Une Globale Bibliothèque Digitale pour la Physique de Haute Energie

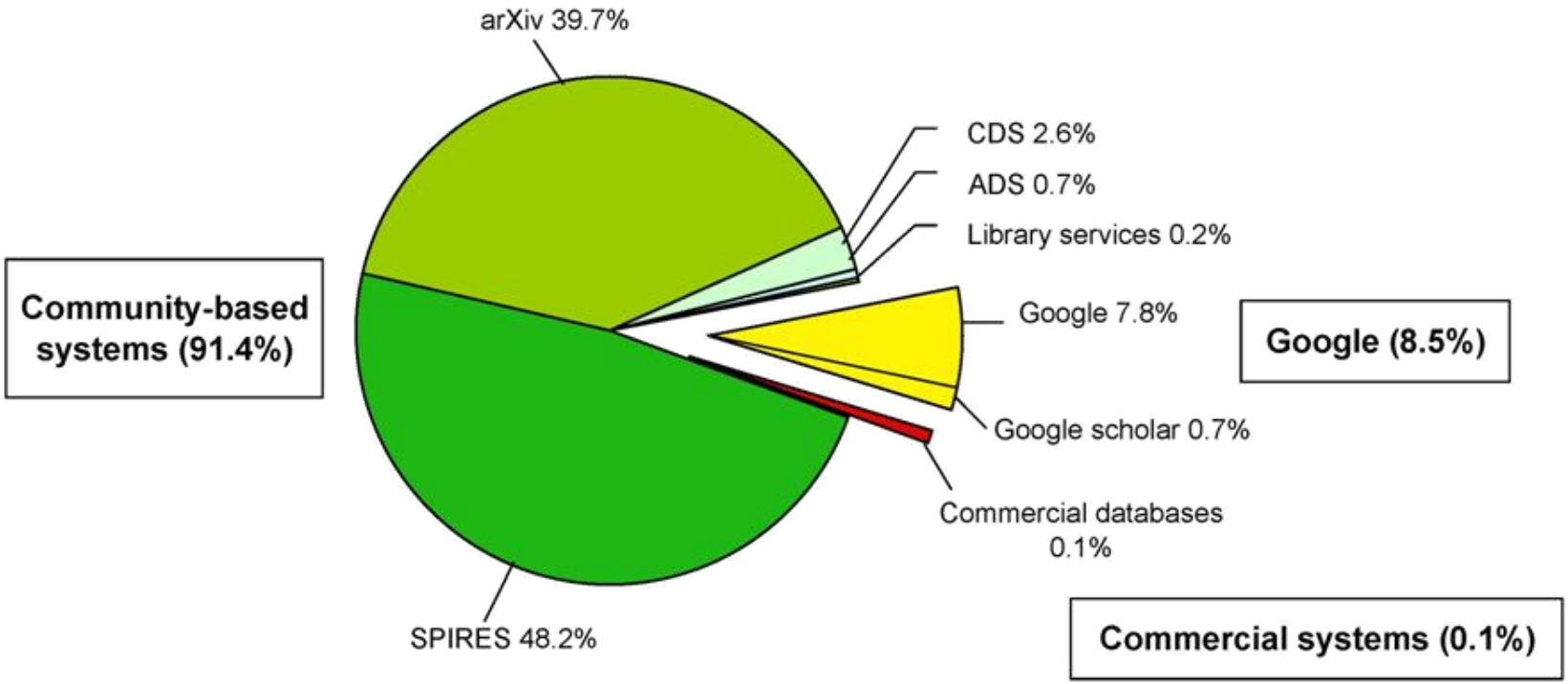
Annette Holtkamp

CERN-UNESCO School on Digital Libraries – Dakar, Nov 2011

HEP communauté

- communauté très interconnectée
  - 20-30k chercheurs actives publiant 10k articles/an
  - large collaborations (jusqu'à 5000 membres)
  - très international (même petits groupes)
  - auteurs = lecteurs
- échange rapide d'informations essentielle
  - envoi postal de pretirages depuis 60's
  - longue tradition d'accès ouvert
  - >90% de HEP articles publiés en journaux aussi sur arXiv
- dominance de systèmes d'information développés par la communauté
  - arXiv
  - SPIRES

Dominance of community services



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 (1974-)

- réseau de bases de donnees
  - HEP littérature, conférences, institutions, expériences, hepnames, jobs
- SLAC – DESY – Fermilab Collaboration
- SPIRES-HEP
  - métadonnées pour 850k objets, ~800 nouvelles notices par semaine records
  - prétirages, articles publiés, conférence contributions, livres, littérature grise
  - depuis 1974, web serveur depuis 1991
  - 100k recherches/jour
- metadonnées haut de gamme, traitées manuellement
- couverture compréhensive
- grande acceptance, engagement des utilisateurs

Mais:

- technologie démodée des70‘s

http://inspirehep.net

run by

Fermilab

SLAC

Contenu bibliographique

- SPIRES contenu (+ part de CDS):
  articles publiés, conference proceedings, prétirages, notes d'expériences, theses
- par-delà SPIRES:
  transparences, multimédia, logiciel, données de recherche…
- par-delà 1974
- plus de matériaux de disciplines voisines
  astrophysique, physique nucléaire, mathématique…
  cité par HEP articles

Archive de textes intégrales

- tous les articles en libre accès
  - esp. matériaux en danger de disparaitre
- thèses: action dédiée
  - recherche dans archives institutionelles / sites d'expériences
  - email aux auteurs
  - page de soumission (prévu)
- articles d'accès restreint
  - "archive caché"
  - accords avec Springer et APS
- matériaux historiques
  - digitalisation d'anciens séries de prétirage ou series de conférences.
- par-delà articles
  - transparences, multimédia, logiciels, wikis…

Recherche

- 3 modes de syntax:
  - Google-like freetext search („Dakar supersymmetry“)
  - Spires syntax („find aff Dakar and t supersymmetry“)
  - Invenio syntax („affiliaton:‘Dakar‘ title:supersymmetry“)
- recherche en texte integrale
- recherche complex de seconde ordre

Example:

Cherche les articles d‘auteurs de Benin qui citent des articles écrits par d‘auteurs de Dakar et cités eux-memes plus de 10 fois

affiliation:Benin refersto:affiliation:dakar cited:10->100

Recherche de texte integrale - fragments

HEP **2** records found Search took 0.02 seconds.

1. **An Updated Description of Heavy-Hadron Interactions in GEANT-4.**
Rasmus Mackeprang (CERN), David Milstead (Stockholm U.). 2010. 8 pp.
Published in **Eur.Phys.J. C66 (2010) 493-501**
e-Print: **arXiv:0908.1868 [hep-ph]**

References | BibTeX | LaTeX(US) | LaTeX(EU) | Harvmac | EndNote
Abstract and Postscript and PDF from arXiv.org
Journal Server

Snippets courtesy of Springer
... a number of beyond-the-Standard-Model scenarios, such as **supersymmetry** and universal extra dimensions 4 5 SMP searches will thus...

Detailed record - Cited by 14 records

2. **More on the scalar-tensor B-F theory.**
Harvendra Singh (Saha Inst.). Jul 2009. 19 pp.
Published in **Phys.Rev. D80 (2009) 066009**
e-Print: **arXiv:0907.2792 [hep-th]**

References | BibTeX | LaTeX(US) | LaTeX(EU) | Harvmac | EndNote
Abstract and Postscript and PDF from arXiv.org
Journal Server

Snippets courtesy of arXiv
... pairs of scalar and tensor fields. We especially discuss the **supersymmetry** aspects of such a membrane theory It is concluded that...
... the theory possesses maximal **supersymmetry** and it is related to the L BLG theory via...
... to extend our earlier work [1] and specially discuss the **supersymmetry** aspects of the B F theory with tensor fields We...
... shall show that the theory has a maximal **supersymmetry** We also discuss supersymmetric solutions particularly the fuzzy sphere solution...
... add compensating terms, as we discuss it next along with **supersymmetry** Note that in the vacuum we shall have coupling constants...

Detailed record - Cited by 1 record

INSPIRE

Page détaillée d'une notice

- résumé
- mots-clefs
- publication info
- vignettes de figures
- divers formats d'exportation
- tabs for
  - references
  - citations
  - fulltext
  - full-sized plots with captions

Notice détaillées avec figures

Information | References (21) | Citations (36) | Files | Plots

Bosonic Colored Group Field Theory.

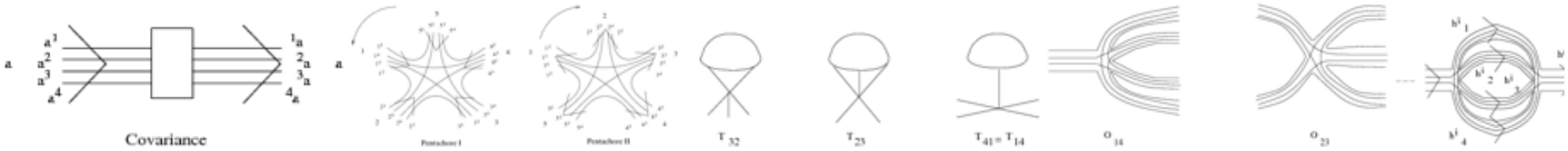
Joseph Ben Geloun (Orsay, LPT & ICMPA, Benin & Cheikh Anta Diop of Dakar U.), Jacques Magnen (Ecole Polytechnique, CPHT), Vincent Rivasseau (Orsay, LPT).

ICMPA-MPA-2009-24, LPT-2009-93.
Nov 2009
16 pp.

Eur.Phys.J. C70 (2010) 1119-1130
e-Print: **arXiv:0911.1719 [hep-th]**

Abstract: Bosonic colored group field theory is considered. Focusing first on dimension four, namely the colored Ooguri group field model, the main properties of Feynman graphs are studied. This leads to a theorem on optimal perturbative bounds of Feynman amplitudes in the 'ultraspin' (large spin) limit. The results are generalized in any dimension. Finally integrating out two colors we write a new representation which could be useful for the constructive analysis of this type of models.

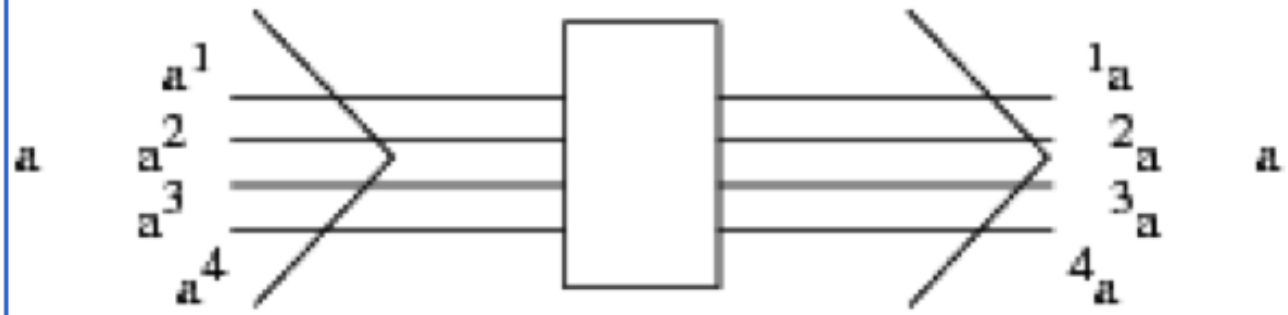
Keyword(s): INSPIRE: field theory: group | Feynman graph | boson: colored particle | renormalization group | space-time: any-dimensional | perturbation theory | scaling | vertex function: correction
Author supplied: Group field theory | renormalization | perturbative study



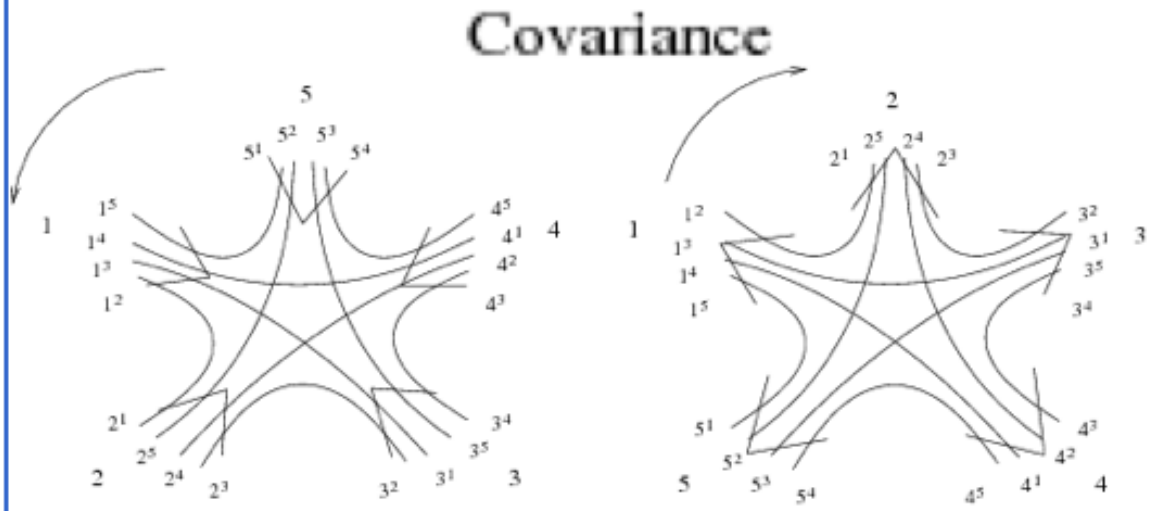
Figures détaillées

Information | References | Citations | Files | Plots

Bosonic Colored Group Field Theory - Ben Geloun, Joseph *et al.* Eur.Phys.J. C70 (2010) 1119-1130 .
arXiv:0911.1719 [hep-th] . ICMPA-MPA-2009-24, LPT-2009-93



: \small The propagator or covariance of the colored model. : : Caption not extracted



: Caption not extracted

Extraction de figures

- figures extraites de sources LaTeX (arXiv)
- légendes recherchables
  - caption:neutrino

a venir bientot:

- extraction de pdf
- phrase du texte integrale qui référence la figure

Extraction de références

refextract: module pour extraire références de pdf

MARC sous-zones (Inspire)

- $o numéro de la référence
- $h auteurs
- $a DOI
- $u Uniform Resource Identifier
- $r report number
- $s journal publication
- $m reste non identifié

refextract exemple

fulltext:

[3] V. A. Bednyakov, N. D. Giokaris, and A. V. Bednyakov, “On Higgs mass generation mechanism in the standard model,” Phys. Part. Nucl., vol. 39, pp. 13–36, 2008.

MARC:

999C5 $$hV. A. Bednyakov, N. D. Giokaris, and A. V. Bednyakov

$$m"On Higgs mass generation mechanism in the standard model”

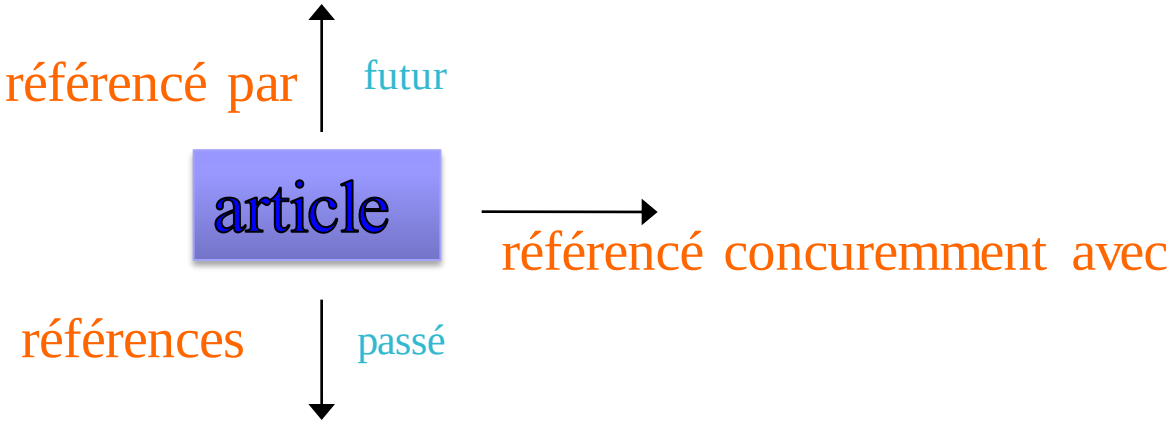
$$o[3]

$$sPhys.Part.Nucl.,39,13

web: **On Higgs mass generation mechanism in the Standard Model - Bednyakov, V.A. *et al. Phys.Part.Nucl. 39 (2008) 13-36 . hep-ph/0703280 [HEP-PH]***

Analyse de citations

- références
- référencé par passé
- référencé concuremment avec
- self-citations
- histoire de citation (développement temporale)



Citation analysis: Example

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: 346 records

(254) **Iteration of planar amplitudes in maximally supersymmetric Yang-Mills theory at three loops and beyond** - Bern, Zvi *et al* hep-th/0505205 SLAC-PUB-11210, UCLA-05-TEP-14

(252) **Generalized unitarity and one-loop amplitudes in N=4 super-Yang-Mills** - Britto, Ruth *et al* hep-th/0412103

(252) **New recursion relations for tree amplitudes of gluons** - Britto, Ruth *et al* hep-th/0412308

(232) **Calculating scattering amplitudes efficiently** - Dixon, Lance J. hep-ph/9601359 SLAC-PUB-7106, C95-06-04.1

(232) **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

more

Co-cited with: 4182 records

(316) **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

(196) **Generalized unitarity and one-loop amplitudes in N=4 super-Yang-Mills** - Britto, Ruth *et al* hep-th/0412103

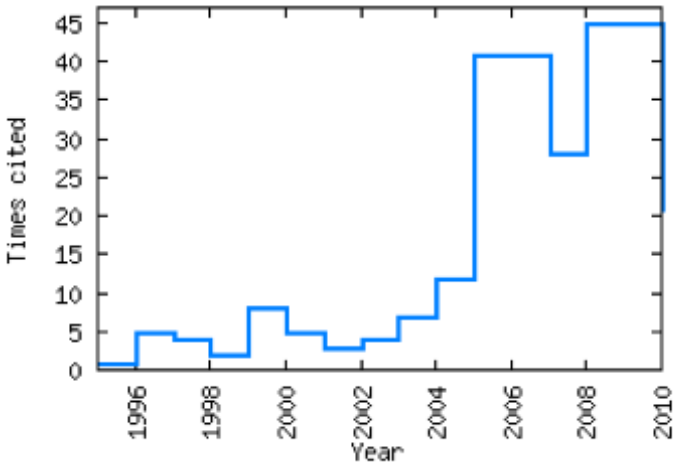
(171) **Perturbative gauge theory as a string theory in twistor space** - Witten, Edward hep-th/0312171

(159) **Direct proof of tree-level recursion relation in Yang-Mills theory** - Britto, Ruth *et al* hep-th/0501052

(153) **MHV vertices and tree amplitudes in gauge theory** - Cachazo, Freddy *et al* hep-th/0403047

more

Citation history:



Page d'auteur

- histoire d'affiliations
- co-auteurs
- mot-clefs fréquents
- types de publications
- analyse de citations

Profile d'auteur

Ben Geloun, Joseph (21 papers)

This is me. Verify my publication list.

Name variants

Ben Geloun, Joseph (21)

Papers

All papers (21)
Report (21)
Published (15)
Conference (3)

Affiliations

ICMPA, Benin (21)
Cheikh Anta Diop of Dakar U. (9)
Perimeter Inst. Theor. Phys. (5)
NIThePh, Matieland (4)
Orsay, LPT (3)
Abomey-Calavi U. (2)
Louvain U. (1)
Stellenbosch U. (1)
IHES, Bures-sur-Yvette (1)

Frequent keywords

renormalization (7)
Group field theory (6)
field theory: group (5)
Feynman graph (3)

Frequent co-authors

Govaerts, Jan (5)
Rivasseau, Vincent (5)
Gurau, Razvan (4)
Hounkonnou, M.Norbert (4)

Profile d'auteur: Resume de citations

Citations:

Citation summary results	All papers	Published only
Total number of citable papers analyzed:	21	15
Total number of citations:	184	171
Average citations per paper:	8.8	11.4
Breakdown of papers by citations:		
Renowned papers (500+)	0	0
Famous papers (250-499)	0	0
Very well-known papers (100-249)	0	0
Well-known papers (50-99)	0	0
Known papers (10-49)	6	6
Less known papers (1-9)	11	6
Unknown papers (0)	4	3
Additional Citation Metrics [?]		
h-index [?]	6	6

HEPNAMES

3. **Zheng, Yangheng** (郑阳恒) (Beijing, GUCAS) [PAPERS] [Papers at this affiliation] [arXiv] [GOOGLE] [EXPTS] [STUDENTS] [Similar names]
Ph.D. advisor: Olsen, Stephen L. & Browder, Thomas E.
Ph.D. institution: Hawaii U. (2002)
Email: *Click number by name to see email address and affiliation history.*
Field: hep-ex, hep-ph, nucl-ex
Date verified 10/17/07
Author ID number: INSPIRE-00138380
Experiments: FNAL-E-0830

UPDATE

HEP taxonomie

structure hierarchique d'importants

HEP concepts (dynamical symmetry breaking)

offrant

- synonymes (dynamically broken)
- termes reliés (spontaneous symmetry breaking)
- termes plus/moins généraux (symmetry breaking)
- définitions
- domaines de sujet (high-energy physics – theory)

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

Taxonomie: applications

- rapide génération automatique de mots-clefs
  - permettant e.g. alertes immediates
  - ameliorés manuellement plus tard
- selection automatique d'articles pertinents pour HEP
  - pas de retard a cause de selection manuelle en disciplines voisines
- algorithme de recherche amelioré (prévu)
  - recherche de „SUSY" trouve aussi „supersymmetry"
  - amplifier/limiter une recherche
- user tagging (prévu)
  - ameliorer la classification generee par Inspire
  - ameliorer la taxonomie

Identification d'auteurs

- INSPIRE author id
  - compatible avec d'autres schémas d'identification
  - participation active en ORCID
- desambiguisation algorithmique
  - exploitant e.g. lab id's, histoire d'affiliations, co-auteurs et plus
  - ~260k differents auteurs identifiés
- association automatique d'articles avec auteurs
  - exploitant info sur affiliations, co-auteurs, sujets, références

    G. Chen: 963 docs, 21 real authors, only 22 docs not assigned, 97.2% success rate
  - INSPIRE-id composant de listes d'auteurs des larges collaborations

Crowdsourcing: Claim My Paper

Randall, Lisa (145 papers)

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Name variants
Randall, Lisa (139)
Randall, L. (6)

Papers
All papers (145)
Report (145)
Published (114)
Conference (12)
Introductory (3)
Review (2)
Lectures (1)

Affiliations
MIT, LNS (66)
Harvard U., Phys. Dept. (26)
Harvard U. (24)
LBL, Berkeley (13)
Princeton U. (9)
UC, Berkeley (8)
MIT (7)
Santa Barbara, KITP (5)
unknown affiliation (4)
Boston U. (3)
CERN (1)
Fermilab (1)

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Orsay, LPT (3)
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Louvain U. (1)
Stellenbosch U. (1)
IHES, Bures-sur-Yvette (1)

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Rivasseau, Vincent (5)
Gurau, Razvan (4)
Hounkonnou, M.Norbert (4)

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Attribute papers (administrator interface) for: J.Ben.Geloun.1

Navigation: Person Search Open tickets

Names variants:

Geloun, Joseph Ben (1); Ben Geloun, J. (2); Ben Geloun, Joseph (21);

Papers (21) | Papers removed from this profile (0) | Tickets (0) | Data

Select All | Select None | Invert Selection | Hide successful claims

Yes, those papers are by this person. | No, those papers are not by this person | Assign to other person | Forget decision

Search:

	Paper Short Info	Author Name	Affiliation	Date	Experiment	Actions
☐	1. **Supersymmetry breaking in noncommutative supersymmetric quantum mechanics** J. Ben Geloun (Stellenbosch U. & ICMPA, Benin & Cheikh Anta Diop of Dakar U.), F G Scholtz (Stellenbosch U.).	Ben Geloun, Joseph	Stellenbosch U., Cheikh Anta Diop of Dakar U., ICMPA, Benin	2008-12	Not Available	Yes, this paper is by this person. No, this paper is *not* by this person Assign to another person
☐	2. **Coherent states in noncommutative quantum mechanics** J. Ben Geloun (NITheP, Matieland & ICMPA, Benin & Cheikh Anta Diop of Dakar U.), F.G. Scholtz (NITheP, Matieland).	Ben Geloun, Joseph	ICMPA, Benin, NITheP, Matieland, Cheikh Anta Diop of Dakar U.	2009-01	Not Available	Yes, this paper is by this person. No, this paper is *not* by this person Assign to another person
☐	3. **Classical Group Field Theory** Joseph Ben Geloun (Perimeter Inst. Theor. Phys. & ICMPA, Benin).	Ben Geloun, Joseph	ICMPA, Benin, Perimeter Inst. Theor. Phys.	2011-07	Not Available	Yes, this paper is by this person. No, this paper is *not* by this person Assign to another person
☐	4. **EPRL/FK Group Field Theory** Joseph Ben Geloun (Perimeter Inst. Theor. Phys. & ICMPA, Benin), Razvan Gurau (Perimeter Inst. Theor. Phys.), Vincent Rivasseau (Orsay, LPT).	Ben Geloun, Joseph	ICMPA, Benin, Perimeter Inst. Theor. Phys.	2010-08	Not Available	Marked as this person's paper Forget decision. But it's *not* this person's paper. Assign to another person

Crowdsourcing: references

Information | References (12) | Citations (7) | Files | Plots

Local Observation in Eternal inflation - Hartle, James *et al.* Phys.Rev.Lett. 106 (2011) 141302 . arXiv:1009.2525 [hep-th]

Update these references

- Wave Function of the Universe - Hartle, J.B. *et al.* Phys.Rev. D28 (1983) 2960-2975 . PRINT-83-0937 (CAMBRIDGE)
- Phys.Rev.Lett.,100,202301

(not extracted or not in INSPIRE)

- No-Boundary Measure of the Universe - Hartle, James B. *et al.* Phys.Rev.Lett. 100 (2008) 201301 . arXiv:0711.4630 [hep-th]
- Populating the landscape: A Top down approach - Hawking, S.W. *et al.* Phys.Rev. D73 (2006) 123527 . hep-th/0602091 . CERN-PH-TH-2006-022
- Science in a Very Large Universe - Srednicki, Mark *et al.* Phys.Rev. D81 (2010) 123524 . arXiv:0906.0042 [hep-th]
- Replication Regulates Volume Weighting in Quantum Cosmology - Hartle, James *et al.* Phys.Rev. D80 (2009) 063531 . arXiv:0905.3877 [hep-th]
- The Birth of Inflationary Universes - Vilenkin, Alexander Phys.Rev. D27 (1983) 2848 . TUTP-83-1
- Eternally Existing Selfreproducing Chaotic Inflationary Universe - Linde, Andrei D. Phys.Lett. B175 (1986) 395-400 . Print-86-0418 (LEBEDEV INST), LEBEDEV-86-106

Crowdsourcing: references

Local Observation in Eternal inflation
Hartle, James; Hawking, S.W.; Hertog, Thomas
arXiv:1009.2525, Phys.Rev.Lett. 106, 141302, 2011; 10.1103/PhysRevLett.106.141302 Date-Upd:2011-04-18
PDF from arXiv Journal Server

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⊕ Phys.Rev.,D28,2960 **Wave Function of the Universe** - Hartle, J.B. *et al.* Phys.Rev. D28 (1983) 2960-2975 . PRINT-83-0937 (CAMBRIDGE)
⊕ Phys.Rev.Lett.,100,202301 Phys.Rev.Lett.,100,202301
⊕ arXiv:0711.4630 **No-Boundary Measure of the Universe** - Hartle, James B. *et al.* Phys.Rev.Lett. 100 (2008) 201301 . arXiv:0711.4630 [hep-th]

Projets en developpement

- crowdsourcing
  - Page de soumissions pour theses
  - mise a jour avec des notes de publications
  - interface pour ajouter mot-clefs
- analyse de documents
  - extraction d'auteurs, affiliations, titres, resume
- recognition of affiliations