

Scholarly Publication in the E-Print Era

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What does it mean to publish?

To communicate the results of one's
scholarly research to a broad audience
in a timely way ...

Why publish?

- To foster communication
 - Between friend and foe, within and across fields ...
- To gain recognition
 - Fame and fortune, both today and tomorrow ...

How to publish?

- Manuscripts
 - Papyrus
 - Parchment
- Books, Journals
 - Paper
 - Printing press
- Preprints
 - Mimeograph
 - Xerox machine
- E-Prints
 - Computers
 - Internet

Driven by technology!

My viewpoint:

- I am a practicing particle theorist
- I am also an editor of
 - *Physical Review*
 - *Physics Reports*
 - *Journal of High Energy Physics*

Tension!

In this talk I'll describe how
technology has sparked a
revolution in scholarly
communication ...

... in the field of particle physics

Particle physics community

- Small, but global ...
 - 3,200 members in American Physical Society. About 2,000 active. Perhaps 6,000 active worldwide
- Technically literate ...
 - 1980's: TeX, internet
 - 1990's: World Wide Web

- Preprint tradition ...
 - Enhanced day-to-day communication
 - But ... expensive, elitist, and temporary

Print publications, circa 1985

- Textbooks, monographs
- Conference proceedings
- Journals
 - Letter journals
 - Archival journals
 - Review journals

1990: E-print revolution

Today, the landscape has changed.

- E-prints have replaced preprints
- Will they also replace traditional print?

Los Alamos e-print server: xxx.lanl.gov

- Sparked the e-print revolution
- Started in 1991 by Paul Ginsparg as a “cottage industry”
- Currently supported by Department of Energy and National Science Foundation.
NSF contribution: \$350k/year

Archive subjects

- Physics
 - Astrophysics, Condensed Matter, General Relativity and Quantum Cosmology, Particle Theory, Particle Phenomenology, Experimental High Energy Physics, Mathematical Physics, Nuclear Physics, Physics, Quantum Physics

- Nonlinear Systems

- Adaptation, Noise, and Self-Organizing Systems, Chaotic Dynamics, Cellular Automata, Lattice Gases, Nonlinear Sciences, Pattern Formation and Solitons, Exactly Solvable and Integrable Systems

- Mathematics

- Computer Science

What is xxx.lanl.gov?

- A free, automated, electronic archive
 - Users submit papers, when written
 - Submissions in TeX, with Postscript figures
 - Users download papers, as needed
 - Downloads in TeX, gzipped Postscript (with embedded figures), or Adobe Acrobat

The archive in action





arXiv.org Physics e-Print archive

xxx.lanl.gov

Form interface for the automated e-print archives at [xxx](#).

15 Sep '98: Cumulative ["What's New"](#) pages

Guide to the perplexed : Read these **PROFESSIONAL HELP** pages before sending fan mail.

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High Energy Physics - Theory

Daily abstracts

hep-th new abstracts, Thu, 25 Mar 99 05:00:03 GMT
9903204 -- 9903213 received (over 2972 served)

hep-th/9903204 [[abs](#), [src](#), [ps](#), [other](#)] :

Title: Dynamical content of Chern-Simons Supergravity

Authors: [Oswaldo Chandia](#), [Ricardo Troncoso](#), [Jorge Zanelli](#)

Comments: 15pages, RevTeX, no figures, one column. Talk given at the Second Meeting on Trends in Theoretical Physics, Buenos Aires, November 30-December 4, 1998

The dynamical content of local AdS supergravity in five dimensions is discussed. The bosonic sector of the theory contains the vielbein (e^a), the spin connection (ω^{ab}) and internal SU(N) and U(1) gauge fields. The fermionic fields are complex Dirac spinors (ψ^i) in a vector representation of SU(N). All fields together form a connection 1-form in the superalgebra SU(2,2|N). For N=4, the symplectic matrix has maximal rank in a locally AdS background in which the dynamical degrees of freedom can be identified. The resulting effective theory have different numbers of bosonic and fermionic degrees of freedom. **(11kb)**

hep-th/9903205 [[abs](#), [src](#), [ps](#), [other](#)] :

Title: D-branes and Deformation Quantization

Authors: [Volker Schomerus](#)

Comments: 12 pages, Latex

In this note we explain how world-volume geometries of D-branes can be reconstructed within the microscopic framework where D-branes are described through boundary conformal field theory. We extract the (non-commutative) world-volume algebras from the operator product expansions of open string vertex operators. For branes in a flat background with constant non-vanishing B-field, the operator products are computed perturbatively to all orders in the field strength. The resulting series coincides with Kontsevich's presentation of the Moyal product. After extending these considerations to fermionic fields we conclude with some remarks on the generalization of our approach to curved backgrounds. **(13kb)**

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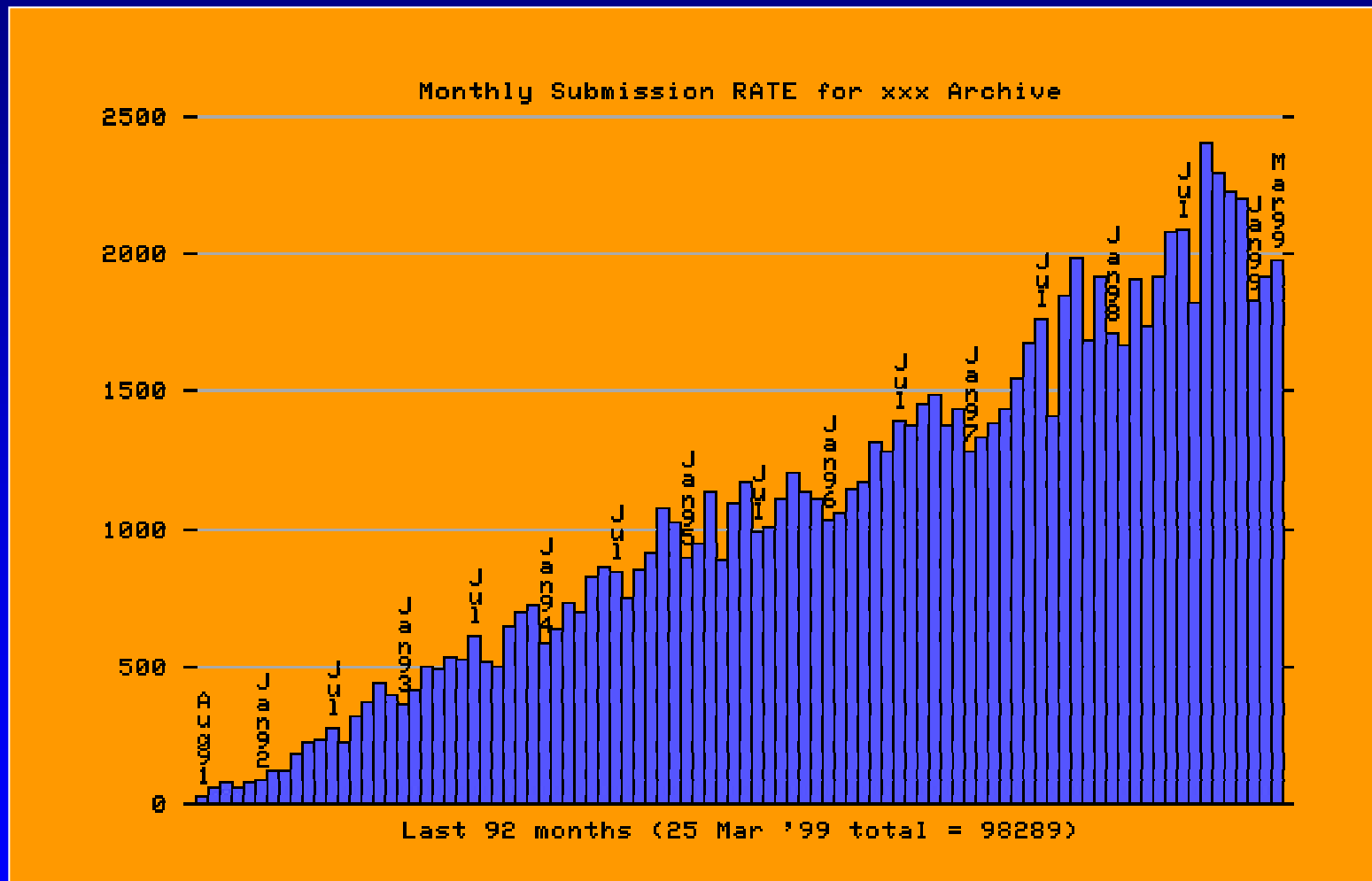
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Scientific revolution!

The Los Alamos archive has changed my life

I use it every day: To read abstracts, to download papers, to post my own work ...

No preprints to lose, no treks to the library ...

So where is the library?

The only library I use is the one at SLAC,
the Stanford Linear Accelerator Center,
in Stanford, California

I visit it every day ...

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Database: **HEP (USPIRES-SLAC)**
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Result: **5** documents found:

Search results

1) **LINEAR AND NONLINEAR SUPERSYMMETRIES.**

By Jonathan Bagger, Alexander Galperin (Johns Hopkins U.). Jul 1997. 18pp.

Presented at International Seminar on Supersymmetries and Quantum Symmetries (Dedicated to the Memory of Victor I. Ogievetsky), Dubna, Russia, 22-26 Jul 1997.

e-Print Archive: **hep-th/9810109**

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[Abstract](#) and [Postscript](#) from Los Alamos (or from [France](#) or [Italy](#) or [U.K.](#))
[Conference Info](#)

2) **SUPERSYMMETRY AT LHC AND NLC.**

By Jonathan A. Bagger (Johns Hopkins U.). May 1997. 13pp.

Talk given at 5th International Conference on Supersymmetries in Physics (SUSY 97), Philadelphia, PA, 27-31 May 1997.

Published in **Nucl.Phys.Proc.Suppl.62:23-35,1998**

e-Print Archive: **hep-ph/9709335**

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3) **THE TENSOR GOLDSTONE MULTIPLER FOR PARTIALLY BROKEN SUPERSYMMETRY.**

By Jonathan Bagger, Alexander Galperin (Johns Hopkins U.). JHU-TIPAC-97012, Jul 1997. 6pp.

Published in **Phys.Lett.B412:296-300,1997**

e-Print Archive: **hep-th/9707061**

[References](#) | [LaTeX](#) | [BibTeX](#) | [Keywords](#) | [Citation Search](#)
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4) **QCD CORRECTIONS TO FLAVOR CHANGING NEUTRAL CURRENTS IN THE SUPERSYMMETRIC STANDARD**

High Energy Physics - Theory, abstract hep-th/9810109

[Link to xxx](#)

From: Jonathan Bagger <bagger@bohr.pha.jhu.edu>
Date ([v1](#)): Wed, 14 Oct 1998 21:48:03 GMT (32kb)
Date (revised [v2](#)): Thu, 15 Oct 1998 19:47:40 GMT (32kb)

Linear and Nonlinear Supersymmetries

Authors: [Jonathan Bagger](#), [Alexander Galperin](#)

Comments: Presented at the International Seminar on Supersymmetries and Quantum Symmetries (Dedicated to the Memory of Victor I. Ogievetsky), Dubna, Russia, July, 1997

In this talk we use nonlinear realizations to study the spontaneous partial breaking of rigid and local supersymmetry.

Paper: [Source](#) (32kb), [PDF](#), or [Other formats](#)

([N.B.](#): delivery types and potential problems)

refers [to](#) , cited [by](#)

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www-admin@xxx.lanl.gov

Scholarly communication

The physics community has, from the bottom up, created a fast and efficient means of scholarly communication

Are e-prints publications?

Yes! They communicate the results of my research to a broad audience in a timely way

What is the role of traditional print journals?

They offer:

- Peer review
- Historical archives
- Nice bindings
- Better English

Are they worth the cost?

Peer review

A one-time pass that

- Helps improve poor papers
- Filters out terrible papers

But the quality is uneven. And who says
that the referees know best?

E-print archives

- Offer on-going peer review. Papers can be revised to reflect the criticisms of many readers ...
- Offer a simple alternative to peer review: A thread of critical remarks attached to each paper ...

Where are we heading?

- Dual track system
 - Print journals have become irrelevant to scholarly communication
 - Yet we still publish in them...
- Why?
 - Promotion? Annual reports? Grants?
 - Historical archive? Inertia?
 - Bindings?

Two things are clear:

- The dual track system is ripe for change. It is inherently unstable
- At present prices, most print journals are enormously expensive in light of their limited contribution to scholarly communication

Are print publishers facing the challenge?

- American Physical Society has begun to change
 - Revised copyright form
 - E-first policy
 - Web submissions from archive
 - Pilot projects
- Elsevier has been quiet
 - Don't ask don't tell



- New all-electronic journals have appeared



The electronic journals share the goal of reducing costs to match the value added by peer review.

Will the traditional journals be able to compete?

The future?

I have no idea what the future holds ...

But I am sure we are facing a paradigm shift

The particle physics community has taken a big step towards redefining what it means to publish

The growth in the Los Alamos archives shows that these ideas are being embraced by members of other fields ...

I also know that it is time to rethink
the roles of authors, publishers and
librarians

... in the enterprise of scholarly
communication ...

... in the e-print era ...

www.pha.jhu.edu/~bagger/talks/ar1.html