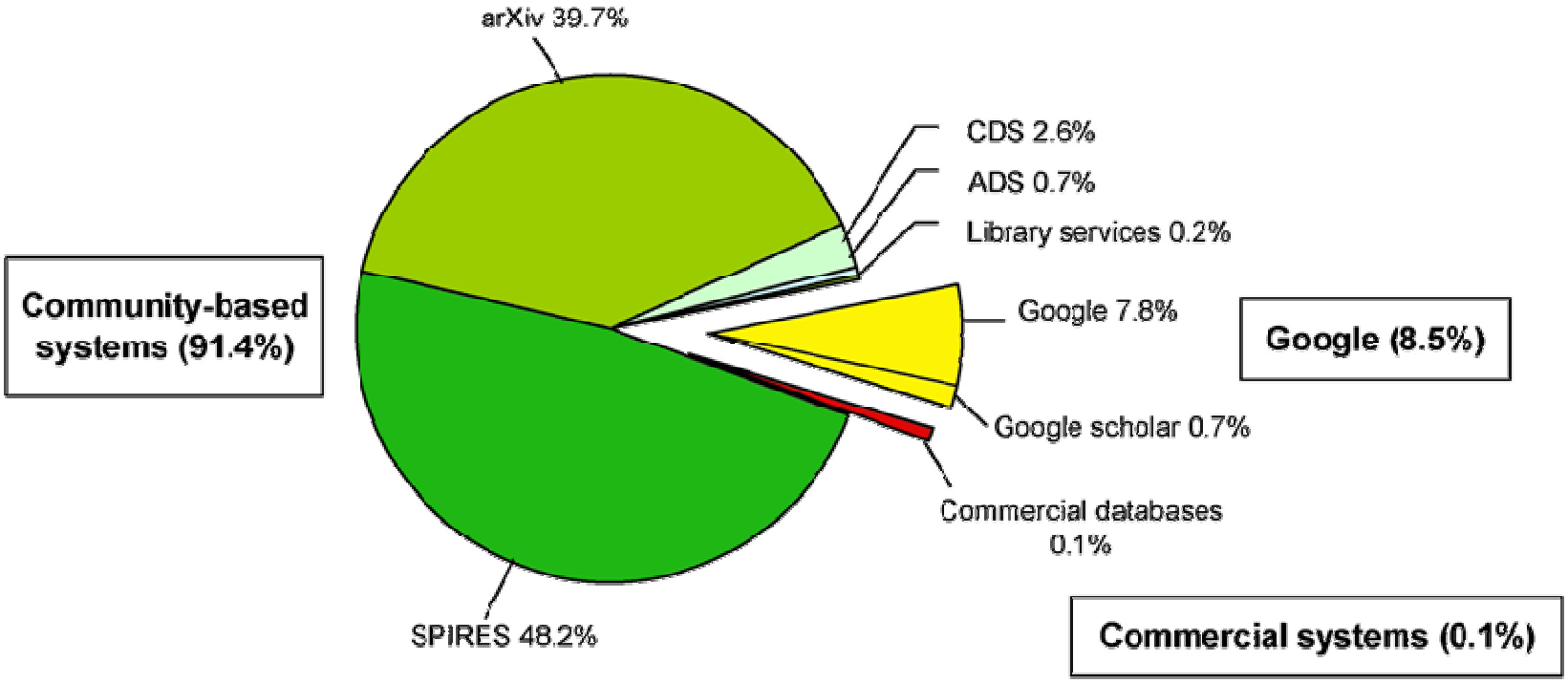
The next generation HEP information system

HEP scientists love community services



What is the primary source of information for HEP scientists?
From 2007 survey of 2,000 physicists. Gentil-Beccot et al, *Information Resources in High-Energy Physics: Surveying the Present Landscape and Charting the Future Course*.
J.Am.Soc.Inf.Sci.60:150-160,2009 arXiv:0804.2701

SPIRES

- SPIRES-HEP database of metadata with 800k records
  - Preprints, journal articles, conference talks, books, grey literature
- linked databases
  - Conferences, institutions, experiments, hepnames, jobs
- SLAC – DESY – Fermilab
- since 1974, web server since 1991
- high data quality, depth of coverage
- high acceptance in the community

But:

- outdated technology → new platform necessary

SPIRES + INVENIO = Inspire

Invenio: the ideal platform for SPIRES

- digital multimedia library system
  - developed at CERN
- Open Source
- platform for CDS CERN Document Server
- fast search engine
- many search and display options
- Web2.0 tools
- and many more modern features

Integrated information platform tailored to the specific needs of the HEP community run by

CERN DESY Fermilab SLAC

Access to the entire HEP “literature”

- bibliographic information
  - journal articles, conference proceedings, preprints, experimental notes, theses
  - conference slides, multimedia, software, high-level research data…
- “fulltext “ (if freely accessible)

Finally getting your name displayed correctly

Universal Fermi Gas with Two- and Three-Body Resonances.

Yusuke Nishida, (西田介), Dam Thanh Son, Shina Tan (Washington U., Seattle). INT-PUB-07-51. Nov 12, 2007. 4 pp.

Published in **Phys.Rev.Lett. 100: 090405, 2008**

e-Print: **arXiv:0711.1562 [cond-mat.other]**

…as well as formulae

Higgs mediated lepton flavor violating tau decays $\tau \to \mu\gamma$ and $\tau \to \mu\gamma\gamma$ in effective theories.

J.I. Aranda, F. Ramirez--Zavaleta, J.J. Toscano, E.S. Tututi. Apr 16, 2008. 6 pp.

e-Print: **arXiv:0804.2652 [hep-ph]**

Search SPIRES- or Google-like

SPIRES syntax

fin a Witten and t S-duality and k quiver

Google-like

Witten S-duality quiver

Search:

witten s-duality quiver | any field | Search | Browse

Search Tips :: Advanced Search

Sort by: latest first | desc | - or rank by

Display results: 10 result: | single list

Output format: HTML brief

HEP **1** records found Search took 1.00 seconds.

1. **Inherited duality and quiver gauge theory.**
Nick Halmagyi, Christian Romelsberger, Nicholas P. Warner (Southern California U.). Jun 18, 2004. 23 pp.
Published in **Adv.Theor.Math.Phys. 10: 159-179, 2006**
e-Print: **hep-th/0406143**

References | BibTeX | LaTeX(US) | LaTeX(EU) | EndNote

Abstract and Postscript and PDF from arXiv.org (mirrors: au br cn de es fr il in it jp kr ru tw uk za aps lanl)
Adv. Theor. Math. Phys. Server
Detailed record - Similar records - Cited by 5 records

Axions In String Theory.

Peter Svrcek (Stanford U., Phys. Dept. & SLAC), Edward Witten (Princeton, Inst. Advanced Study).

May 22, 2006

Published in:**JHEP 0606: 051, 2006**
e-Print: **hep-th/0605206**

Abstract: In the context of string theory, axions appear to provide the most plausible solution of the strong CP problem. However, as has been known for a long time, in many string-based models, the axion coupling parameter F_a is several orders of magnitude higher than the standard cosmological bounds. We re-examine this problem in a variety of models, showing that F_a is close to the GUT scale or above in many models that have GUT-like phenomenology, as well as some that do not. On the other hand, in some models with Standard Model gauge fields supported on vanishing cycles, it is possible for F_a to be well below the GUT scale.

Keyword(s): string model: heterotic ; gauge field theory: SU(3) ; instanton ; axion ; violation: CP ; dimensional reduction ; anomaly ; membrane model: D-brane ; bibliography

Record created 2008-05-04, last modified 2008-05-04 Similar records

Abstract and Postscript and PDF from arXiv.org
JHEP Electronic Journal Server
SLAC Document Server

Fusing gauge theory tree amplitudes into loop amplitudes - Bern, Zvi *et al* hep-ph/9409265 SLAC-PUB-6563, SACLAY-SPH-T-94-95, UCLA-TEP-94-29, SWAT-94-36

Cited by: 215 records

(196) Progress in one loop QCD computations - Bern, Zvi *et al* hep-ph/9602280 SLAC-PUB-7111, UCLA-96-TEP-5, SACLAY-SPH-T-96-10
(160) Calculating scattering amplitudes efficiently - Dixon, Lance J. hep-ph/9601359 SLAC-PUB-7106, C95-06-04.1
(154) One loop amplitudes for e+ e- to four partons - Bern, Zvi *et al* hep-ph/9708239 SLAC-PUB-7529, SACLAY-SPH-T-97-090, UCLA-97-TEP-10
(132) On the relationship between Yang-Mills theory and gravity and its implication for ultraviolet divergences - Bern, Z. *et al* hep-th/9802162 SLAC-PUB-7751, UCLA-98-TEP-03, SWAT-98-183
(132) One-loop gauge theory amplitudes in N=4 super Yang-Mills from MHV vertices - Brandhuber, Andreas *et al* hep-th/0407214 QMUL-PH-04-06
more

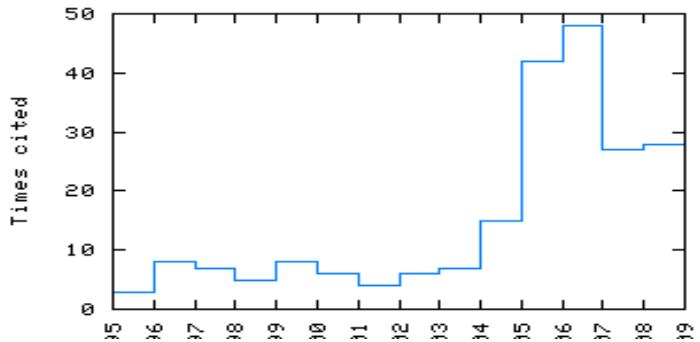
.. of which self-citations: 32 records

(1) Efficient analytic computation of higher order QCD amplitudes - Bern, Zvi *et al* hep-ph/9503261 SLAC-PUB-6771, SLAC-PUB-95-6771, C94-12-13
(89) Factorization in one loop gauge theory - Bern, Zvi *et al* hep-ph/9503236 UCLA-95-TEP-6
(196) Progress in one loop QCD computations - Bern, Zvi *et al* hep-ph/9602280 SLAC-PUB-7111, UCLA-96-TEP-5, SACLAY-SPH-T-96-10
(0) One loop QCD amplitudes from Cutkosky rules - Bern, Zvi UCLA-96-TEP-19
(100) One loop amplitudes for e+ e- ---> anti-q q anti-Q Q - Bern, Zvi *et al* hep-ph/9610370 SLAC-PUB-7316, SACLAY-SPH-T-96-111, UCLA-96-TEP-33

Co-cited with: 2516 records

(396) One loop n point gauge theory amplitudes, unitarity and collinear limits - Bern, Zvi *et al* hep-ph/9403226 SLAC-PUB-6415, SACLAY-SPH-T-94-20, UCLA-TEP-94-4, SWAT-94-17
(240) Perturbative gauge theory as a string theory in twistor space - Witten, Edward hep-th/0312171
(226) MHV vertices and tree amplitudes in gauge theory - Cachazo, Freddy *et al* hep-th/0403047
(216) Multiparton amplitudes in gauge theories - Mangano, Michelangelo L. *et al* hep-th/0509223 FERMILAB-PUB-90-113-T
(208) Generalized unitarity and one-loop amplitudes in N=4 super-Yang-Mills - Britto, Ruth *et al* hep-th/0412103
more

Citation history:



Svrcek, Peter

Affiliations:

Princeton U. (10)
SLAC (2)
Stanford U., Phys. Dept. (3)

Frequent keywords:

anomaly (5)
analytic properties (5)
twistor (4)
scattering amplitude: higher-order (4)
string model (3)
gauge field theory: Yang-Mills (3)
compactification (3)
bibliography (3)
instanton (2)
gauge field theory: U(N) (2)

Frequent co-authors:

Cachazo, Freddy (5)
Witten, Edward (4)
Kachru, Shamit (2)
Diaconescu, Duiliu-Emanuel (1)
Florea, Bogdan (1)
McGreevy, John (1)

Papers:

All papers (13) (downloaded 0 times)
Conference (2)
Lectures (1)
Preprint (13)
Published (8)
Thesis (1)

Citations:

Citation summary results	All papers	Published only
Total number of papers analyzed:	12	8
Total number of citations:	646	525
Average citations per paper:	53.8	65.6
Breakdown of papers by citations:		
Renowned papers (500+)	0	0
Famous papers (250-499)	0	0
Very well-known papers (100-249)	2	2
Well-known papers (50-99)	2	1
Known papers (10-49)	4	3
Less known papers (1-9)	3	2
Unknown papers (0)	1	0

See also: similar author names
1 Svrcek, P.

Which J. Ellis is this?

- unique author identification via hepnames
  - using e.g. lab id's, affiliation history and more
- unique association of papers with authors
  - using info on affiliations, coauthors, from publishers and the community ("claim my paper")
- compatible with other author-id schemes
  - e.g.Thomson-Reuter's ResearcherID

Organizing knowledge on HEP

A taxonomy is developed to organize hierarchically all important

- HEP terms (dynamical symmetry breaking)

providing

- synonyms (dynamically broken)
- related terms (spontaneous symmetry breaking)
- broader/narrower (symmetry breaking)
- definitions
- subject areas (high-energy physics – theory)

Taxonomy applications

- automatic selection of HEP relevant articles
  - no longer time delay in border areas due to manual selection
- fast automatic generation of keywords
  - enabling e.g. effective alerts
- improved search algorithm (planned)
  - A search for „SUSY“ will also find „supersymmetry“
  - narrow/broaden search
- user tagging (planned)
  - standardized keywords - folksonomy

Keyword extraction

arXiv:0903.3933

Author keywords:
quantum cosmology -> quantum cosmology
wheeler-dewitt equation ->
tunneling probability -> tunneling
positive cosmological constant -> cosmological constant

Composite keywords:
10 transformation, canonical [22, 24]
9 potential, symplectic [22, 33]
3 tensor, energy-momentum [3, 3]
2 quantization, canonical [8, 24]
2 symmetry, gauge [4, 2]
2 oscillator, harmonic [2, 2]
1 dimension, 2 [0, 33]
1 fluid, pressure [22, 2]
1 operator, differential [16, 1]
1 inflation, open [4, 1]
1 field theory, scalar [0, 1]

Single keywords:
19 wave function
14 tunneling
13 Wheeler-DeWitt equation
13 cosmological constant
8 zero mode
7 Robertson-Walker
7 quantum cosmology
6 variational
5 Schroedinger equation
4 boundary condition
4 Poisson bracket
4 phase space

Acronyms:
WDW Wheeler-DeWitt equation

Core keywords:
Wheeler-DeWitt equation
quantum cosmology

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(4) **M-theory on pp-waves with a holomorphic superpotential and its membrane and matrix descriptions** - Kim, Jongwook *et al* - HU-EP-08-08arXiv:0804.3349

(2) **The LHCb RICH: Its application to the study of the B/s ---> J/psi phi decay channel and magnetic distortions corrections** - Storaci, Barbara - CERN-THESIS-2007-071

(2) **Structure of palladium nanoclusters for hydrogen gas sensors** - Stevens, K.J. *et al*

(2) **A Measurement of psi(2S) resonance parameters** - Bai, J.Z. *et al* - SLAC-PUB-9570hep-ph/0209354

Download history:

What else to expect?

- new metrics to assess the impact of articles, authors and author groups
- integration of high-level research data
  - starting with figures and plots and the numbers behind them
- Web2.0 tools
- open API's for 3rd parties
- text- and data-mining applications
  - Access to fulltext important (SCOAP^3)

SCOAP^3

- Project to convert the bulk of HEP journal literature to Open Access
- Worldwide consortium of HEP institutes, funding agencies and libraries
- Each country pays according to its article output
- No charges to be paid by authors
- Budget approx 10 Mio Euros/year
  - Currently 65% pledged, from 22 countries

http://scoap3.org