

Writing papers

Is it important ?

- Not as important as letters of recommendation
- However:
 - ◆ You have to have some minimal output



- ◆ Content important to establish match (for grant-supported positions) and importance of your work (for fellowship applications)

Is it important ?

- In science, a result does not exist until it has been accepted for publication in a peer-reviewed journal
- Still holds, despite (or because of) astro-ph: papers “in preparation” do not count

How papers are read

- The most important part of a paper is

How papers are read

- The most important part of a paper is the **title**
 - ◆ Read by everyone who checks astro-ph
 - ◆ The rest of the paper will only be read if the title is sufficiently interesting !
 - ◆ Should therefore be maximally informative (“mini-abstract”)

Bad titles

PHOTOMETRY OF BLUE STARS IN THE GALACTIC HALO

SPECTROSCOPY OF A SAMPLE OF FAINT GALAXIES IN THE GOODS FIELD

A DETAILED INVESTIGATION OF THE ORBIT OF XHR-29485-B721/II

A SURVEY OF THE INNER REGIONS OF EXTENDED STAR FORMING COMPLEXES

**THE NATURE OF THE YOUNG AND LOW-MASS OPEN CLUSTERS PISMIS5,
vDB80, NGC1931, AND BDSB96**

Bad titles

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A good title has a conclusion !

Bad titles

**A DETAILED INVESTIGATION OF THE ORBIT OF XHR-29485-B721/II:
EVIDENCE FOR 2-3 RESONANCE MODULATION**

A MEASUREMENT OF EXCESS ANTENNA TEMPERATURE AT 4080 Mc/S

**MAGNETOHYDRODYNAMIC SIMULATION OF THE INTERACTION BETWEEN
INTERPLANETARY STRONG SHOCK AND MAGNETIC CLOUD AND ITS CONSEQUENT
GEOEFFECTIVENESS 2: OBLIQUE COLLISION**

Bad titles

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Good titles can be understood by people
outside of your immediate field

high pressure, such as the zero-mass scalar, capable of speeding the universe through the period of helium formation. To have a closed space, an energy density of 2×10^{-29} gm/cm³ is needed. Without a zero-mass scalar, or some other "hard" interaction, the energy could not be in the form of ordinary matter and may be presumed to be gravitational radiation (Wheeler 1958).

One other possibility for closing the universe, with matter providing the energy content of the universe, is the assumption that the universe contains a net electron-type neutrino abundance (in excess of antineutrinos) greatly larger than the nucleon abundance. In this case, if the neutrino abundance were so great that these neutrinos are degenerate, the degeneracy would have forced a negligible equilibrium neutron abundance in the early, highly contracted universe, thus removing the possibility of nuclear reactions leading to helium formation. However, the required ratio of lepton to baryon number must be $> 10^9$.

We deeply appreciate the helpfulness of Drs. Penzias and Wilson of the Bell Telephone Laboratories, Crawford Hill, Holmdel, New Jersey, in discussing with us the result of their measurements and in showing us their receiving system. We are also grateful for several helpful suggestions of Professor J. A. Wheeler.

R. H. DICKE
P. J. E. PEEBLES
P. G. ROLL
D. T. WILKINSON

May 7, 1965

PALMER PHYSICAL LABORATORY
PRINCETON, NEW JERSEY

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A MEASUREMENT OF EXCESS ANTENNA TEMPERATURE AT 4080 Mc/s

Measurements of the effective zenith noise temperature of the 20-foot horn-reflector antenna (Crawford, Hogg, and Hunt 1961) at the Crawford Hill Laboratory, Holmdel, New Jersey, at 4080 Mc/s have yielded a value about 3.5° K higher than expected. This excess temperature is, within the limits of our observations, isotropic, unpolarized, and

Things to avoid

- Avoid grammatical errors, jargon, humor

Amusing titles in scientific journals and article citation

Itay Sagi and Eldad Yechiam¹

Technion – Israel Institute of Technology

Abstract

The present study examines whether the use of humor in scientific article titles is associated with the number of citations an article receives. Four judges rated the degree of amusement and pleasantness of titles of articles published over 10 years (from 1985 to 1994) in two of the most prestigious journals in Psychology, *Psychological Bulletin* and *Psychological Review*. We then examined the association between the levels of amusement and pleasantness and the article's monthly citation average. The results show that while the pleasantness rating was weakly associated with the number of citations, articles with highly amusing titles (2 standard deviations above average) received fewer citations. The negative association between amusing titles and subsequent citations cannot be attributed to differences in the title length and pleasantness, number of authors, year of publication, and article type (regular article vs. comment). These findings are discussed in the context of the importance of titles for signalling an article's content.

Keywords: citation analysis; research evaluation; writing style; humor

Things to avoid

- Avoid grammatical errors, jargon, humor
- Don't phrase the title as a question

Good titles

- Generally two options
 - ◆ mini-abstract: “introduction: conclusion”

**SUZAKU OBSERVATION OF A HARD EXCESS IN 1H 0419-577:
DETECTION OF A COMPTON-THICK PARTIAL-COVERING ABSORBER**

**THE GLOBULAR CLUSTER NGC 6642: EVIDENCE FOR A DEPLETED
MASS FUNCTION IN A VERY OLD CLUSTER**

- ◆ short and to the point: “conclusion”

**EVIDENCE FOR COSMIC EVOLUTION OF THE STELLAR INITIAL
MASS FUNCTION**

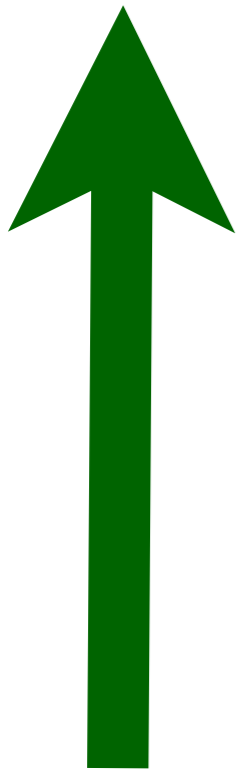
COSMIC BLACK BODY RADIATION

How papers are read

- Most important parts:
 - ◆ Title (read by everyone)
 - ◆ Abstract (read by people in the field)
 - ◆ Figures (glanced at by very small subset of people in the field)
 - ◆ Text (usually not read by anyone)

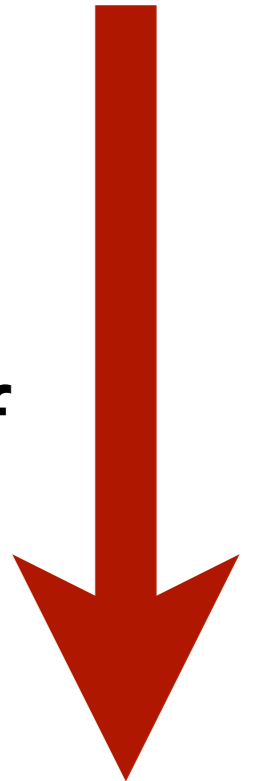
How papers are read

increasing importance



- Most important parts:
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required amount of time



Overall structure of a paper

- Regular paper different from Letter !
- Paper:
 - ◆ Introduction
 - ◆ Observations / methods
 - ◆ Results
 - ◆ Discussion
 - ◆ Conclusions

Overall structure of a paper

- Regular paper different from Letter !
- Letter:
 - ◆ Introduction
 - ◆ Key finding
 - ◆ Discussion

Paper should be “story”

- Think carefully about what the story is that you want to tell
- Make an outline, with a title and the key points
 - ◆ Does each point follow logically from the previous ?
 - ◆ Are the questions asked in the introduction answered in the conclusion ?
- **A paper should only have 1 important point !**

Steps to writing a paper

- Outline with key points, and title
 - ◆ If you get stuck here, you should **not** start writing ! Do more thinking, or more work
- Add figures to the outline
 - ◆ Figures alone should be able to carry the story
 - ◆ Ideally, have “citable” figures that folks can use
- Write an abstract
 - ◆ If you get stuck, go back to the outline !
- Write the text

Points for discussion

- Figures
- The right level of detail
- How to chose the right journal
- A letter or a paper ?
- How to deal with referees
- Proposal writing (same things apply, only more so)

"There seems to be no study too fragmented, no hypothesis too trivial, no literature too biased or too egotistical, no design too warped, no methodology too bungled, no presentation of results too inaccurate, too obscure, and too contradictory, no analysis too self-serving, no argument too circular, no conclusions too trifling or too unjustified, and no grammar and syntax too offensive for a paper to end up in print."

D. Rennie, editor of Journal of the American Medical Association

"The mistake, of course, is to have thought that peer review was any more than a crude means of discovering the acceptability — not the validity — of a new finding. Editors and scientists alike insist on the pivotal importance of peer review. We portray peer review to the public as a quasi-sacred process that helps to make science our most objective truth teller. But we know that the system of peer review is biased, unjust, unaccountable, incomplete, easily fixed, often insulting, usually ignorant, occasionally foolish, and frequently wrong."

R. Horton, editor of The Lancet