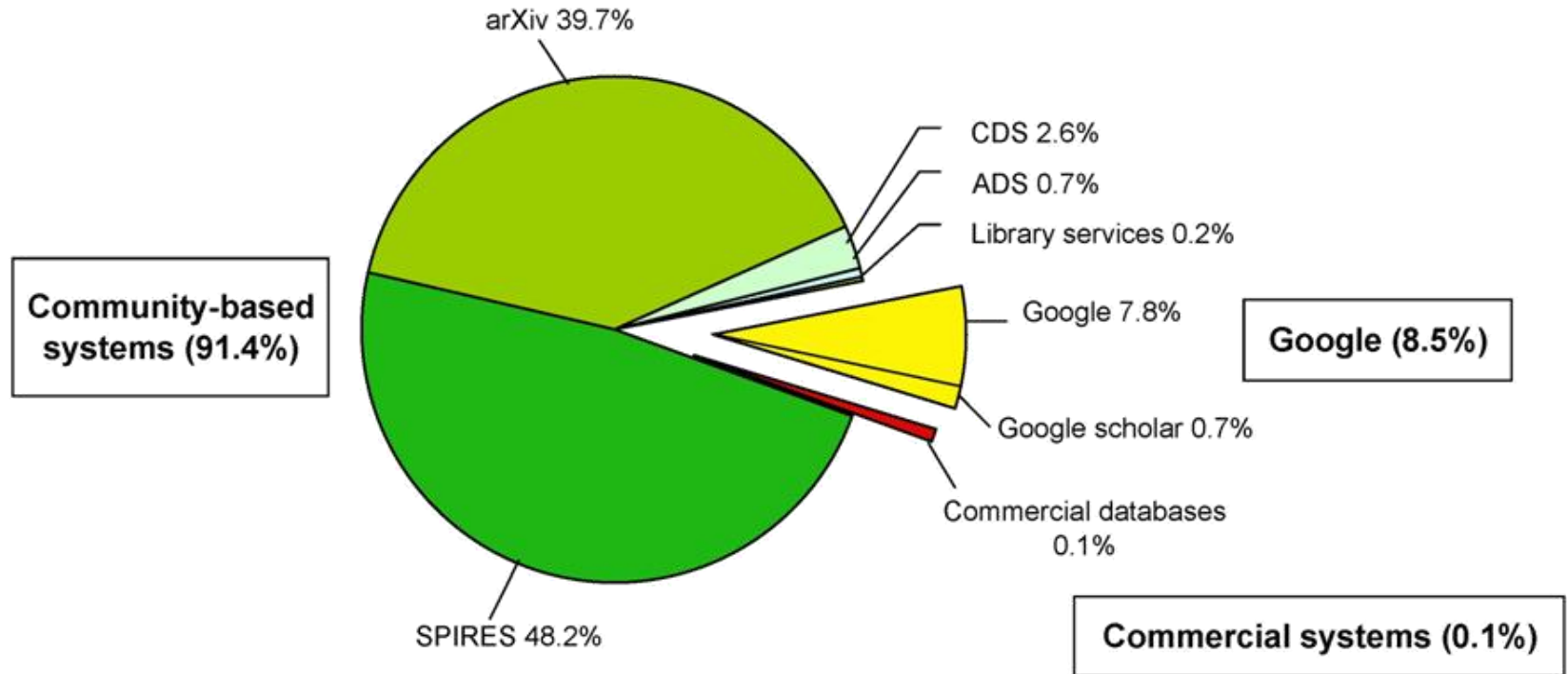


Information systems for HEP: INSPIRE, arXiv and more

Annette Holtkamp
CERN

ASP 2012
Kumasi, Ghana, Aug 3, 2012

Dominance of community services in HEP



HEP community

- closely-knit community
 - 20-30k active researchers publishing 10k articles
 - large collaborations (up to 5000 members)
 - very international (even small author groups)
 - authors = readers
- rapid information exchange essential
 - mailing of preprints since the 60's
 - long OA tradition
 - >90% of HEP journal articles on arXiv

Community services landscape

- arXiv:
 - Recent literature (preprints/postprints)
 - Several disciplines
- Inspire:
 - Focus on HEP
 - Complete coverage of HEP literature and more
 - Value added
- ADS:
 - Broad coverage of astronomy and physics literature
- PDG
- HepData
- Institutional repositories
 - Scientific output of an institution in all its manifestations
 - Internal documents

HEP community services

Complementary roles, e.g.:

- arXiv the place to **submit** new material
- Inspire the place to **search** for HEP literature, providing enriched content

Growing cooperation to profit from synergies

- Linking
- Metadata exchange
- ...

arXiv



All papers

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- [High Energy Physics - Phenomenology \(hep-ph new, recent, find\)](#)
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Mathematics



- Electronic archive and distribution server for research articles
 - Physics, mathematics, computer science, nonlinear sciences, quantitative biology, statistics
 - Persistent access
- Started in Aug 1991
- Mainly new papers pre-publication
 - based on user submission
- Alerts, RSS feeds

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A mobile antineutrino detector with plastic scintillators.

Jun 29, 2012 (yesterday)

(arXiv:1206.6566v1 [physics.ins-det])  

by Yasuhiro Kuroda, Shugo Oguri, Yo Kato, Ryoko Nakata, Yoshizumi Inoue, Chikara Ito, Makoto Minowa

We propose a new type segmented antineutrino detector made of plastic scintillators for the nuclear safeguard application. A small prototype was built and tested to measure background events. A satisfactory unmanned field operation of the detector system was demonstrated. Besides, a detailed Monte Carlo simulation code was developed to estimate the antineutrino detection efficiency of the detector.

    Share  Email Mark as read  Add tags

The XENON100 Detector. (arXiv:1206.6576v1 [astro-ph.IM])

Jun 29, 2012 (yesterday)

by P. R. Scovell, XENON100 Collaboration

XENON100 is a liquid xenon (LXe) time projection chamber built to search for rare collisions of hypothetical, weakly interacting massive particles (WIMPs). Operated in a low-background shield at the Gran Sasso underground laboratory in Italy, XENON100 has reached the unprecedented background level of <0.15 events/day/keV in the energy range below 100 keV in 30 kg of target mass, before electronic/nuclear recoil discrimination. It found no evidence for WIMPs during a dark matter run lasting for 100.9 live days in 2010, excluding with 90% confidence scalar WIMP-nucleon cross sections above $7 \times 10^{-45} \text{ cm}^2$ at a WIMP mass of $50 \text{ GeV}/c^2$. A new run started in March 2011, and more than 200 live days of WIMP-search data have been acquired. Results of this second run are expected to be released in summer 2012.

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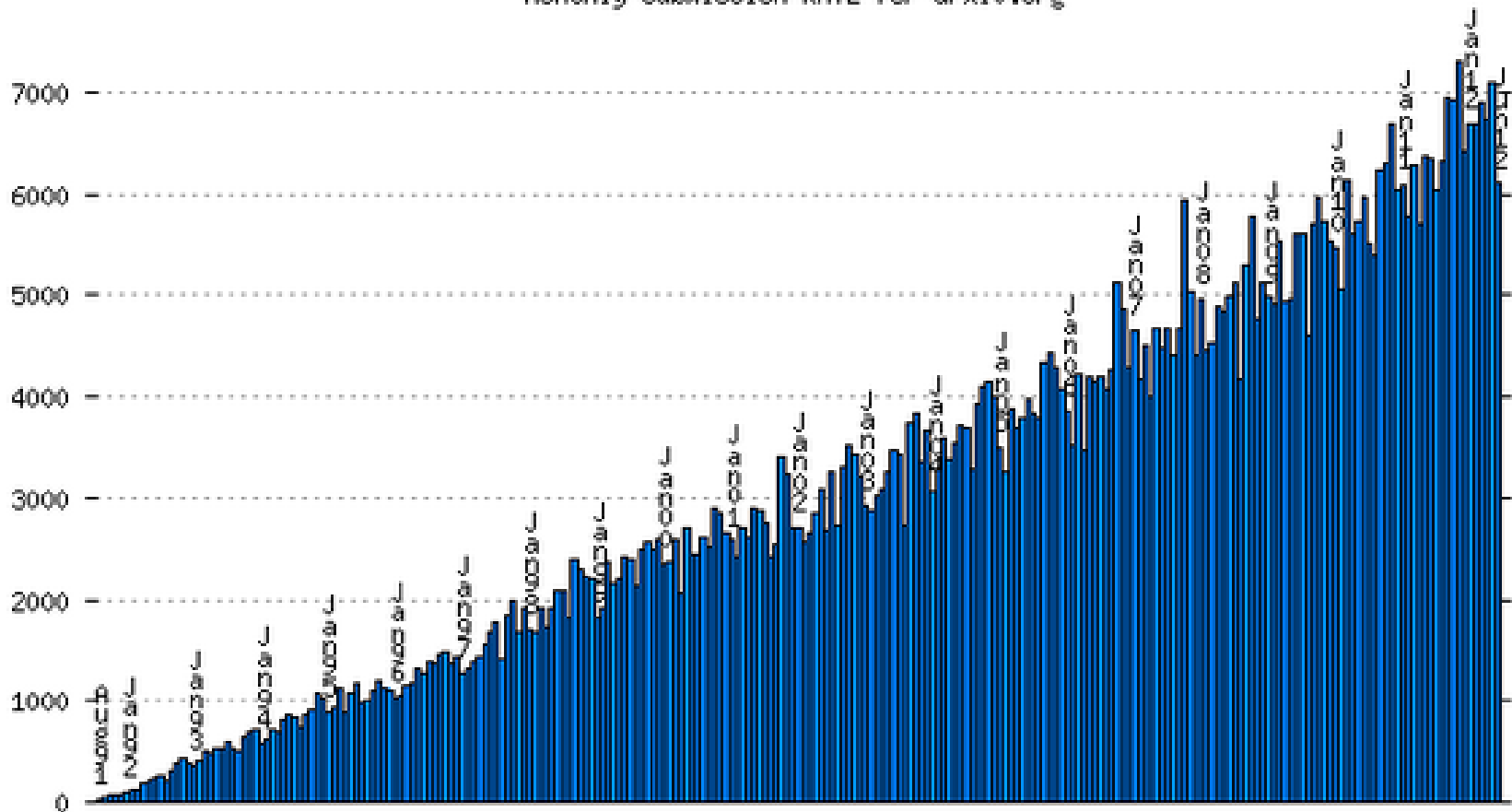
<http://export.arxiv.org/rss/hep-ex>

arXiv submission

- Submission by registered authors
 - recognized academic affiliation
 - endorsement
- Reviewed by moderators
 - basic quality control:
 - Refereable scientific contributions
 - control of category assignments

arXiv monthly submission rate statistics

Monthly Submission RATE for arxiv.org



First 20.9 years (26 Jun '12 total = 766,171)

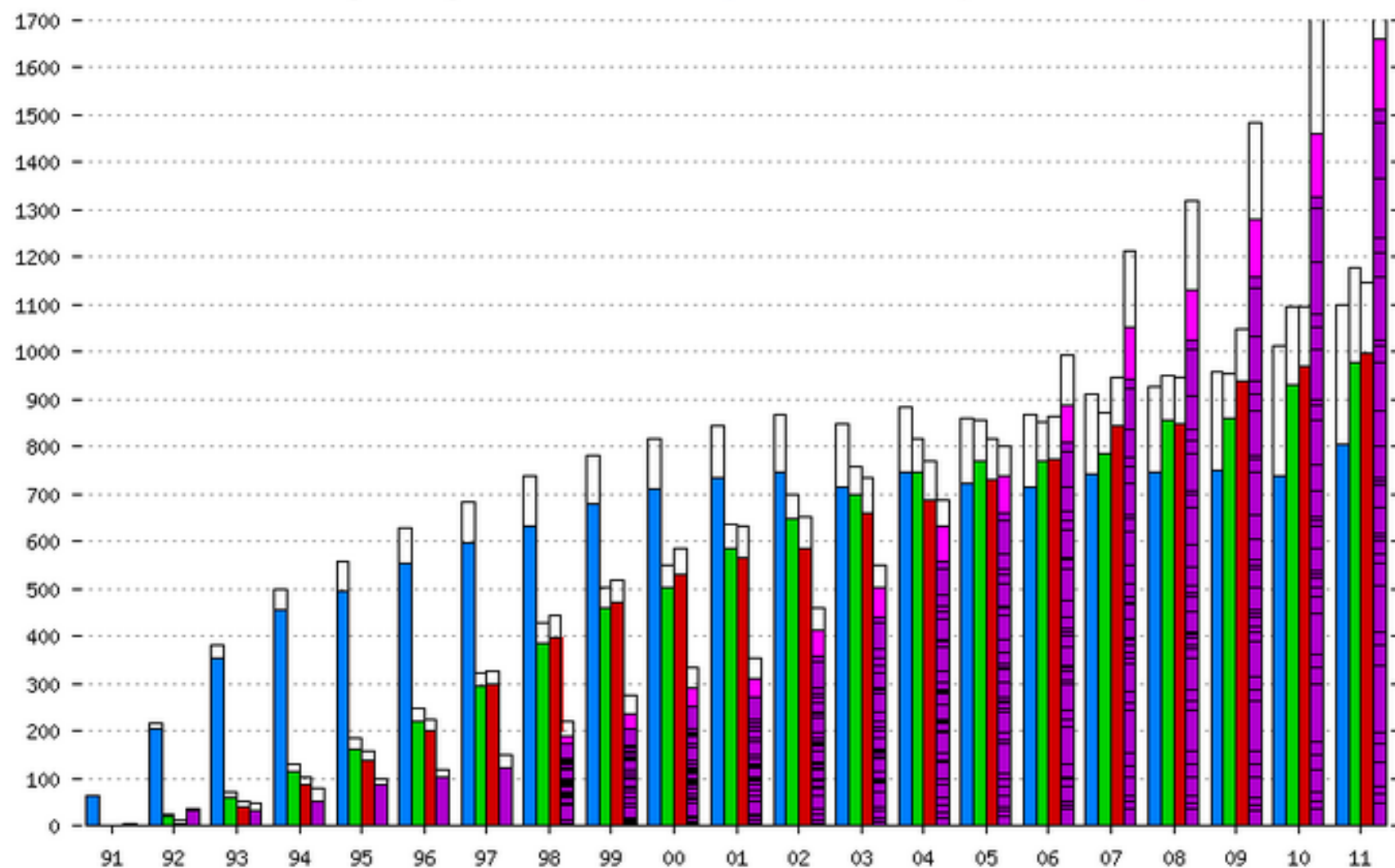
Blue - Number of new submissions received during each month since Aug '91

http://arxiv.org/show_monthly_submissions

arXiv monthly submission rate statistics, 1 Jan '12

(for the four largest "subject areas": "hep" = High Energy Physics, "cond-mat" = Condensed Matter Physics, "astro-ph" = Astrophysics, "math" = Mathematics)

Average Monthly Submission Rates for hep / cond-mat / astro-ph / math(+math-ph)



arXiv submission: HEP

- complete acceptance in the HEP community
- ~738 submissions/month for the past 12 years
- fraction of arxiv papers in main journals (2011):
 - JHEP: 99%
 - Phys. Rev. D: 97%

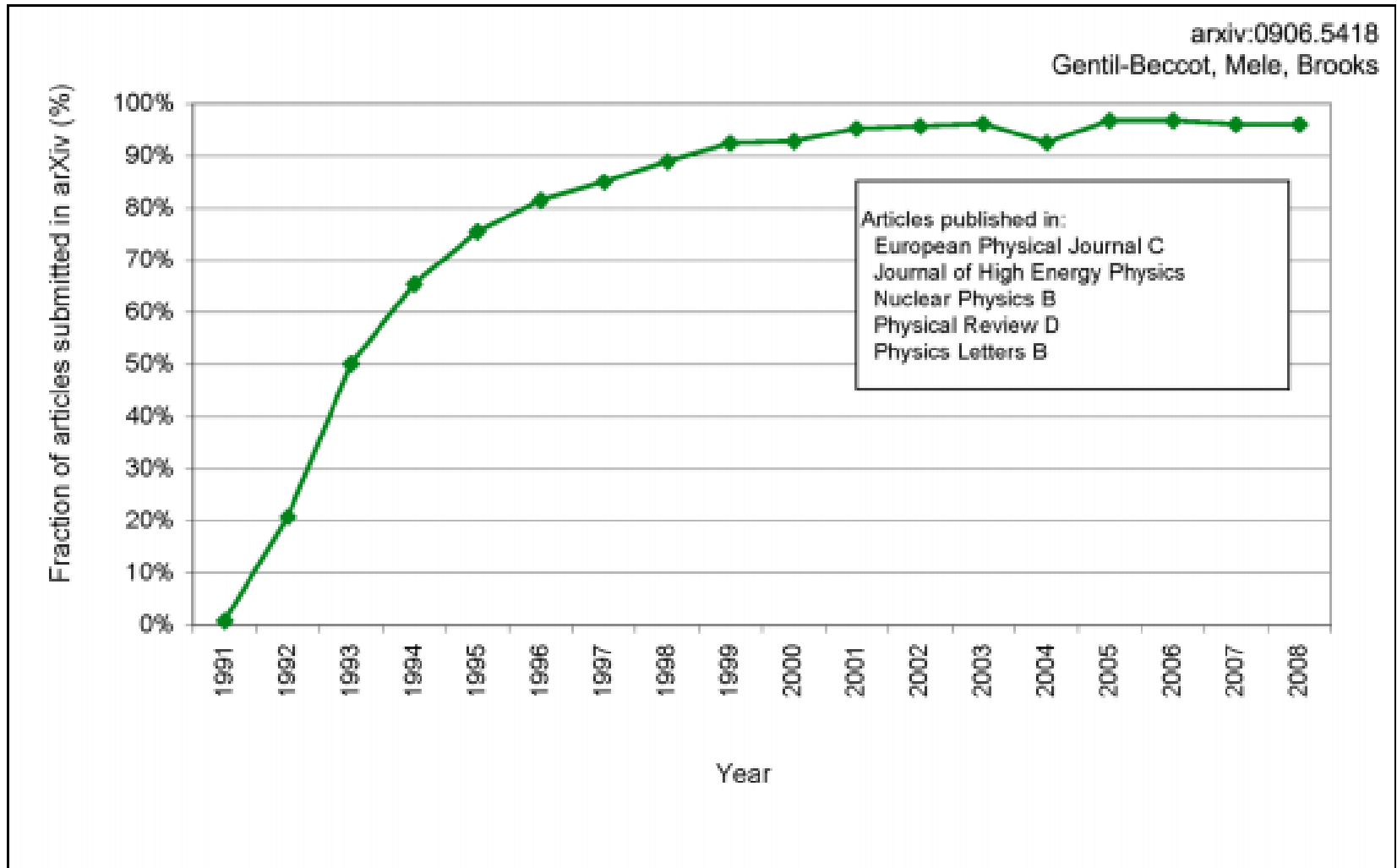
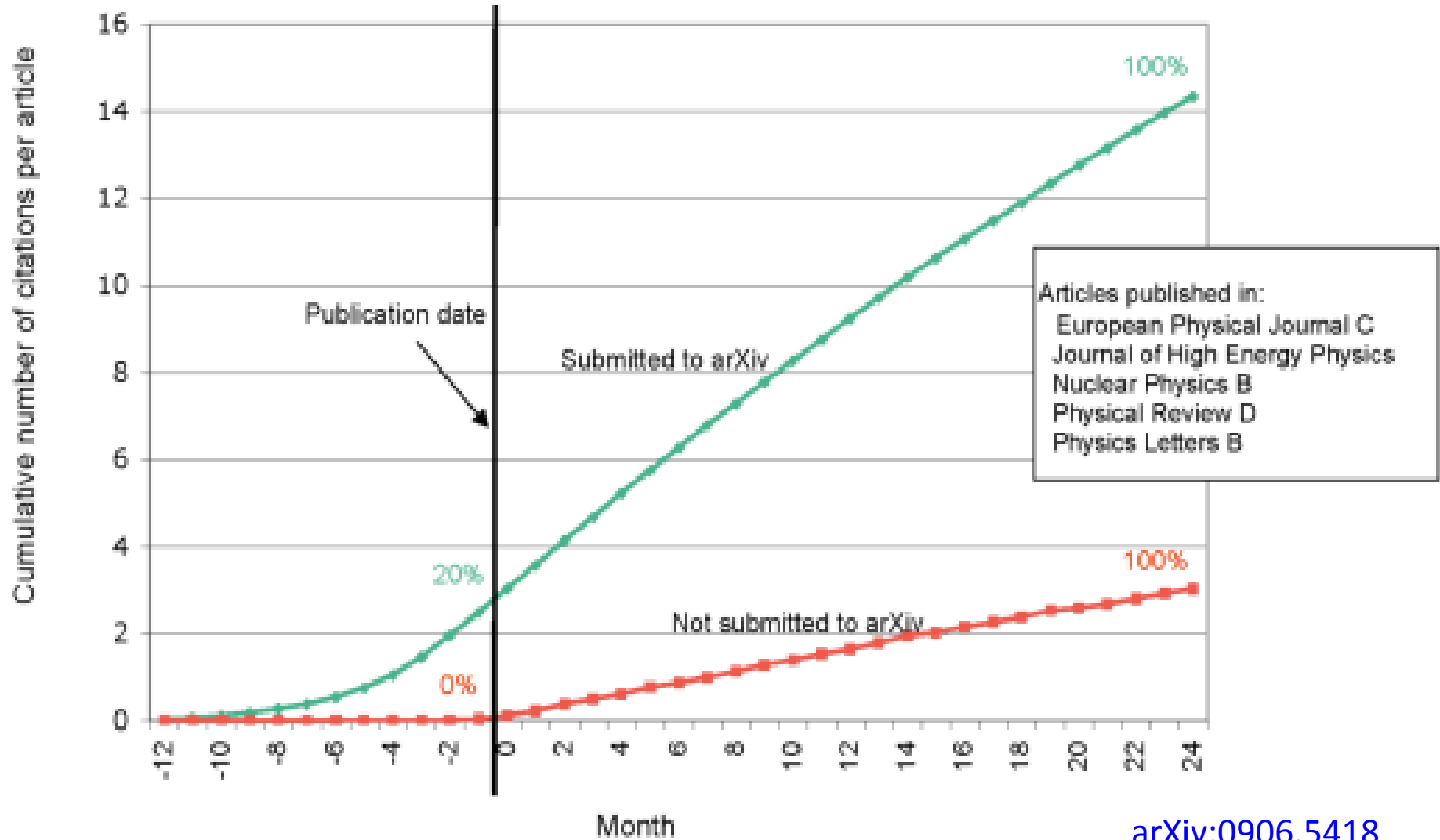


Figure 1. Fraction of articles published in the main peer-reviewed HEP journals which also appeared, in some version, on arXiv.org as a function of time.

arXiv: citation advantage



[arXiv:0906.5418](https://arxiv.org/abs/0906.5418)

If you're a HEP scientist
and don't submit to arXiv
you're not visible

High Energy Physics – Experiment

Search for a light pseudoscalar Higgs boson in the dimuon decay channel in pp collisions at $\sqrt{s} = 7$ TeV

CMS Collaboration

(Submitted on 27 Jun 2012)

The dimuon invariant mass spectrum is searched in the range between 5.5 and 14 GeV for a light pseudoscalar Higgs boson "a", predicted in a number of new physics models, including the next-to-minimal supersymmetric standard model. The data sample used in the search corresponds to an integrated luminosity of 1.3 inverse femtobarns collected in pp collisions at $\sqrt{s} = 7$ TeV with the CMS detector at the LHC. No excess is observed above the background predictions and upper limits are set on the cross section times branching fraction $\sigma \times B(\text{pp to "a" to an oppositely charged muon pair})$ in the range of 1.5–7.5 pb. These results improve on existing bounds on the "a" b-bbar coupling for $m(\text{"a"}) < m(\text{Upsilon(1S)})$ and are the first significant limits for $m(\text{"a"}) > m(\text{Upsilon(1S)})$. Constraints on the supersymmetric parameter space are presented in the context of the next-to-minimal model.

Comments: Submitted to Phys. Rev. Lett
Subjects: **High Energy Physics – Experiment (hep-ex)**
Report number: CMS-HIG-12-004, CERN-PH-EP-2012-176
Cite as: [arXiv:1206.6326v1](https://arxiv.org/abs/1206.6326v1) [hep-ex]

Submission history

From: Cms Collaboration [[view email](#)]
[v1] Wed, 27 Jun 2012 16:13:31 GMT (786kb,D)

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Inspire

Inspire

- Comprehensive HEP information platform
 - conceived in 2007
 - out of beta since 2012
 - run by CERN, DESY, Fermilab, SLAC
 - based on Invenio
 - digital library system developed at CERN
- Evolution of SPIRES

<http://inspirehep.net>

SPIRES (1974-2012)

- Network of databases
 - HEP literature, conferences, institutions, experiments, hepnames, jobs
- SLAC – DESY – Fermilab Collaboration
- SPIRES-HEP
 - metadata of 850k articles
 - preprints, journal articles, conference contributions, books, grey literature
 - web server since 1991
 - 100k searches/day
- High data quality, manually curated, comprehensive coverage
- High acceptance, user involvement
- Technology from the 70's
- Replaced by Inspire in 2012
 - still serves as backend for Inspire



run by



HEP Search

High-Energy Physics Literature Database

Use "find " for SPIRES-style search ([other tips](#))

Brief format ▾

Search

[Easy Search](#)
[Advanced Search](#)

[find j *Phys.Rev.Lett.,105*](#) :: [more](#)

HOW TO SEARCH

- SPIRES syntax is (mostly) supported (requires "find")
 - [find a richter, b and t quark and date > 1984](#)
 - [find j phys.rev.,D50,1140 or j jhep,0903,112](#)
 - [find eprint arxiv:1007.5048](#) (Note the plots available on the detailed record)
 - [find fulltext "quark-gluon plasma"](#) (Note new "fulltext" operator)
 - [find a ellis and refersto a witten](#) (Note "refersto")
 - [find a kane and citedby title SUSY and topcite 200+](#) (Note "citedby")

New techniques:

- [1985 richter quark multiplicity](#)
- [arXiv:1007.5048](#)
- [citedby:author:ellis -refersto:author:witten](#)
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INSPIRE NEWS

- 2012-06-27 Want to do more powerful citation searching such as finding the latest citations to your work?
<http://t.co/xaVGQv8H>
- 2012-06-26 Free text searches for equal signs are now possible. Try it out and type "N=2" into the search box.
<http://t.co/yAnHZJeU>
- 2012-06-15 Looking for a non-conventional career in

Inspire collections

- HEP: literature
 - 960k records
 - > 110k searches/day
- HepNames
- Institutions
- Conferences
- Jobs
- Experiments

Beyond Spires

- Many new features
 - plot extraction, author profiles...
- fulltext
- More content
 - historical material before 1974
 - more content from neighbouring disciplines (planned)
 - astrophysics, nuclear physics, mathematics...
 - if cited by core HEP articles
- More content types (planned):
 - slides, multimedia, software, high-level research data

Fulltext repository

- All OA material
 - arXiv, theses, preprints, OA journal articles
 - esp “endangered” material (conf procs)
- Access restricted articles
 - hidden archive of journal articles
 - searchable
- Historical material
 - scanning of old preprint/conference series
- Beyond articles (planned)
 - slides, multimedia, software...

How to find stuff on Inspire?

3 options for search syntax:

- Google-like freetext search
 - searches in title, abstract, keywords...

“CMS Higgs”

- Invenio syntax

“collaboration:CMS title:Higgs”

- Spires syntax

“fin cn cms and t higgs”

<http://inspirehep.net/help/search-tips>

Easy search

Easy Search

Welcome to Easy Search of HEP.

Author:	<input type="text"/>
Title:	<input type="text" value="Higgs"/>
Report Number:	<input type="text"/>
Affiliation:	<input type="text"/>
Collaboration:	<input type="text" value="CMS"/>
Keywords:	<input type="text"/>
Eprint:	<input type="text" value="Any Type"/> Number <input type="text"/>
Topcite:	<input type="text" value="Don't care"/>
Journal:	<input type="text" value="Any Journal"/> vol: <input type="text"/> pg: <input type="text"/>

Advanced search

HEP Search

High-Energy Physics Literature Database

Search 958,992 records for:

All of the words: any field AND

All of the words: any field AND

All of the words:
 Any of the words:
 Exact phrase:
 Partial phrase:
 Regular expression:

Added since: any day any month any year

Sort by: - latest first - asc. - or rank by - 10 results

Displays: any field
 affiliation
 author
 caption
 collaboration
 experiment
 exact author
 fulltext
 journal
 keyword
 reference
 report number
 record ID
 title
 year

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second-order search operators

- refersto

`refersto:affiliation:CERN`

All papers citing articles written by CERN authors

- citedby

`Citedby:author:...`

All papers cited by articles written by ...

Complex search example

Find the most influential HEP core papers that cite the Hitchin article „Generalized Calabi-Yau manifolds“ but don't cite any papers by Polchinski

collection:core cited:100->9999

refersto:reportnumber:math/0209099 NOT

refersto:author:Polchinski

Fulltext search

- all of arxiv papers, many theses, some report series
- to be extended
- phrase search
 - fulltext:"light pseudoscalar Higgs"
- display of snippets surrounding the search term

Sort by:

Display results:

latest first

desc.

- or rank by -

25 results

single list

Full-text search is currently available for all arXiv papers, many theses, a few report series and some journal articles

HEP 45 records found 1 - 25 ▶ jump to record:

Search took 0.05 seconds.

1. Non-perturbative effects in WIMP scattering off nuclei in the NMSSM.[Grigoris Panotopoulos \(CERN\)](#), [Miguel-Angel Sanchis-Lozano \(Valencia U., IFIC & Valencia U.\)](#). Dec 2011. 4 pp.

FTUV-11-12-20, IFIC-11-71, CERN-PH-TH-2011-313

e-Print: [arXiv:1112.4387 \[hep-ph\]](#) [PDF](#)[References](#) | [BibTeX](#) | [LaTeX\(US\)](#) | [LaTeX\(EU\)](#) | [Harvmac](#) | [EndNote](#)**Snippets courtesy of arXiv**... can efficiently annihilate through the resonant s-channel via a **light pseudoscalar Higgs** mediator satisfying the requirements from the relic density $\Omega_{\text{CDM}} h^2 \approx 0.12$. However...... muonic decay modes, due to an extra contribution of a **light pseudoscalar Higgs** boson which couples to down-type quarks at large $\tan \beta$...[Detailed record](#)**2. Higgs to Four Taus at ALEPH.**[ALEPH Collaboration](#) ([James Beacham \(New York U.\)](#) for the collaboration). Jun 2010. 4 pp.To appear in the proceedings of Conference: [C10-03-13](#)e-Print: [arXiv:1006.2491 \[hep-ex\]](#) [PDF](#)[References](#) | [BibTeX](#) | [LaTeX\(US\)](#) | [LaTeX\(EU\)](#) | [Harvmac](#) | [EndNote](#)**Snippets courtesy of arXiv**... parameter space previously unexplored and further constrains models that feature **light pseudoscalar Higgs** particles and non-standard Higgs decays such as the NMSSM...[Detailed record](#)

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CERN-PH-EP-2012-083, FERMILAB-PUB-12-357-E

DOI: [10.1007/JHEP06\(2012\)039](https://doi.org/10.1007/JHEP06(2012)039)e-Print: [arXiv:1204.2760](#) [[hep-ex](#)] [PDF](#)[References](#) | [BibTeX](#) | [LaTeX\(US\)](#) | [LaTeX\(EU\)](#) | [Harvmac](#) | [EndNote](#)
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Search for charged Higgs bosons decaying via $H^+ \rightarrow \tau \nu$ in top quark pair events using pp collision data at $\sqrt{s} = 7$ TeV with the ATLAS detector.

ATLAS Collaboration (Georges Aad (Freiburg U.) et al.) [Show all 2878 authors.](#)

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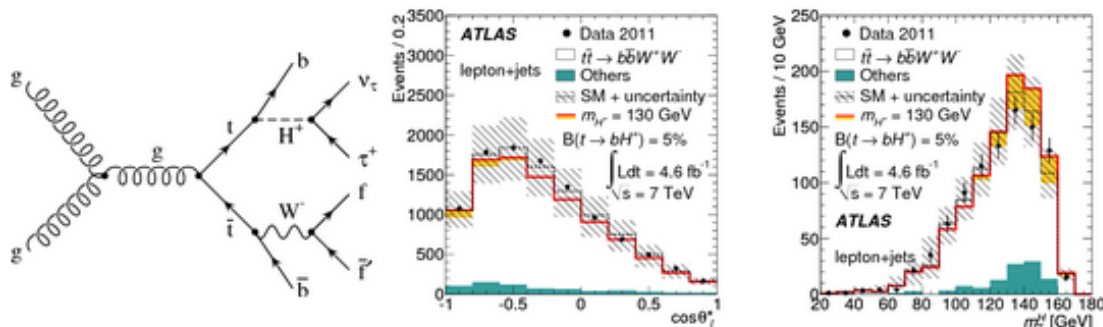
JHEP 1206 (2012) 039
DOI: [10.1007/JHEP06\(2012\)039](https://doi.org/10.1007/JHEP06(2012)039)
CERN-PH-EP-2012-083
e-Print: [arXiv:1204.2760](https://arxiv.org/abs/1204.2760) [hep-ex] [PDF](#)
Experiment: [CERN-LHC-ATLAS](#)

Abstract: The results of a search for charged Higgs bosons are presented. The analysis is based on 4.6/fb of proton-proton collision data at $\sqrt{s} = 7$ TeV collected by the ATLAS experiment at the Large Hadron Collider, using top quark pair events with a tau lepton in the final state. The data are consistent with the expected background from Standard Model processes. Assuming that the branching ratio of the charged Higgs boson to a tau lepton and a neutrino is 100%, this leads to upper limits on the branching ratio of top quark decays to a b quark and a charged Higgs boson between 5% and 1% for charged Higgs boson masses ranging from 90 GeV to 160 GeV, respectively. In the context of the mh-max scenario of the MSSM, $\tan(\beta)$ above 12-26, as well as between 1 and 2-6, can be excluded for charged Higgs boson masses between 90 GeV and 150 GeV.

Note: * Temporary entry *; Long author list - awaiting processing; 29 pages plus author list (51 pages total), 8 figures, 8 tables, submitted to JHEP

Keyword(s): INSPIRE: [Higgs particle: charged particle: leptonic decay](#) | [Higgs particle: charged particle: search for](#) | [Higgs particle: mass](#) | [p: scattering](#) | [top: branching ratio](#) | [top: decay](#) | [top: pair production](#) | [ATLAS](#) | [minimal supersymmetric standard model](#)

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Search for charged Higgs bosons decaying via $H^+ \rightarrow \tau \nu$ in top quark pair events using pp collision data at $\sqrt{s} = 7$ TeV with the ATLAS detector.

ATLAS Collaboration (Georges Aad (Freiburg U.) et al.) [Show all 2878 authors.](#)

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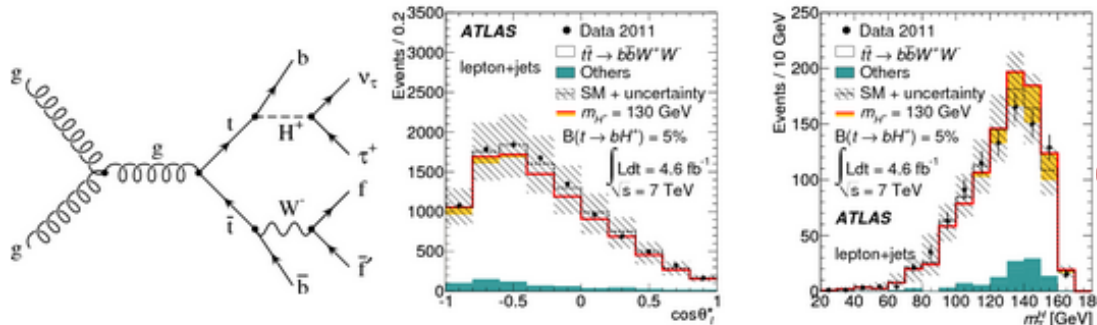
JHEP 1206 (2012) 039
DOI: [10.1007/JHEP06\(2012\)039](https://doi.org/10.1007/JHEP06(2012)039)
CERN-PH-EP-2012-083
e-Print: [arXiv:1204.2760](https://arxiv.org/abs/1204.2760) [hep-ex] [PDF](#)
Experiment: [CERN-LHC-ATLAS](#)

Abstract: The results of a search for charged Higgs bosons are presented. The analysis is based on 4.6/fb of proton-proton collision data at $\sqrt{s} = 7$ TeV collected by the ATLAS experiment at the Large Hadron Collider, using top quark pair events with a tau lepton in the final state. The data are consistent with the expected background from Standard Model processes. Assuming that the branching ratio of the charged Higgs boson to a tau lepton and a neutrino is 100%, this leads to upper limits on the branching ratio of top quark decays to a b quark and a charged Higgs boson between 5% and 1% for charged Higgs boson masses ranging from 90 GeV to 160 GeV, respectively. In the context of the mh-max scenario of the MSSM, $\tan(\beta)$ above 12-26, as well as between 1 and 2-6, can be excluded for charged Higgs boson masses between 90 GeV and 150 GeV.

Note: * Temporary entry *; Long author list - awaiting processing; 29 pages plus author list (51 pages total), 8 figures, 8 tables, submitted to JHEP

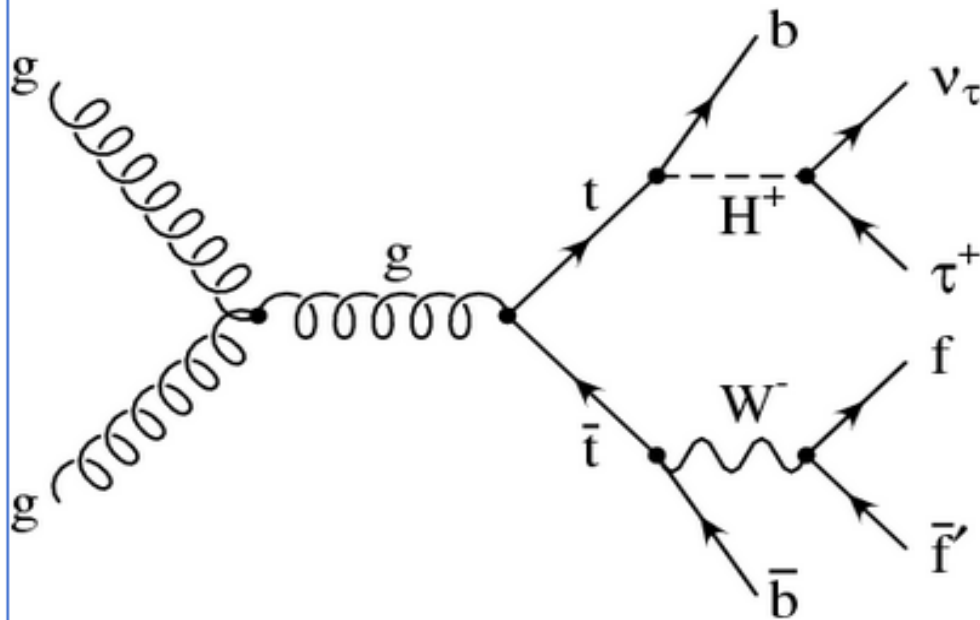
Keyword(s): INSPIRE: [Higgs particle: charged particle: leptonic decay](#) | [Higgs particle: charged particle: search for](#) | [Higgs particle: mass](#) | [p: scattering](#) | [top: branching ratio](#) | [top: decay](#) | [top: pair production](#) | [ATLAS](#) | [minimal supersymmetric standard model](#)

Author supplied: [Hadron-Hadron Scattering](#)



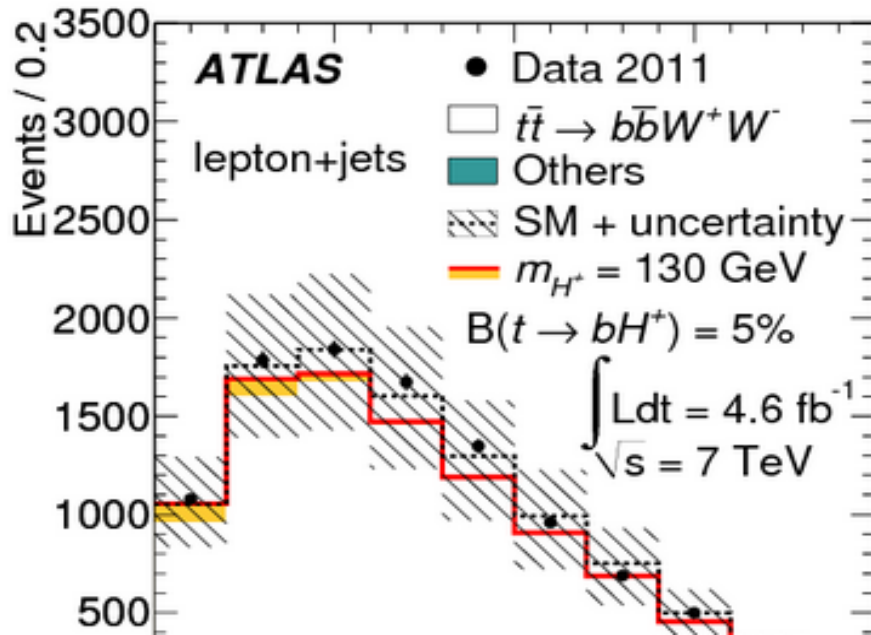
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Search for charged Higgs bosons decaying via $H^+ \rightarrow \tau \nu$ in top quark pair events using pp collision data at $\sqrt{s} = 7$ TeV with the ATLAS detector - ATLAS Collaboration (Aad, Georges et al.) JHEP 1206 (2012) 039 . arXiv:1204.2760 [hep-ex] . CERN-PH-EP-2012-083



Example of a leading-order Feynman diagram for the production of $t\bar{t}$ events arising from gluon fusion, where a top quark decays to a charged Higgs boson, followed by the decay $H^+ \rightarrow \tau \nu$.

Searchable captions



Distribution of (a) $\cos\theta_1^*$ and (b) m_{ll}^H , in the signal region ($|\cos\theta_1^*| < 0.6$, $m_{ll}^H > 60 \text{ GeV}$) for the latter. The dashed line corresponds to the SM-only hypothesis and the hatched area around it shows the total uncertainty for the SM backgrounds, where "Others" refers to the contribution of all SM processes except $t\bar{t} \rightarrow b\bar{b}W^+W^-$. The solid line shows the predicted contribution of signal+background in the presence of a 130-GeV charged Higgs boson, assuming $B(t \rightarrow bH^+) = 5\%$ and $B(H^+ \rightarrow \tau \nu) = 100\%$. The light area below the solid line corresponds to the contribution of the H^+ signal, stacked on top of the scaled $t\bar{t} \rightarrow b\bar{b}W^+W^-$ background and other SM processes.

Plot extraction

- Figures extracted from LaTeX sources (arXiv)
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Soon to come:

- Extraction from pdf
- Phrase from fulltext referencing a figure

Search for charged Higgs bosons decaying via $H^+ \rightarrow \tau \nu$ in top quark pair events using pp collision data at $\sqrt{s} = 7$ TeV with the ATLAS detector.

ATLAS Collaboration (Georges Aad (Freiburg U.) et al.) [Show all 2878 authors.](#)

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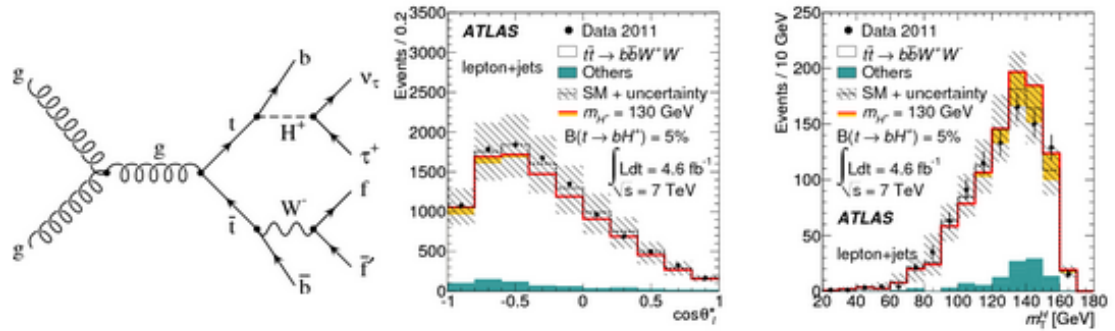
JHEP 1206 (2012) 039
DOI: [10.1007/JHEP06\(2012\)039](https://doi.org/10.1007/JHEP06(2012)039)
CERN-PH-EP-2012-083
e-Print: [arXiv:1204.2760](https://arxiv.org/abs/1204.2760) [hep-ex] [PDF](#)
Experiment: [CERN-LHC-ATLAS](#)

Abstract: The results of a search for charged Higgs bosons are presented. The analysis is based on 4.6/fb of proton-proton collision data at $\sqrt{s} = 7$ TeV collected by the ATLAS experiment at the Large Hadron Collider, using top quark pair events with a tau lepton in the final state. The data are consistent with the expected background from Standard Model processes. Assuming that the branching ratio of the charged Higgs boson to a tau lepton and a neutrino is 100%, this leads to upper limits on the branching ratio of top quark decays to a b quark and a charged Higgs boson between 5% and 1% for charged Higgs boson masses ranging from 90 GeV to 160 GeV, respectively. In the context of the mh-max scenario of the MSSM, $\tan(\beta)$ above 12-26, as well as between 1 and 2-6, can be excluded for charged Higgs boson masses between 90 GeV and 150 GeV.

Note: * Temporary entry *; Long author list - awaiting processing; 29 pages plus author list (51 pages total), 8 figures, 8 tables, submitted to JHEP

Keyword(s): INSPIRE: [Higgs particle: charged particle: leptonic decay](#) | [Higgs particle: charged particle: search for](#) | [Higgs particle: mass](#) | [p: scattering](#) | [top: branching ratio](#) | [top: decay](#) | [top: pair production](#) | [ATLAS](#) | [minimal supersymmetric standard model](#)

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[Softly Broken Supersymmetry and \$SU\(5\)\$](#) - Dimopoulos, Savas *et al.* Nucl.Phys. B193 (1981) 150 HUTP-81/A022

[Handbook of LHC Higgs Cross Sections: 1. Inclusive Observables](#) - LHC Higgs Cross Section Working Group Collaboration (Dittmaier, S. *et al.*) arXiv:1101.0593 [hep-ph] CERN-2011-002

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J.Phys.Conf.Ser. 331 (2011) 062022.

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The Large N limit of superconformal field theories and supergravity.

Juan Martin Maldacena (Harvard U.).

Nov 1997

19 pp.

Adv.Theor.Math.Phys. 2 (1998) 231-252

HUTP-98-A097

e-Print: hep-th/9711200 [hep-th] [PDF](#)

Abstract: We show that the large N limit of certain conformal field theories in various dimensions include in their Hilbert space a sector describing supergravity on the product of Anti-deSitter spacetimes, spheres and other compact manifolds. This is shown by taking some branes in the full M/string theory and then taking a low energy limit where the field theory on the brane decouples from the bulk. We observe that, in this limit, we can still trust the near horizon geometry for large N . The enhanced supersymmetries of the near horizon geometry correspond to the extra supersymmetry generators present in the superconformal group (as opposed to just the super-Poincare group). The 't Hooft limit of 4-d $\mathcal{N} = 4$ super-Yang-Mills at the conformal point is shown to contain strings: they are IIB strings. We conjecture that compactifications of M/string theory on various Anti-deSitter spacetimes are dual to various conformal field theories. This leads to a new proposal for a definition of M-theory which could be extended to include five non-compact dimensions.

Note: 20 pages, harvmac, v2: section on AdS₂ corrected, references added, v3: More references and a sign in eqns 2.8 and 2.9 corrected Report-no: HUTP-98/A097

Keyword(s): INSPIRE: [field theory: conformal](#) | [expansion 1/N](#) | [supergravity](#) | [Hilbert space](#) | [space-time: anti-de Sitter](#) | [membrane model](#) | [string model](#) | [geometry: horizon](#) | [gauge field theory: U\(N\)](#) | [supersymmetry](#) | [duality](#) | [M-theory](#) | [bibliography](#)

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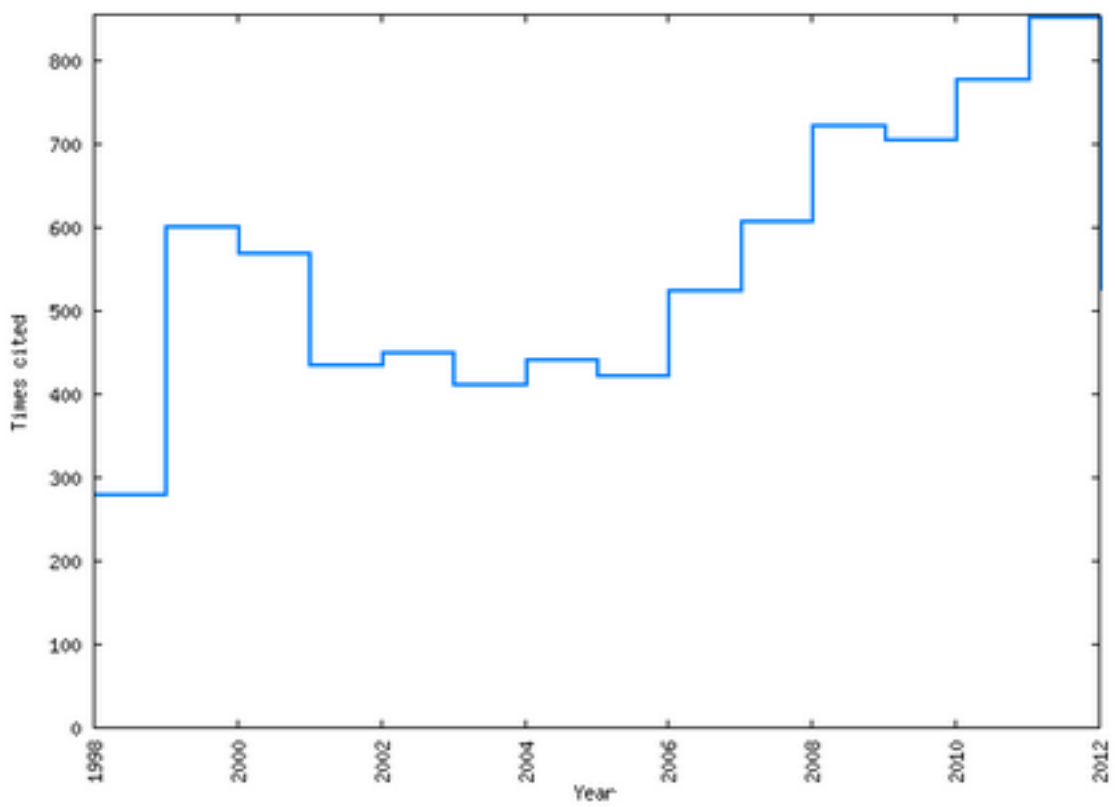
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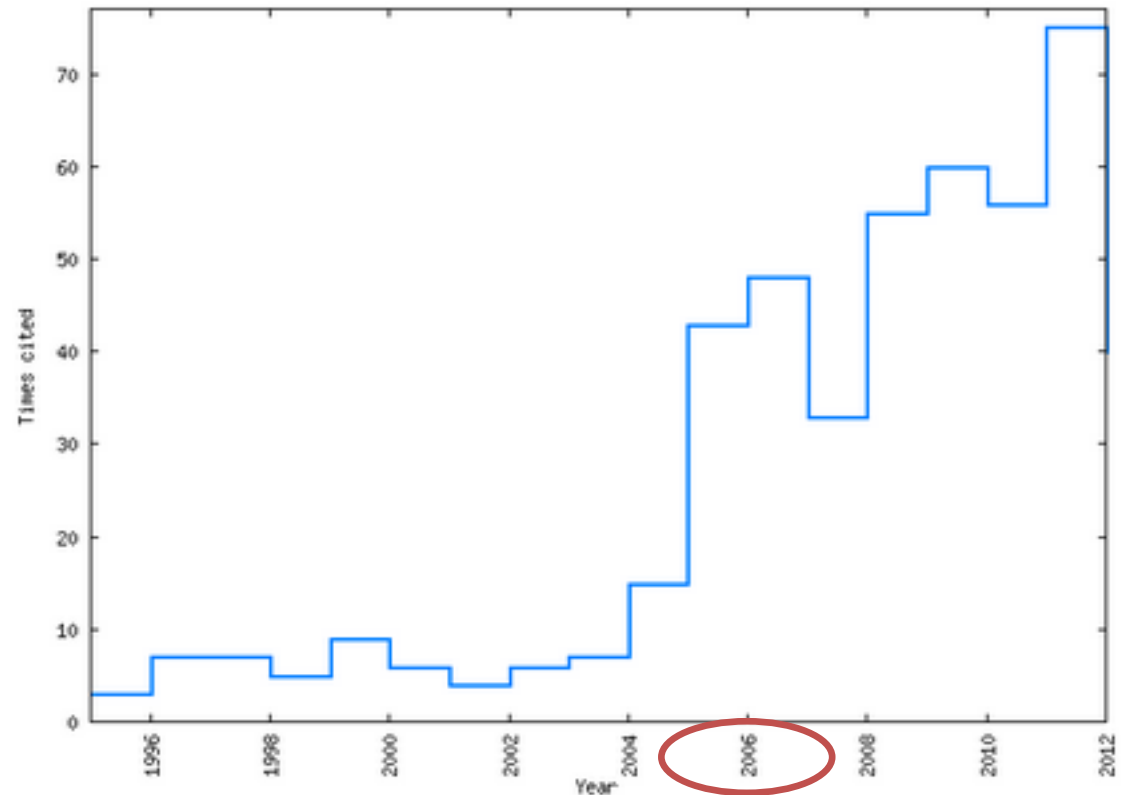
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PhD Institution: [Cambridge U.](#)

Undergrad: [Cambridge U.](#)

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URL: http://www.kcl.ac.uk/news/news_details.php?news_id=1324&year=2010

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Field: HEP-TH, HEP-PH, ASTRO-PH

Author ID: [J.R.Ellis.1](#)

Inspire ID: INSPIRE-00146525

Institutional History:

Institution	Rank	Start Date	End Date
King's Coll. London	SENIOR	2010	
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SLAC	PD		
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Cambridge U.	UG		



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John Richard Ellis ([King's Coll. London](#))
[\[Publication list\]](#) [\[Google\]](#) [\[Students\]](#) [\[arXiv\]](#) [\[ADS\]](#)

PhD Institution: [Cambridge U.](#)

Undergrad: [Cambridge U.](#)

Email: john.ellis@cern.ch

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supersymmetry (303)
numerical calculations (272)
bibliography (245)
numerical calculations: interpretation of experiments (147)
Higgs particle: mass (138)
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Olive, Keith A. (127)
Mavromatos, Nikolaos E. (83)
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Additional Citation Metrics ?		
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ALICE Collaboration (B. Abelev (LLNL, Livermore) *et al.*). May 2012. 18 pp.

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Reaction Database Standard Search Interface

Database of Numerical HEP scattering cross sections

Enter query:

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The basic keywords are:

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exp - the experiment/laboratory name (eg. ZEUS, CERN, LHC).

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- Hadronic total cross-sections (R) in e+e- interactions
- Low-energy neutrino cross-sections
- Event shapes in lepton-lepton and lepton-nucleon interactions

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ABELEV 2012 — Neutral pion and η meson production in proton-proton collisions at $\sqrt{s}=0.9$ TeV and $\sqrt{s}=7$ TeV

Experiment: [CERN-LHC-ALICE \(ALICE\)](#)Preprinted as [CERN-PH-EP-2012-001](#)Archived as: [ARXIV:1205.5724](#)Record in: [INSPIRE](#)

CERN-LHC. Measurements of the invariant cross sections for inclusive P^0 and η production at centre-of-mass energies of 0.9 and 7 TeV. The P^0 measurements cover the P_T ranges 0.4-7 GeV and 0.3-25 GeV for the 0.9 and 7 TeV data respectively. The η data covers the P_T range 0.4-15 GeV. The ratio of η to P^0 production at 7 TeV is tabulated.

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Table 1 (Fig.3.:) [HIDE DATA](#) or as: [plain text](#), [AIDA](#), [PyROOT](#), [YODA](#), [ROOT](#), [mpl](#) or [jhepwork](#)

The measured invariant differential section for inclusive P^0 production at a centre-of-mass energy of 7 TeV.

	RE : P P \rightarrow P^0 X
	YRAP : 0.0
	SQRT(S) : 7000.0 GeV
PT IN GEV	E*D3(SIG)/DP**3 IN MUB/GEV**2
	HIDE DATA
0.350 (bin: 0.300 – 0.400)	88580 \pm 17010 (stat) \pm 16140 (sys)
0.449 (bin: 0.400 – 0.500)	67370 \pm 4165 (stat) \pm 10150 (sys)
0.549 (bin: 0.500 – 0.600)	38660 \pm 1228 (stat) \pm 5535 (sys)
0.694 (bin: 0.600 – 0.800)	20560 \pm 277 (stat) \pm 1955 (sys)

Reaction Database Single Dataset Plot

First Author: ABELEV12
Published as: Not Published
Preprinted as: ARXIV:1205.5724
Experiment Name: CERN-LHC-ALICE(ALICE)

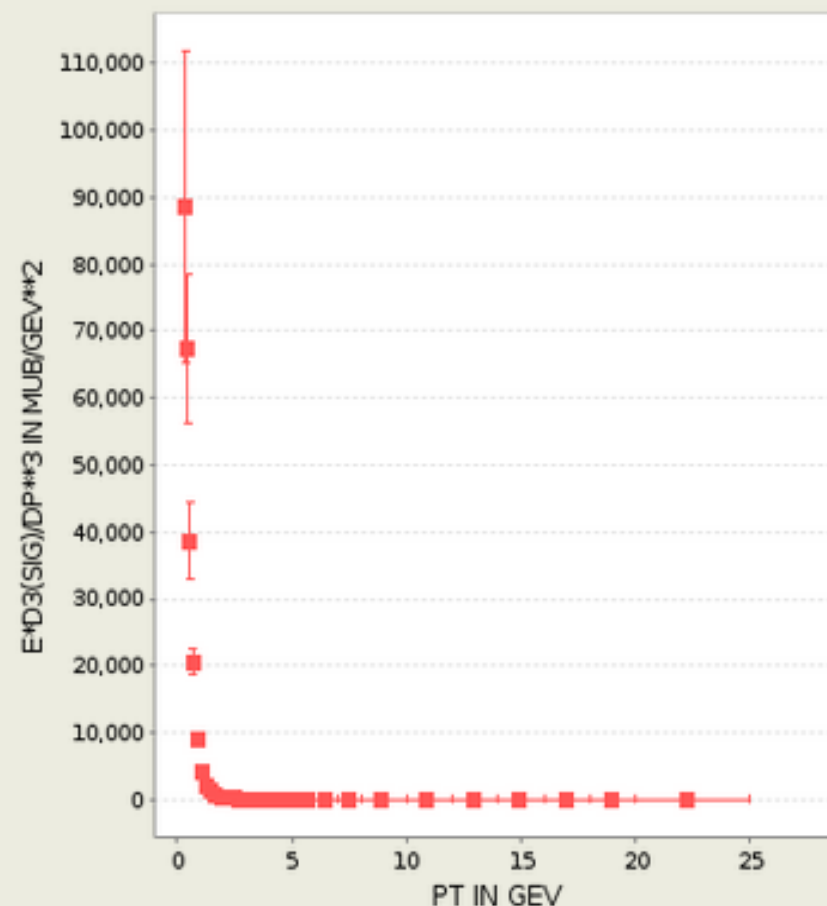
Data plot: 1/1

The measured invariant differential section for inclusive π^0 production at a centre-of-mass energy of 7 TeV
'E*D3(SIG)/DP**3 IN MUB/GEV**2' versus 'PT IN GEV'
'RE : P P --> PI0 X'
'YRAP IN num : 0.0'

Re-plot as: [xlin-ylin](#) | [xlin-ylog](#) | [xlog-ylin](#) | [xlog-ylog](#)

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Final results from DELPHI on the searches for SM and MSSM neutral Higgs bosons.

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Feb 2003

66 pp.

Eur.Phys.J. C32 (2004) 145-183

DOI: [10.1140/epjc/s2003-01394-x](https://doi.org/10.1140/epjc/s2003-01394-x)

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Abstract: These final results from DELPHI searches for the Standard Model (SM) Higgs boson, together with benchmark scans of the Minimal Supersymmetric Standard Model (MSSM) neutral Higgs bosons, used data taken at centre-of-mass energies between 200 and 209 GeV with a total integrated luminosity of 224 pb⁻¹. The data from 192 to 202 GeV are reanalysed with improved b-tagging for MSSM final states decaying to four b-quarks. The 95% confidence level lower mass bound on the Standard Model Higgs boson is 114.1 GeV/c². Limits are also given on the lightest scalar and pseudo-scalar Higgs bosons of the MSSM.

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Particle Data Group (PDG)

International collaboration of more than 100 authors publishing biannually summaries of particle physics:

- Review of Particle Physics (RPP)
- Particle Physics Booklet
 - Abbreviated version of RPP

<http://pdg.lbl.gov/>

Review of Particle Physics (RPP)

- “bible of particle physics”
- Compilation and evaluation of measurements of properties of elementary particles (Particle Listings)
 - ~32k measurements from ~9k papers (2012)
- Summary tables:
 - properties of well-established particles
 - search limits for hypothetical particles
 - experimental tests of conservations laws
- Reviews on theoretical and experimental topics
 - 112 in 2012
- ~1500 Pages
- Phys. Rev. D86, 010001 (2012)

RPP: Online Information Resources

- Collection of online information resources in particle physics and related areas
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Limits on the Standard Model Higgs obtained from the study of Z^0 decays rule out conclusively its existence in the whole mass region $m_{H^0} \sim < 60$ GeV. These limits, as well as stronger limits obtained from $e^+ e^-$ collisions at LEP at energies up to 202 GeV, and weaker limits obtained from other sources, have been superseded by the more recent data of LEP. They have been removed from this compilation, and are documented in previous editions of this Review of Particle Physics. The same holds for limits obtained from $p\bar{p}$ collisions at the Tevatron that have been superseded by more recent results incorporating a larger integrated luminosity.

In this Section, unless otherwise stated, limits from the four LEP experiments (ALEPH, DELPHI, L3, and OPAL) are obtained from the study of the $e^+ e^- \rightarrow H^0 Z$ process, at center-of-mass energies reported in the comment lines.

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Limits on the Standard Model Higgs obtained from the study of Z^0 decays rule out conclusively its existence in the whole mass region $m_{H^0} \sim < 60$ GeV. These limits, as well as stronger limits obtained from $e^+ e^-$ collisions at LEP at energies up to 202 GeV, and weaker limits obtained from other sources, have been superseded by the more recent data of LEP. They have been removed from this compilation, and are documented in previous editions of this Review of Particle Physics. The same holds for limits obtained from $p\bar{p}$ collisions at the Tevatron that have been superseded by more recent results incorporating a larger integrated luminosity.

In this Section, unless otherwise stated, limits from the four LEP experiments (ALEPH, DELPHI, L3, and OPAL) are obtained from the study of the $e^+ e^- \rightarrow H^0 Z$ process, at center-of-mass energies reported in the comment lines.

Value (GeV)	CL%	Document ID	TECN	Comment
> 115.5 and none 127 – 600		OUR EVALUATION		
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Published in **Phys.Lett. B710 (2012) 284-306**

CMS-HIG-11-031, CERN-PH-EP-2012-040

DOI: [10.1016/j.physletb.2012.02.085](https://doi.org/10.1016/j.physletb.2012.02.085)

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2. Search for the standard model Higgs boson in the H to ZZ to 2l 2nu channel in pp collisions at $\sqrt{s} = 7$ TeV.

CMS Collaboration (Serguei Chatrchyan (Yerevan Phys. Inst.) *et al.*). Feb 2012.

Published in **JHEP 1203 (2012) 040**

CMS-HIG-11-026, CERN-PH-EP-2012-033

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3. Search for the standard model Higgs boson in the H to ZZ to ll tau tau decay channel in pp collisions at $\sqrt{s}=7$ TeV.

CMS Collaboration (Serguei Chatrchyan (Yerevan Phys. Inst.) *et al.*). Feb 2012.

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Email for Reference Letters: jeff@nassp.uct.ac.za

Contact: [Dr Jeff Murugan](#)

Email: jeff@nassp.uct.ac.za

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