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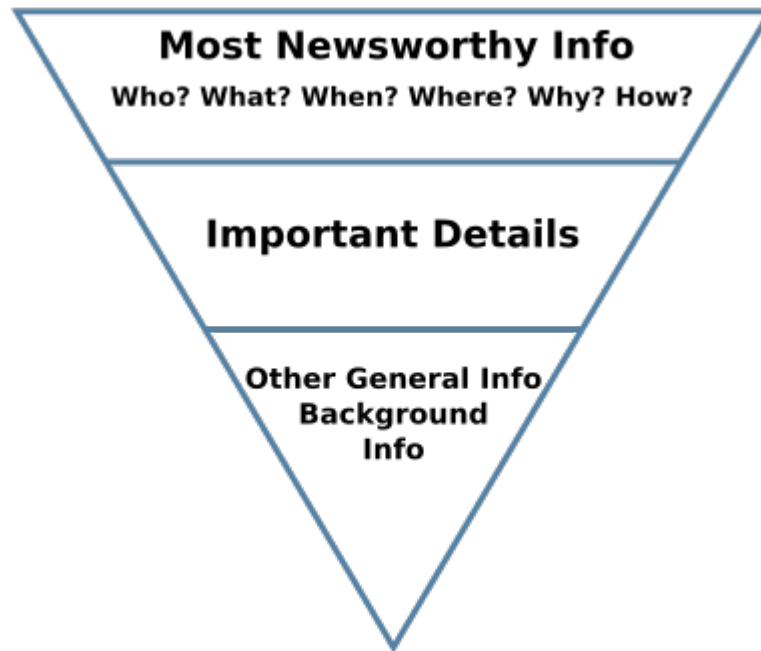
Det matematisk-naturvitenskapelige fakultet

# The “Art” of Writing a Scientific Paper

**Sverre Holm**



# The Inverted Pyramid



[https://en.wikipedia.org/wiki/Inverted\\_pyramid](https://en.wikipedia.org/wiki/Inverted_pyramid)

## Journal Publications

## Publications at Conferences

1. V. Pandey, S. P. N. publication.
2. W. Zhang and S. H.
3. S. A. Lambert, S. F. [orders of magnitud](#)
4. S. Holm, "[Prudenc](#)  
◦ [Matlab code](#)
5. T. Dahl, J. Ealo, H.
6. J. P. Åsen, A. Aust  
Ferroelect., Freq. C
7. S. Holm, "[On the a](#)  
([arXiv version](#)).  
◦ S. Holm, [Co](#)  
Terrestr. Phy  
◦ [Matlab code](#)
8. S. Holm and S. P. I  
Medicine and Biolo
9. J. P. Åsen, J. I. Bus  
[Imaging](#)." IEEE Tr
10. W. Zhang, X. Cai,  
pp 164–171, Jan 20
11. A. L. L. Ramos, S.  
to Gunshot Acoust.
12. S. Holm, S. P. Näs  
Computers & Math
13. S. P. Näsholm and
14. A. C. Jensen, S. P.  
[Ultrasound Imagin](#)
15. F. Prieur, G. Vilens  
operator," Journ. A  
◦ [Download p](#)
16. S. Mehdizadeh, A.  
[Acoustically Hard](#)
17. P. K. Eide, S. Holm  
[patients with cereb](#)
18. F. Prieur, S. P. Näs  
[Simulations](#)." IEEE
19. F. Prieur, T. F. Joh  
Soc. Am, June 201  
◦ [Download p](#)
20. I. Hafizovic, C.-I. C  
IEEE Trans. Audio
21. S. Mehdizadeh, A.  
[Scatterer](#)." IEEE Trans. Ultrason., Ferroelect., Freq. Contr., April 2012
65. S. Holm, "Four interpretations of temporal memory operators in the wave equation," Invited presentation, Acoust. Soc. Am. meeting, Jacksonville FL, Nov. 2015.
66. V. Pandey, S. Holm, "A fractional calculus approach to the propagation of waves in an unconsolidated granular medium," Acoust. Soc. Am. meeting, Jacksonville FL, Nov. 2015.
67. S. Holm, "Four ways to justify temporal memory operators in the lossy wave equation," IEEE Ultrason. Symp., Taipei, Oct. 2015. [ArXiv](#)
68. S. Holm, "[Four ways to interpret temporal memory operators in the wave equation](#)," 8th Vienna Int. Conf. Math. Modelling, Vienna, Feb 2015.
69. V. Pandey, S. P. Näsholm, S. Holm, "Wave propagation in a spatially tempered nonlocal elastic medium," [Int. Conf. Fract. Diff. Applic. \(ICFDA'14\)](#), June 2014, Catania, Italy
70. E. Bakken, T. S. Lande, S. Holm, [Real time UWB radar imaging using single chip transceivers](#), IEEE Int. Symp. Circuits and Systems (ISCAS), pp.2461,2464, 1-5 June 2014.
71. S. A. Lambert, P. Näsholm, L. Juge, L. Bilston, B. Guzina, S. Holm, and R. Sinkus, "Waves as biosensor for microarchitecture" presented at [Int. Soc. Magn. Res. in Med.](#), Milan, May 2014.
72. W. Zhang and S. Holm, "Modeling radiation force and shear wave propagation using the fractional Kelvin-Voigt model", 12th [Int. Tissue Elasticity Conference](#), Lingfield Park, England, Oct 2013.
73. Skogstad, Ståle Andreas van Dorp; Nymoen, Kristian; Høvin, Mats Erling; Holm, Sverre; Jensenius, Alexander Refsum. "Filtering Motion Capture Data for Real-Time Applications." in Proc. Int. Conf. on New Interfaces For Musical Expression. Daejeon: Korea Advance Institute of Science and Technology, pp. 142-147, May 2013
74. C.-I. Nilsen, I. Hafizovic, S. Holm, "Robust 3-D Sound Source Localization Using Spherical Microphone Arrays," [Proc. Int. Audio Eng. Soc. Convention](#), Rome, May 2013.
75. S. A. Lambert, S. Chatelin, P. Näsholm, L. Juge, P. Garteiser, L. Ter Beek, V. Vilgrain, B. E. Van Beers, L. E. Bilston, B. Guzina, S. Holm, and R. Sinkus, "[Sub-Voxel Micro-Architecture Assessment by Scattering of Mechanical Shear Waves](#)," presented at Int. Soc. Magn. Res. in Med, Salt Lake City, April 2013.
76. E. Bakken, T. S. Lande, S. Holm, "[Effect of process variations in CMOS chips for radar beamforming](#)," NORCHIP, Copenhagen, Denmark, Nov. 2012
77. S. Holm, "[Ultrasound positioning based on time-of-flight and signal strength](#)," in Proc. 2012 Int. Conf. Indoor Positioning and Indoor Navigation, Sydney, Nov. 2012
78. C. Medina, S. Holm, J. C. Segura, "[Feasibility of ultrasound positioning based on signal strength](#)" in Proc. 2012 Int. Conf. Indoor Positioning and Indoor Navigation, Sydney, Nov. 2012
79. S. A. D. Skogstad, S. Holm, M. Høvin, "Designing Digital IIR Low-Pass Differentiators With Multi-Objective Optimization," 2012 IEEE 11th International Conference on Signal Processing, Beijing, China, 21-25. Oct 2012
80. S. A. D. Skogstad, S. Holm, M. Høvin, "Digital IIR filters with minimal group delay for real-time applications," 2012 IEEE Int. Conf. Engineering and Technology (ICET), Cairo, Egypt, 10-11. Oct 2012.
81. S. Mehdizadeh, S. Muller, T. F. Johansen, S. Holm, "Application of eigen-spaced beamformers for imaging lamina of vertebral arch," IEEE International Ultrasonics Symposium, Dresden, Germany, 2012.
82. J. P. Åsen, J. I. Buskenes, C.-I. C. Nilsen, A. Austeng, S. Holm, "Implementing Capon Beamforming on the GPU for Real Time Cardiac Ultrasound Imaging," IEEE International Ultrasonics Symposium, Dresden, Germany, 2012.
83. J. P. Åsen, S. Holm, "Huygens on Speed - Interactive Simulation of Ultrasound Pressure Fields," IEEE International Ultrasonics Symposium, Dresden, Germany, 2012.
84. S A Lambert, S Chatelin, S P Näsholm, L. Juge, P. Garteiser, L. ter Beek, V. Vilgrain, B. E. van Beers, L. E. Bilston, B. Guzina, S. Holm, R. Sinkus, "Sub-Voxel Micro-Architecture Assessment by Scattering of Mechanical Shear," 11th [Int. Tissue Elasticity Conference](#), Deauville, France, Oct 2012.

# Different perspectives on writing

## Writer's perspective

- Abstract
- Introduction
- Theory
- Methods and Materials
- Results
- Discussion
- Conclusion

# Different perspectives on writing

## Writer's perspective

- Abstract
- Introduction
- Theory
- Methods and Materials
- Results
- Discussion
- Conclusion

## Reader's perspective

1

2

4

3



## GEOLOGICAL NOTES

### A SCRUTINY OF THE ABSTRACT, II<sup>1</sup>

KENNETH K. LANDES<sup>2</sup>

Ann Arbor, Michigan

#### ABSTRACT

A partial biography of the writer is given. The inadequate abstract is discussed. What should be covered by an abstract is considered. The importance of the abstract is described. Dictionary definitions of "abstract" are quoted. At the conclusion a revised abstract is presented.

For many years I have been annoyed by the inadequate abstract. This became acute while I was serving a term as editor of the *Bulletin* of The American Association of Petroleum Geologists. In addition to returning manuscripts to authors for rewriting of abstracts, I also took 30 minutes in which to lower my ire by writing, "A Scrutiny of the Abstract."<sup>1</sup> This little squib has had a fantastic distribution. If only one of my scientific outpourings would do as well! Now the editorial board of the Association has requested a revision. This is it.

The inadequate abstract is illustrated at the top of the page. The passive voice is positively screaming at the reader! It is an outline, with each item in the outline expanded into a sentence. The reader is told what the paper is about, but not what it contributes. Such abstracts are merely overgrown titles. They are produced by writers who are either (1) beginners, (2) lazy, or (3) have not written the paper yet.

To many writers the preparation of an abstract is an unwanted chore required at the last minute by an editor or insisted upon even before the paper has been written by a deadline-bedeveled program chairman. However, in terms of market reached, the abstract is *the most important part of the paper*. For every individual who reads or

listens to your entire paper, from 10 to 500 will read the abstract.

If you are presenting a paper before a learned society, the abstract alone may appear in a pre-convention issue of the society journal as well as in the convention program; it may also be run by trade journals. The abstract which accompanies a published paper will most certainly reappear in abstract journals in various languages, and perhaps in company internal circulars as well. It is much better to please than to antagonize this great audience. Papers written for oral presentation should be *completed prior to the deadline for the abstract*, so that the abstract can be prepared from the written paper and not from raw ideas gestating in the writer's mind.

My dictionary describes an abstract as "a summary of a statement, document, speech, etc. . . ." and that which *concentrates in itself the essential information* of a paper or article. The definition I prefer has been set in italics. May all writers learn the art (it is not easy) of preparing an abstract containing the *essential information* in their compositions. With this goal in mind, I append an abstract that should be an improvement over the one appearing at the beginning of this discussion.

#### ABSTRACT

The abstract is of utmost importance, for it is read by 10 to 500 times more people than hear or read the entire article. It should not be a mere recital of the subjects covered. Expressions such as "is discussed" and "is described" should *never* be included! The abstract should be a condensation and concentration of the *essential information* in the paper.

# Abstract 1

A partial biography of the writer is given. The inadequate abstract is discussed. What should be covered by an abstract is considered. The importance of the abstract is described. Dictionary definitions of "abstract" are quoted. At the conclusion a revised abstract is presented.

# The inadequate abstract

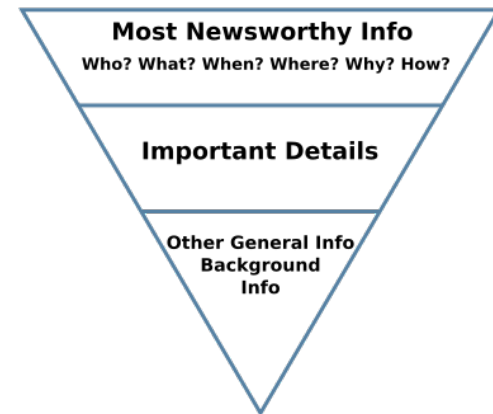
- **The passive voice** is screaming at the reader!
- **It is an outline**, with each item in the outline expanded into a sentence.
- The reader is told what the paper is about, but **not what it contributes**.
- They are produced by writers who are either (1) **beginners**, (2) **lazy**, or (3) **have not written the paper yet**.
- Looks like an abstract prepared as an unwanted chore required at **the last minute**



## Abstract 2

The abstract is of utmost importance, for it is read by 10 to 500 times more people than hear or read the entire article. It should not be a mere recital of the subjects covered.

Expressions such as "is discussed" and "is described" should *never* be included! The abstract should be a condensation and concentration of the *essential information* in the paper.



# Scrutiny of the introduction

## 1995 Jon Claerbout

- The introduction should be an invitation to readers to invest their time reading it.
- Typically this invitation has three parts
  1. The review
  2. The claim
  3. The agenda
- In the *claim* the author should say why the paper's *agenda* is a worthwhile extension of its historical *review*.

## 2) The claim

- The most important part of the introduction
- If you are writing a doctoral dissertation or an article for a refereed journal, then you should be making a new contribution to existing knowledge.
- Your paper is *not acceptable* without an identifiable claim.

# 1) The review

- 3-10 papers providing a background to your research and where you say something about each of them.
- Where intelligence and skill are required is in organizing the review so that it leads up to something, namely, to your *claim*.

### 3) The agenda

- It summarizes what you will show the reader as your paper progresses. Your agenda will be dull if it is merely a recital of the topics you will cover.
- Your agenda should tell how your paper works to fulfill your claim. In this way your agenda should clarify your claim.
- Keep it short.
- Many more people will *begin* reading your paper than will *finish* reading it. Motivate them to finish!

- Be careful of demeaning words like "obviously", "clearly", or "undoubtedly."
- There is nothing more frustrating than reading a paper that alludes to something "obvious" that you are completely confused about.



# Physical Review Letters

PRL **115**, 094301 (2015)

PHYSICAL REVIEW LETTERS

week ending  
28 AUGUST 2015

## Bridging Three Orders of Magnitude: Multiple Scattered Waves Sense Fractal Microscopic Structures via Dispersion

Simon A. Lambert,<sup>1,2,\*</sup> Sven Peter Näsholm,<sup>3</sup> David Nordsletten,<sup>2</sup> Christian Michler,<sup>2</sup> Lauriane Juge,<sup>4,5</sup>

Jean-Michel Serfaty,<sup>6</sup> Lynne Bilston,<sup>4,7</sup> Bojan Guzina,<sup>8</sup> Sverre Holm,<sup>9</sup> and Ralph Sinkus<sup>2</sup>

<sup>1</sup>Centre de Recherche sur l'Inflammation (CRI), UMR 1149 Inserm—Université Paris Diderot, Paris 7, France

<sup>2</sup>King's College London, BHF Centre of Excellence, Division of Imaging Sciences and Biomedical Engineering, St. Thomas' Hospital, London SE1 7EH, United Kingdom

<sup>3</sup>NORSAR, P.O. Box 53, N-2027, Kjeller, Norway

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<sup>5</sup>School of Medical Sciences, University of New South Wales, Sydney, NSW 2052, Australia

<sup>6</sup>CHU Xavier Bichat, Université Paris Diderot, APHP, U698 INSERM, CEFI, Paris 7, France

<sup>7</sup>Prince of Wales Clinical School, University of New South Wales, Sydney, NSW 2052, Australia

<sup>8</sup>Department of Civil, Environmental & Geo-Engineering, University of Minnesota, Minneapolis, Minnesota 55455, USA

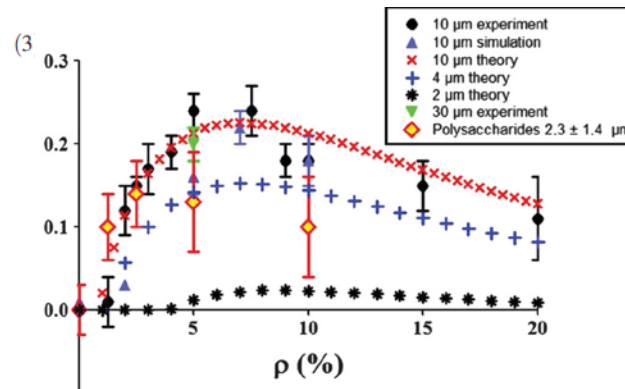
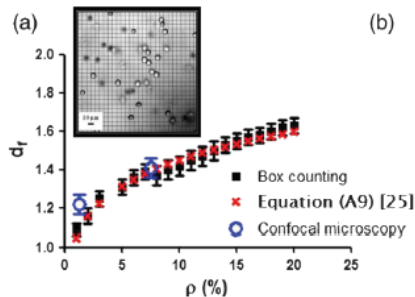
<sup>9</sup>Department of Informatics, University of Oslo, P.O. Box 1080 Blindern, N-0316 Oslo, Norway

(Received 29 December 2014; revised manuscript received 17 March 2015; published 26 August 2015)

$$\beta^{\text{scattered}} \propto \omega \tau_f^{df-D+1} \Gamma(df-D+1) [1 + (\omega \tau_f)^2]^{[(D-d_f-1)/2]}$$

$$\times \sin((df-D+1)\tan^{-1}(\omega \tau_f))$$

$$+ \frac{\omega \tau_c^2}{1 + (\omega \tau_c)^2} - \frac{\omega \tau_M^2}{1 + (\omega \tau_M)^2},$$



- 2014 impact factor: 7.512
- Started writing 2011/2012

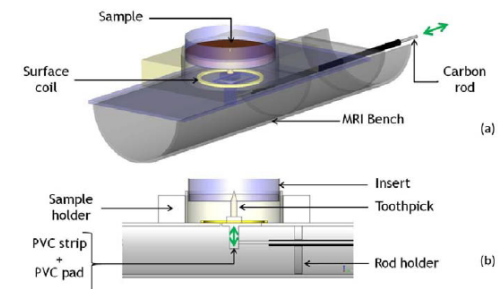
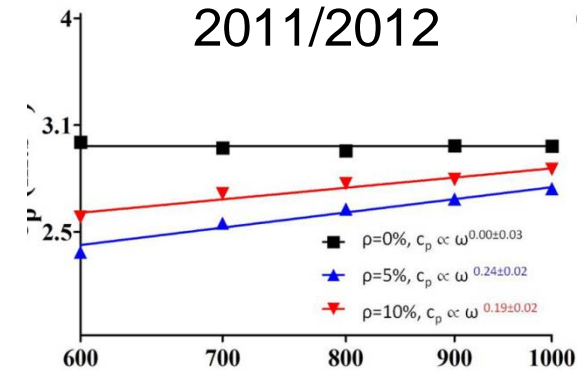


Fig. SM 2 Magnetic Resonance Elastography set up. (a) Perspective view of the experimental

## JAMA retracts second paper by heart researcher

without comments

A heart researcher who [fabricated trial participants](#) has notched a second *JAMA* retraction. The retraction comes at the request of her co-authors, after an investigation by her former employer wasn't able to confirm that this study was valid.



In September, we learned that [Anna Ahimastos](#), who used to work at Baker IDI Heart and Diabetes Institute in Melbourne, Australia, had “fabricated [records] for trial participants that did not exist” [in a JAMA trial for a blood pressure drug](#), according to principal investigator [Bronwyn Kinquell](#). That trial [was retracted](#), along with a sub analysis.

An investigation by the institute found problems or sufficient doubt in several more publications. This second *JAMA* retraction is number 5 for Ahimastos, of 8 total expected.

The [paper](#), “Effect of perindopril on large artery stiffness and aortic root diameter in patients with Marfan syndrome: a randomized controlled trial” [Read the rest of this entry »](#)

### Share this:



Written by Shannon Palus  
November 23rd, 2015 at 6:21 pm

Posted in [Anna Ahimastos](#), [australia retractions](#), [cardiology retractions](#), [cardiovascular research](#), [faked data](#), [freely available jama](#), [misconduct investigations](#), [society journal retractions](#)

## Scott Reuben notches 25th retraction, for a letter to the editor

without comments

Another domino has fallen for the infamous and and prolific former anesthesiologist [Scott Reuben](#). This time it's a [retraction for a letter to the editor](#) that cites one of his since-retracted papers.



The letter, published in 2001, argues that local anesthesia is a “safe, reliable, inexpensive, and practical alternative to the use of epidural, spinal, or general anesthesia” for outpatient knee surgery. But to support his point, he uses one of his papers that has since been retracted for data fabrication.

The [note](#) from *Anesthesia & Analgesia* explains: [Read the rest of this entry »](#)

### Share this:



Written by Shannon Palus  
November 23rd, 2015 at 2:20 pm

Posted in [anesthesia & analgesia retractions](#), [anesthesia retractions](#), [faked data](#), [freely available](#), [scott reuben retractions](#), [united states](#), [wolters kluwer lippincott](#)

## “Significant errors in the data” stop Hurricane Isaac paper

without comments

This version of Hurricane Isaac — [based on the force of nature](#) that hit Louisiana in 2012 — didn't get very far. *Atmospheric Research* has [retracted a paper on a simulation of the hurricane](#) just a few months after it was published.



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[JAMA retracts second paper by heart researcher](#)

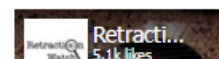
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Kenrod on [Mystery: A bullet with no entry wound, in a paper with no spell check?](#)

tekija on [Mystery: A bullet with no entry wound, in a paper with no spell check?](#)

### We're on Facebook



“What good will it be for someone to gain the whole world, yet forfeit their soul?

Jesus Christ

- Write with a reader's perspective in mind
- A scrutiny of the abstract, Landes, 1966:
  - The abstract is of utmost importance, for it is read by 10 to 500 times more people than hear or read the entire article.
- A scrutiny of the introduction, Claerbout, 1995:
  - In the *claim* the author should say why the paper's *agenda* is a worthwhile extension of its historical *review*.
- <http://blogg.uio.no/mn/ifi/innovasjonsteknologi/content/the-art-of-writing-a-research-paper>

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- [En moderne primstav](#)
- [Å finne igjen de filosofiske røttene](#)
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- [– Lyonesse tegner](#)
- [Nei, det er ikke tortur](#)
- [Ingen kalkuler](#)

## Mest

- [DAB](#)
- [Pålag](#)
- [\(19\)](#)
- [DAB](#)
- [Bare](#)

## The art of writing a research paper

Skrevet av [Sverre Holm](#) man, 02/07/2012 - 11:11

This title is on purpose a bit misleading because writing a good paper is not really an art provided that you have quality results from your research. Getting such results however may be compared to art. I would instead say that writing a paper is a craft and that it is best learnt through practise.

Here are some tips that I have picked up over the years after having been involved in writing more than a hundred and fifty papers, having been a reviewer for several journals, and after some years of



Søk

Søk dette nettstedet:

 Søk

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- [En moderne primstav](#)

## Kunsten å skrive en forskningsartikkel

Skrevet av [Sverre Holm](#) ons, 01/09/2010 - 09:00

Tittelen er med vilje litt misvisende for det å skrive en god artikkel er ikke egentlig noen kunst hvis du har et godt forskningsresultat. Det er det å få det som kan være en kunst. I stedet vil jeg si at det å skrive godt er et håndverk som best læres gjennom øvelse.

Her er noen tips som jeg har plukket opp gjennom årene etter å vært med på å skrive mer enn 150 artikler, etter å ha vært reviewer



Oversett

Søk

Søk dette ne

Sverre Ho

