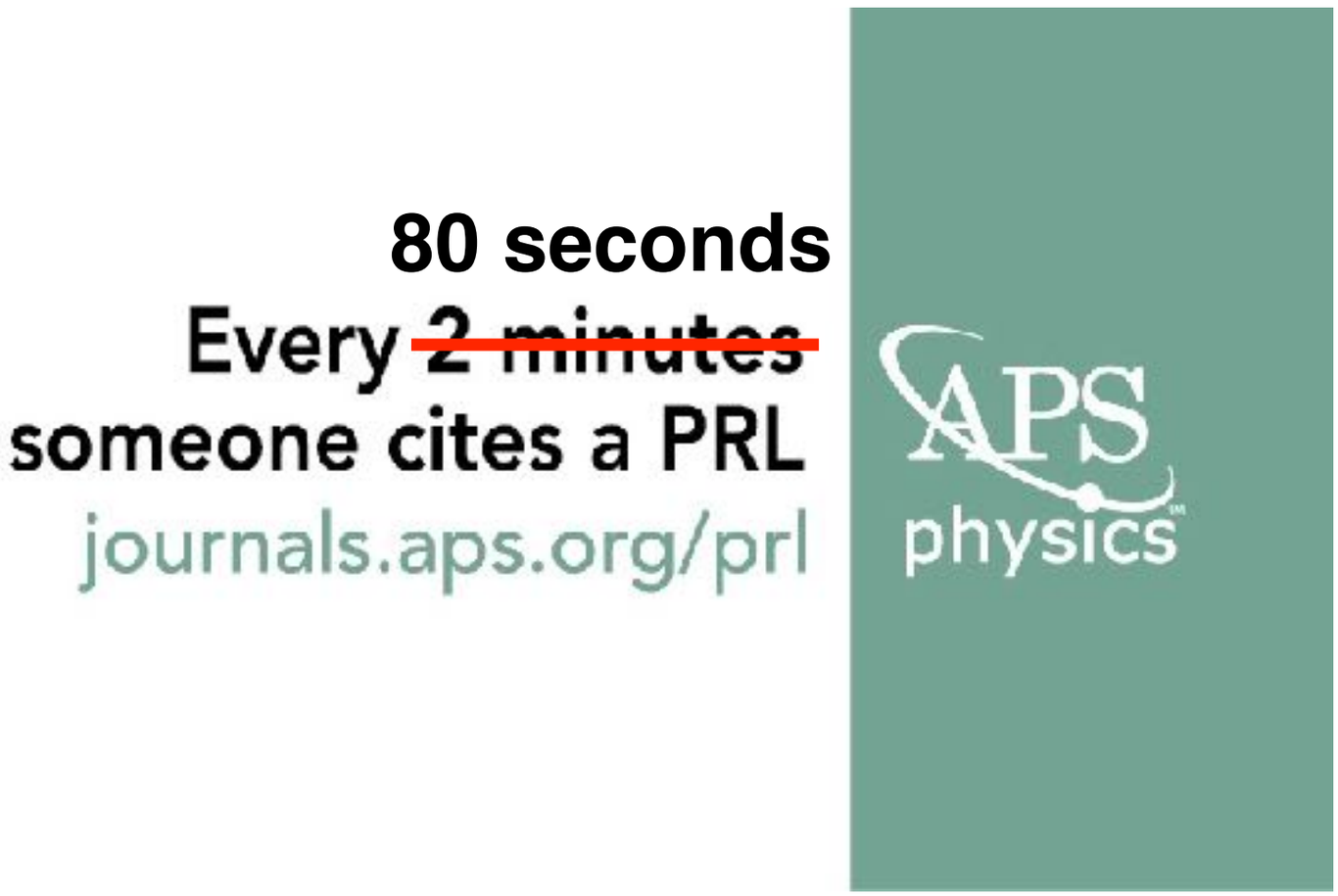
Total Citations to PRL

- High citation rate
- Many Letters/year
- Papers cited for a long time

⇒ 2017 PRL total citations:

433,000 times!

There are 525,600 minutes/yr,
so a PRL is cited more than
once every 80 seconds!



More physics citations than any other journal.

end

PRL

8.839
Journal Impact Factor
2017

2.297
Immediacy Index
2017

0.65857
Eigenfactor®

197
h5-index

TOTAL CITATIONS:
7.9+ million

2017
Published Articles

2,585

Article Downloads

more than 6.2 million

Source: *Journal Citation Reports* (Clarivate Analytics, 2018)

PHYSICAL REVIEW LETTERS

Altmetrics

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Observation of Gravitational Waves from a Binary Black H Merger

B. P. Abbott *et al.* (LIGO Scientific Collaboration and Virgo Collaboration)
Phys. Rev. Lett. **116**, 061102 – Published 11 February 2016

Physics See Viewpoint: The First Sounds of Merging Black Holes

Article | References | Citing Articles (15) | PDF | HTML | Export Citation

ABSTRACT

On September 14, 2015 at 09:50:45 UTC the two detectors of the Laser Interferometer Gravitational-Wave Observatory simultaneously observed a transient gravitational-wave signal. The signal sweeps upwards in frequency from 35 to 250 Hz with a peak gravitational-wave strain of 1.0×10^{-21}. It

Issue
Vol. 116, Iss. 6 — 12 February 2016

This research output has an **Altmetric score** of **4545**. This is our high-level measure of the quality and quantity of online attention that it has received. This score was calculated when the research output was last mentioned on **31 March 2016**.

ALL RESEARCH OUTPUTS	OUTPUTS FROM PHYSICAL REVIEW LETTERS	OUTPUTS OF SIMILAR AGE	OUTPUTS OF SIMILAR AGE FROM PHYSICAL REVIEW LETTERS
#13	#1	#1	#1
of 4,980,186 outputs		of 228,437 outputs	

Publication Enhancements

PRL

Physical Review Lett @PhysRevLett · Feb 17

Volume 118, Issue 7

journals.aps.org/prl/issues/118… #video #cover #fluids

PhySH
(Physics Subject Headings)

- Keyword-based hierarchical classification scheme

Thermodynamics
- Interface & surface thermodynamics
- Nonequilibrium & irreversible thermodynamics
  - Entropy production
  - Quantum thermodynamics
- Thermodynamics of computation
- Thermodynamics of mixing

- Has replaced PACS—need to enter on all submissions (2-6 keywords please)
- Used for internally: helps assign editor & referees
- Appears on wrapper (abstract) page
- Will allow easier topical searches across journals

GRAVITATION & ASTROPHYSICS

ATOMIC, MOLECULAR & OPTICAL

ACCELER & B

RESEARCH AREAS

PHY

PROPERTIES

TECHNIQUES

PROFESSIONAL TOPICS

1

FACETS

Broad groupings of concepts according to the general role they serve.

2

DISCIPLINES

Specialties within physics used to narrow the list of concepts.

3

CONCEPTS

The fundamental building blocks used for classification.

Laser Applications

Quantum Gravity

Loop Quantum Gravity

Theoretical Techniques

X-Ray Diffratction

APS physics

physh.aps.org

Browse PhySH

DISCIPLINES

- [ ] Accelerators & Beams
- [ ] Atomic, Molecular & Optical
- [ ] Biological Physics
- [ ] Condensed Matter & Materials Physics
- [ ] Fluid Dynamics
- [ ] General Physics
- [ ] Gravitation, Cosmology & Astrophysics
- [ ] Interdisciplinary Physics
- [ ] Networks
- [ ] Nonlinear Dynamics
- [ ] Nuclear Physics
- [x] Particles & Fields
- [ ] Physics Education Research
- [ ] Plasma Physics
- [ ] Polymers & Soft Matter
- [ ] Quantum Information
- [ ] Statistical Physics

SHOW MORE

- [ ] Include all related concepts
- [ ] Include all narrower concepts

Search ×

Research Areas | Physical Systems | Properties | Techniques | Professional Topics | All

Electroweak interaction

Hide 4 Narrower

- Electroweak radiative corrections
- Hierarchy problem
- Quantum electrodynamics
- Vacuum stability

Particle phenomena

Show 4 Narrower

Strong interaction

Show 5 Narrower

Hypothetical particle physics models

Show 7 Narrower

Quantum field theory

Show 32 Narrower

Particle astrophysics

Show 3 Narrower

Strings & branes

Hide 6 Narrower

- Braneworlds
- Compactification
- Gauge-gravity dualities
- M-theory
- String dualities
- String phenomenology

Gravitation, Cosmology & Astrophysics +

dark ×

Dark energy
Research Areas > Cosmology > **dark** energy

Dark matter
Research Areas > Cosmology > **dark** matter

Dark matter detectors
Techniques > Experimental Techniques > Cosmic ray & astroparticle detectors > **dark** matter detectors
Techniques > Experimental Techniques > Particle detectors > Cosmic ray & astroparticle detectors > **dark** matter detectors

Scroll for more…

Selected Concepts

★ Mark one term as primary

Research Areas

Dark energy ★ ×

Large scale structure of the Universe ☆ ×

Submit

Research Areas

Physical Systems

Properties

Computational Techniques

Experimental Techniques

⊟ Cosmic rays & astroparticles

Cosmic ray acceleration

Cosmic ray composition & spectra

Cosmic ray propagation

Cosmic ray sources

Extrasolar neutrino astronomy

Particle dark matter

Solar neutrinos

⊟ Other Related Concepts

1 more related to Cosmic rays & astroparticles

Physics Subject Headings (PhySH)

Research Areas

- Charge density waves
- Conductivity
- Gauge-gravity dualities
- Spontaneous symmetry breaking
- **String theory techniques in condensed matter**

Physical Systems

- High-temperature superconductors

Properties

- Symmetries in condensed matter

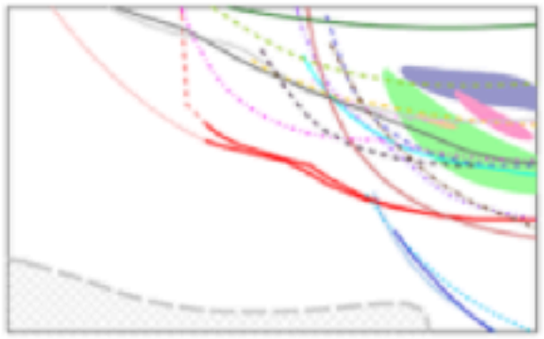
Condensed Matter & Materials Physics

Particles & Fields

PHYSICAL REVIEW LETTERS
moving physics forward

Dear Sir or Madam,

We are pleased to inform you that the Letter



Low-mass dark matter search with the DarkSide-50 experiment

P. Agnes *et al.* (DarkSide-50)
Phys. Rev. Lett. **121**, 081307 (2018)

Published 23 August 2018

has been highlighted by the editors as an Editors' Suggestion. Publication of a Letter is already a considerable achievement, as *Physical Review Letters* accepts fewer than 1/4 of submissions, and is ranked first among physics and mathematics journals by the Google Scholar five-year h-index. A highlighted Letter has additional significance, because only about one Letter in six is highlighted as a Suggestion due to its particular importance, innovation, and broad appeal. Suggestions are downloaded twice as often as the average Letter, and are covered in the press substantially more often. If Suggestions were a separate publication, they would have an Impact Factor of 17. More information about our journal and its history can be found on our webpage prl.aps.org.

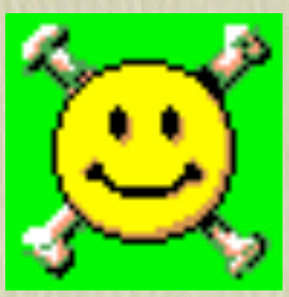
Open Access

end

Open Access?

- Vetting papers costs money.
- Paid either by authors, readers, or third party.
- We want information to be as freely available as possible under the constraint that it allows us to stay in business.

Open Access?



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- All Open Access Journal: *PRX*. Authors *must* pay for their papers to be published.

- CHORUS: Author final resubmission Open Access after 1 year.

- Started in 2018: SCOAP3!

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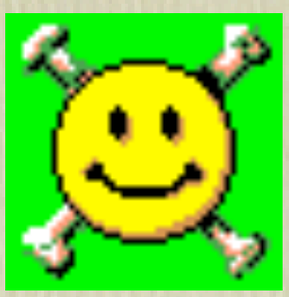

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- All Open Access Journal: *PRX*. Authors *must* pay for their papers to be published.

- CHORUS: Author final resubmission Open Access after 1 year.

- Started in 2018: SCOAP3!

APS joins SCOAP3

- Agreement reached with CERN a last year.
- Began in 2018.
- All **hep** papers in PRL, PRC and PRD will be **open access** *at no cost to the author*.
- Paid for by the SCOAP3 consortium.

Physical Review Letters™

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