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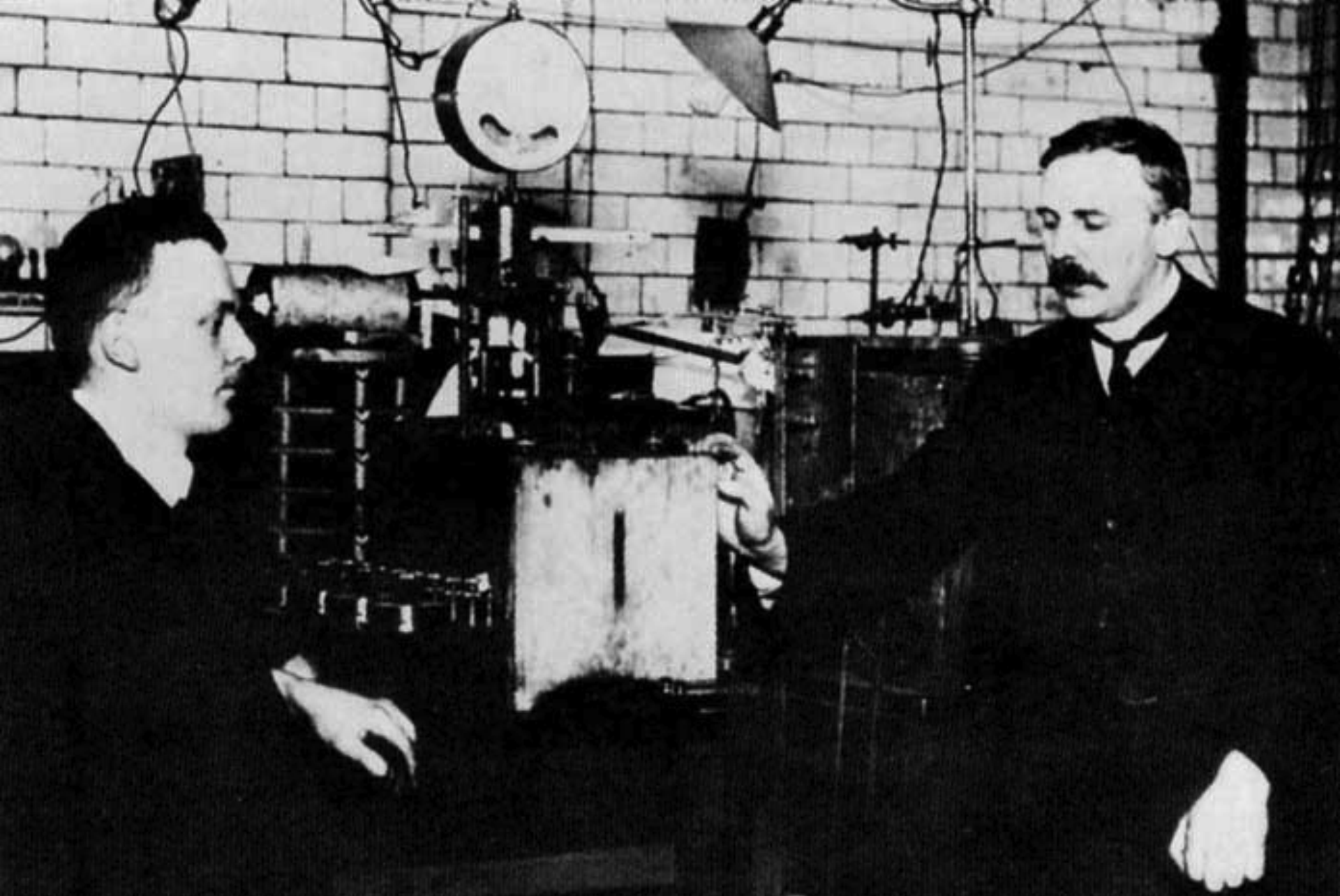




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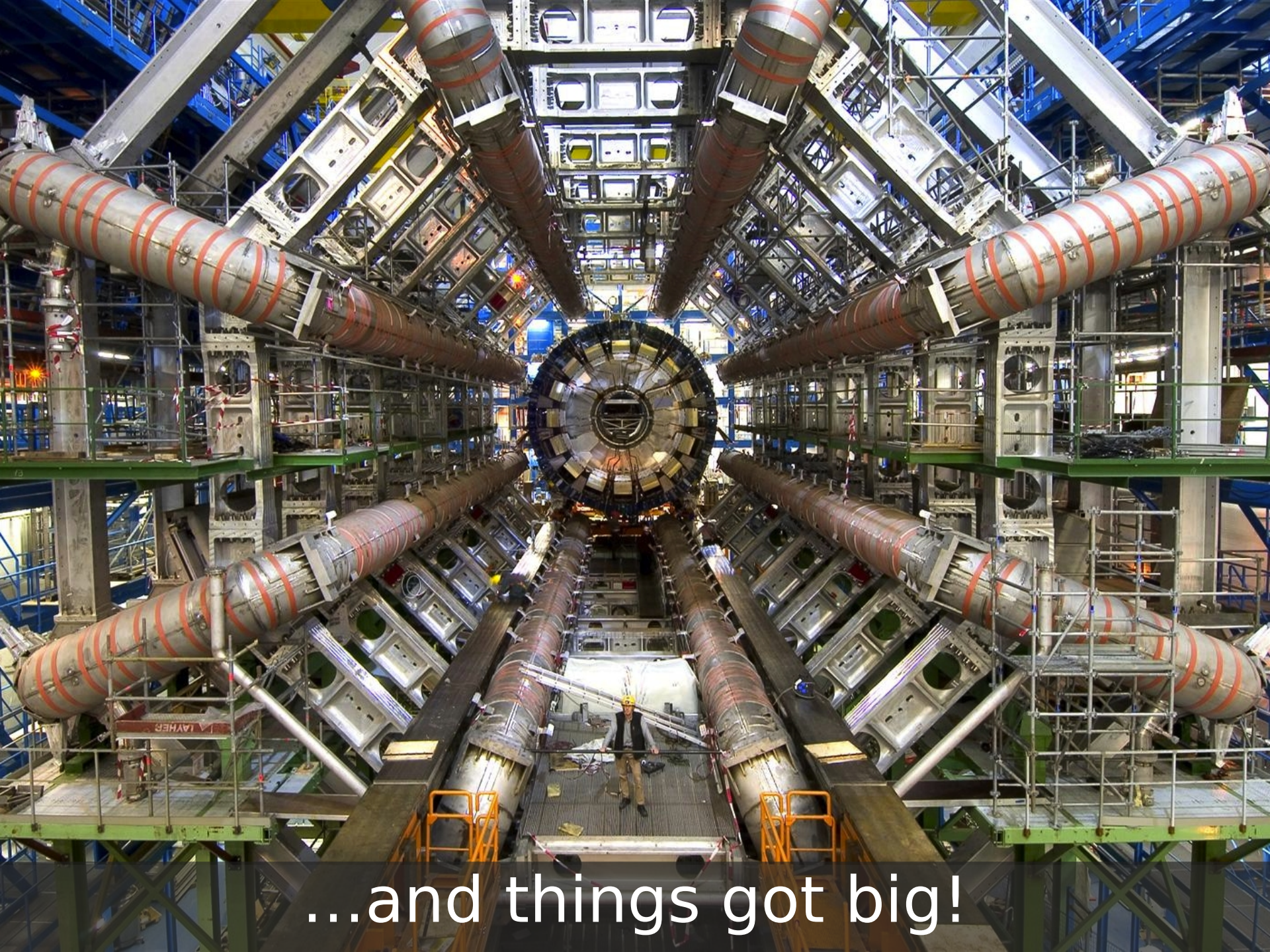
High-Energy Physics



Like most things, it started small...



CERN came along in 1954 : the first Council



...and things got big!

First Measurement of Bose-Einstein Correlations in Proton-Proton Collisions at $\sqrt{s} = 0.9$ and 2.36 TeV at the LHC

V. Khachatryan *et al.**

(CMS Collaboration)

(Received 18 May 2010; published 13 July 2010)

Bose-Einstein correlations have been measured using samples of proton-proton collisions at 0.9 and 2.36 TeV center-of-mass energies, recorded by the CMS experiment at the CERN Large Hadron Collider. The signal is observed in the form of an enhancement of pairs of same-sign charged particles with small relative four-momentum. The size of the correlated particle emission region is seen to increase significantly with the particle multiplicity of the event.

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PACS numbers: 13.85.Hd

In particle collisions, the space-time structure of the hadronization source can be studied using measurements of Bose-Einstein correlations (BEC) between pairs of identical bosons. Since the first observation of BEC 50 years ago in proton-antiproton interactions [1], a number of measurements have been made by several experiments using different initial states; a detailed list of the experimental results can be found in [2,3]. Boson interferometry at the Large Hadron Collider provides a powerful tool to investigate the space-time structure of the particle emission source on femtometric length scales at different center-of-mass energies and with different initial states, using the same detector. This Letter reports the first measurements of BEC at the LHC with the CMS detector, namely, the first measurement in pp collisions at 0.9 TeV and the highest energy measurement at 2.36 TeV.

Constructive interference affects the joint probability for the emission of a pair of identical bosons with four-momenta p_1 and p_2 . Experimentally, the proximity in phase space between final-state particles is quantified by the Lorentz-invariant quantity $Q = \sqrt{-(p_1 - p_2)^2} = \sqrt{M^2 - 4m_\pi^2}$, where M is the invariant mass of the two particles, assumed to be pions with mass m_π . The BEC effect is observed as an enhancement at low Q of the ratio of the Q distributions for pairs of identical particles in the same event, and for pairs of particles in a reference sample that, by construction, is expected to include no BEC effect:

$$R(Q) = (dN/dQ)/(dN_{\text{ref}}/dQ), \quad (1)$$

which is then fitted with the parametrization

$$R(Q) = C[1 + \lambda\Omega(Q)](1 + \delta Q). \quad (2)$$

In a static model of particle sources, $\Omega(Qr)$ is the Fourier

transform of the spatial distribution of the emission region of bosons with overlapping wave functions, characterized by an effective size r . It is often parametrized as an exponential function $\Omega(Qr) = e^{-Q^2 r^2}$, or with a Gaussian form $\Omega(Qr) = e^{-(Qr)^2}$ (see [4] and references therein). The parameter λ reflects the BEC strength for incoherent boson emission from independent sources, δ accounts for long-range momentum correlations, and C is a normalization factor.

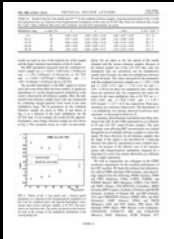
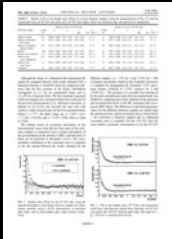
The data used for the present analysis were collected by the CMS experiment in December 2009 from proton-proton collisions at center-of-mass energies of 0.9 and 2.36 TeV. A detailed description of the CMS detector can be found in [5]. The central feature of the CMS apparatus is a superconducting solenoid of 6 m internal diameter, providing a uniform magnetic field of 3.8 T. The inner tracking system is the most relevant detector for the present analysis. It is composed of a pixel detector with three barrel layers at radii between 4.4 and 10.2 cm and a silicon strip tracker with 10 barrel detection layers extending outwards to a radius of 1.1 m. Each system is completed by two end caps, extending the acceptance up to a pseudorapidity $|\eta| = 2.5$. The transverse-momentum (p_T) resolution, for 1 GeV charged particles, is between 0.7% at $\eta = 0$ and 2% at $|\eta| = 2.5$. The events were selected by requiring activity in both beam scintillator counters [6]. A minimum-bias Monte Carlo (MC) sample was generated using PYTHIA (with D6T tune) [7] followed by full detector simulation based on the GEANT4 program [8]. Additional PYTHIA MC samples were generated to simulate BEC effects with both Gaussian and exponential forms of $\Omega(Qr)$.

Charged particles are required to have $p_T > 200$ MeV, which is sufficient for particles emitted from the interaction region to cross all three barrel layers of the pixel detector and ensure good two-track separation. Their pseudorapidity is required to satisfy $|\eta_{\text{track}}| < 2.4$. To ensure high purity of the primary track selection, the trajectories are required to be reconstructed in fits with more than 5 degrees of freedom (dof) and $\chi^2/N_{\text{dof}} < 5.0$. The transverse impact parameter with respect to the collision point is

*Full author list given at the end of the article.

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Let's peek at a paper



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Angola	100	100	100
Argentina	100	100	100
Australia	100	100	100
Austria	100	100	100
Bahamas	100	100	100
Bahrain	100	100	100
Bangladesh	100	100	100
Barbados	100	100	100
Belarus	100	100	100
Belgium	100	100	100
Belize	100	100	100
Benin	100	100	100
Bhutan	100	100	100
Bolivia	100	100	100
Bosnia and Herzegovina	100	100	100
Brazil	100	100	100
Bulgaria	100	100	100
Burkina Faso	100	100	100
Burundi	100	100	100
Cambodia	100	100	100
Cameroon	100	100	100
Canada	100	100	100
Cape Verde	100	100	100
Cayman Islands	100	100	100
Czech Republic	100	100	100
Dominican Republic	100	100	100
Dominica	100	100	100
Ecuador	100	100	100
Egypt	100	100	100
El Salvador	100	100	100
Equatorial Guinea	100	100	100
Eritrea	100	100	100
Estonia	100	100	100
Ethiopia	100	100	100
Fiji	100	100	100
Finland	100	100	100
France	100	100	100
Gabon	100	100	100
Gambia	100	100	100
Germany	100	100	100
Ghana	100	100	100
Greece	100	100	100
Guatemala	100	100	100
Honduras	100	100	100
Hungary	100	100	100
Iceland	100	100	100
India	100	100	100
Indonesia	100	100	100
Iran	100	100	100
Ireland	100	100	100
Israel	100	100	100
Italy	100	100	100
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Japan	100	100	100
Jordan	100	100	100
Kazakhstan	100	100	100
Kenya	100	100	100
Korea	100	100	100
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Morocco	100	100	100
Mozambique	100	100	100
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New Zealand	100	100	100
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Nigeria	100	100	100
North Macedonia	100	100	100
Norway	100	100	100
Oman	100	100	100
Pakistan	100	100	100
Panama	100	100	100
Papua New Guinea	100	100	100
Paraguay	100	100	100
Peru	100	100	100
Philippines	100	100	100
Poland	100	100	100
Portugal	100	100	100
Romania	100	100	100
Russia	100	100	100
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Saudi Arabia	100	100	100
Senegal	100	100	100
Serbia	100	100	100
Seychelles	100	100	100
Singapore	100	100	100
Slovakia	100	100	100
Slovenia	100	100	100
South Africa	100	100	100
South Korea	100	100	100

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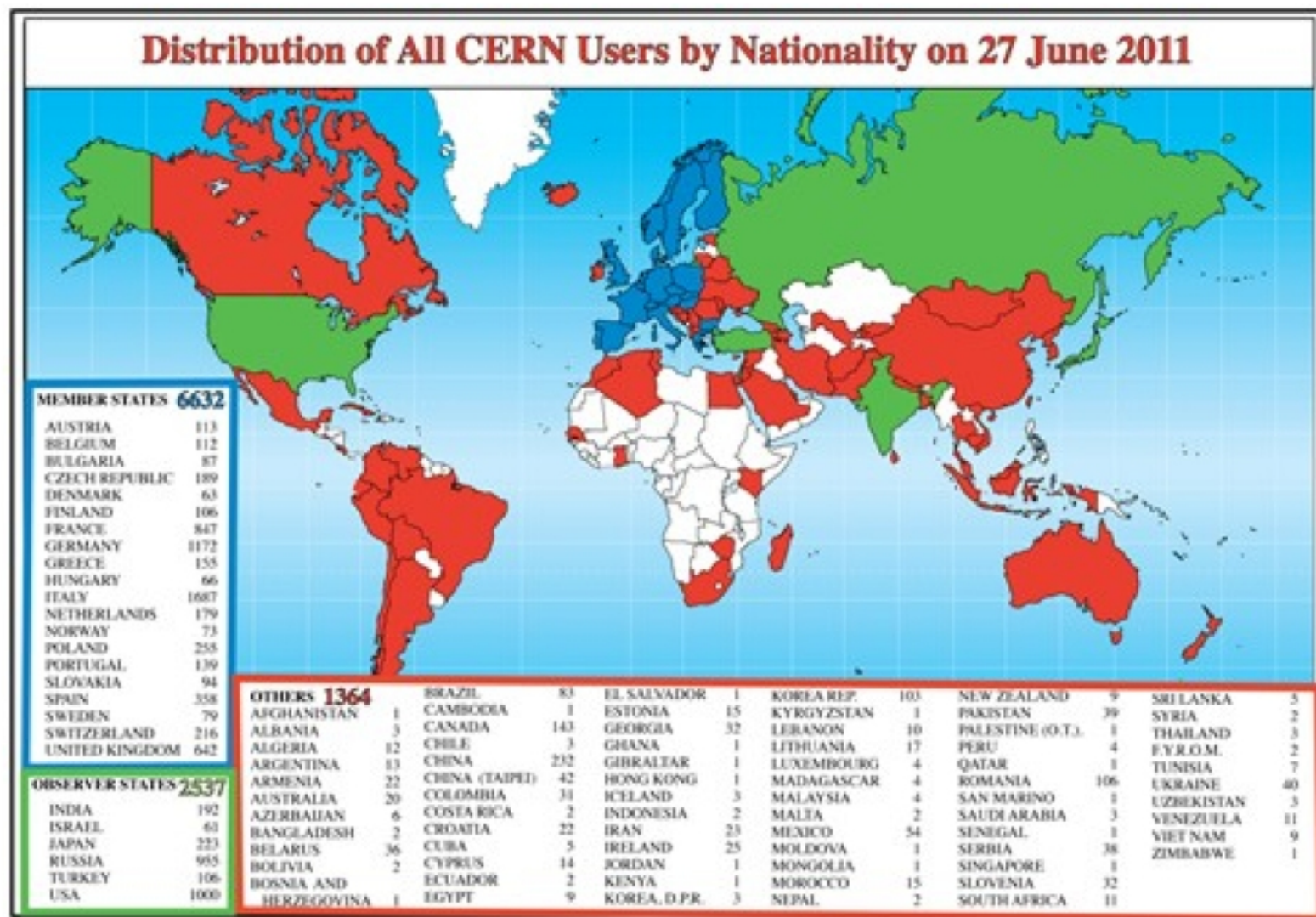
b
~15'000 experimental physicists in
of light (and beyond)



~

heads to make sense of all that stuff

CERN across the world



1665

PHILOSOPHICAL TRANSACTIONS.

Munday, July 3. 1665.

The Contents.

An Account, how Adits and Mines are wrought at Liege without Air-shafts, communicated by Sir Robert Moray. A way to break easily and speedily the hardest Rocks; imparted by the same Person, as he received it from Monsieur Du Son the Inven-

2010

Performance of the ATLAS detector using first collision data

The ATLAS collaboration

ABSTRACT: More than half a million minimum-bias events of LHC collision data were collected by the ATLAS experiment in December 2009 at centre-of-mass energies of 0.9 TeV and 2.36 TeV. This paper reports on studies of the initial performance of the ATLAS detector from these data. Comparisons between data and Monte Carlo predictions are shown for distributions of several track- and calorimeter-based quantities. The good performance of the ATLAS detector in these first data gives confidence for successful running at higher energies.

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1884

2010

TABLE XXXII.

Reference No.	Before the explosion.			After the explosion.				Temperature.	α .
	Oxygen.	Carbonic oxide.	Hydrogen.	Carbonic oxide.	Carbonic acid.	Hydrogen.	Steam.		
100	17.3	24	76	21.4	2.6	44.1	31.9	° C	5.9
101	"	"	"	20.5	3.4	44.7	31.3	70	4.2
102	"	"	"	20.4	3.5	44.7	31.3	80	4.0
103	"	"	"	20.4	3.6	44.4	31.6	100	4.0
104	15.9	24.5	75.5	21.2	3.3	47.0	28.5	125	4.0

Between 0° and 70° a large fall of the coefficient occurs; between 70° and 80° there is a slight fall; from 80° to 125° it remains constant. The high temperature constant with this mixture is rather higher than with mixtures containing excess of carbonic oxide.

A fourth mixture, containing about equal volumes of carbonic oxide and hydrogen, was next exploded at 70° , 80° , and 120° under 1000 millims. pressure. For the purpose of comparison an experiment previously made with a nearly similar mixture at 14° is included in the table.

Table 3

Double-differential dijet mass cross section in the rapidity range $0.5 < |y|_{\max} < 1.0$. The is calculated as described in the text. The experimental systematic uncertainties of the

Mass range (TeV)	Reference mass (TeV)	Measured cross section (pb/TeV)
[0.197, 0.220]	0.208	1.74×10^6
[0.220, 0.244]	0.231	1.02×10^6
[0.244, 0.270]	0.256	6.00×10^5
[0.270, 0.296]	0.282	3.64×10^5
[0.296, 0.325]	0.310	2.22×10^5
[0.325, 0.354]	0.339	1.38×10^5
[0.354, 0.386]	0.369	8.64×10^4
[0.386, 0.419]	0.402	5.42×10^4
[0.419, 0.453]	0.435	3.55×10^4
[0.453, 0.489]	0.470	2.34×10^4
[0.489, 0.526]	0.507	1.53×10^4
[0.526, 0.565]	0.545	1.01×10^4
[0.565, 0.606]	0.585	6.90×10^3
[0.606, 0.649]	0.627	4.60×10^3

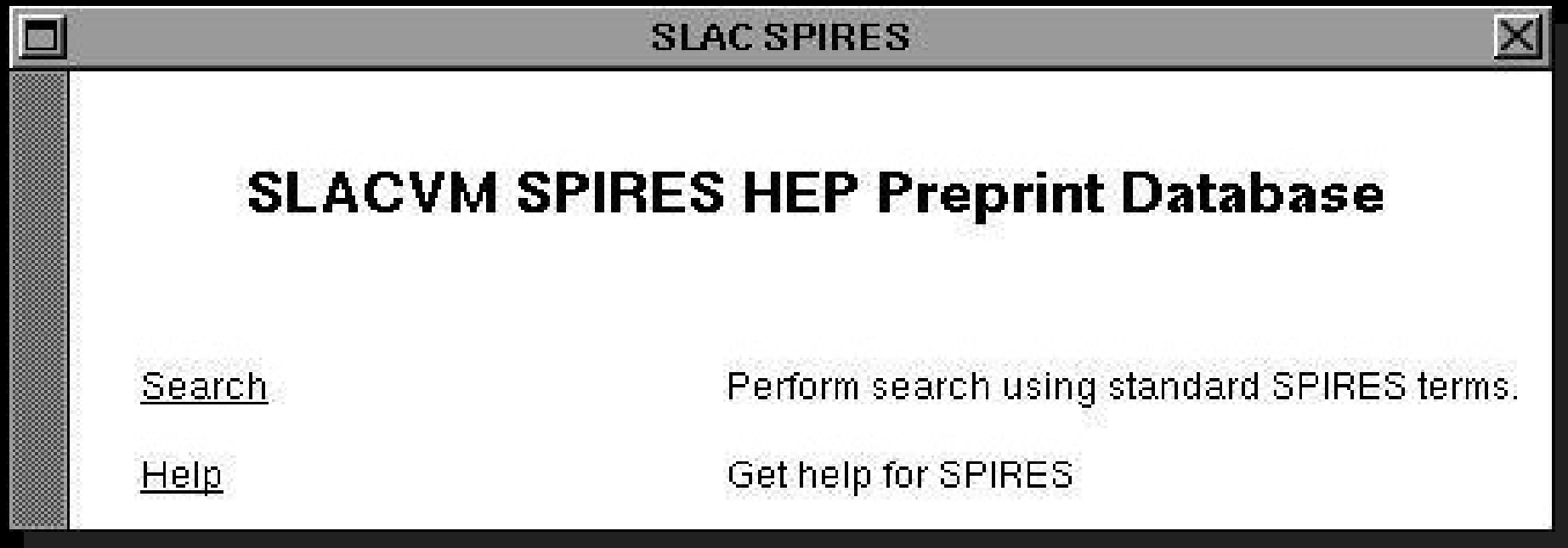
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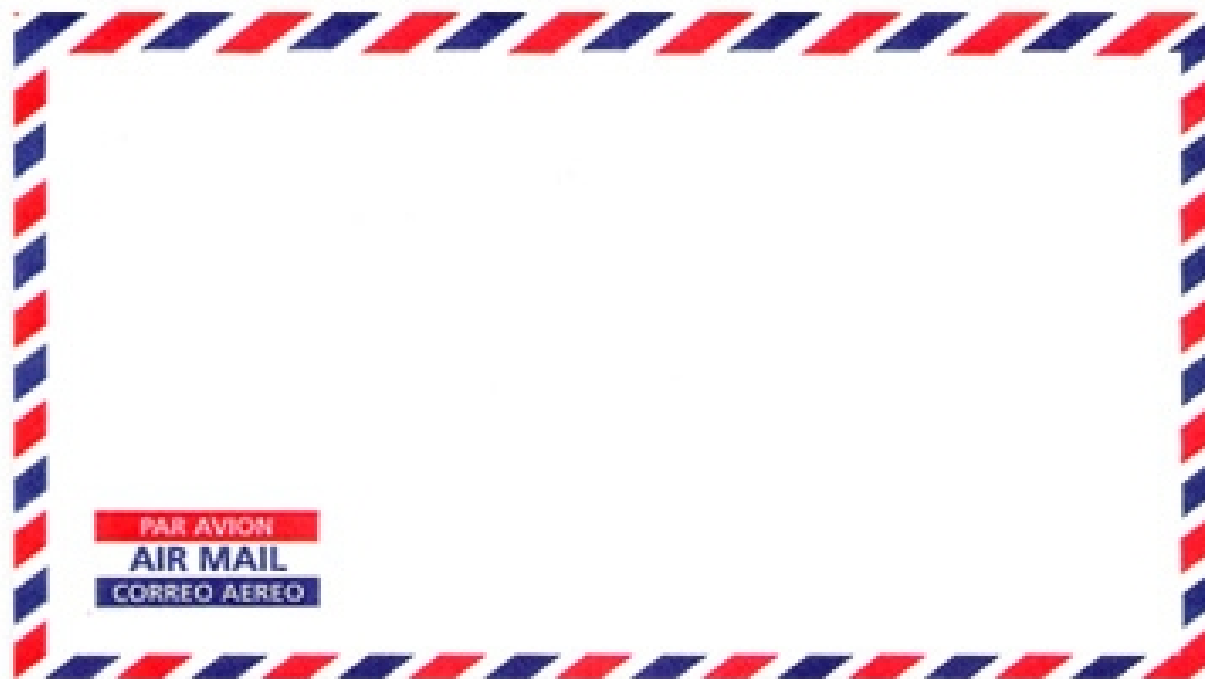
2011

actually
everything is
pretty much the
same; in spite of
an important
happening in
1989 ...

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U.S.?

SPIRES : a database of grey literature!





Once upon a time, when air-mail was fast...



...HEP scientists wrote papers...



...then mailed them to journals AND colleagues



... other scientists received the preprints once a week

MAT
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C

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86

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge.
Laboratory for Nuclear Science.
A limit on the branching ratio $X^* \rightarrow X^* + \gamma$, by D.
Friedell, H. Deutsch, D. Cutts, R. Stiening and C. Wiegand.
December 1967. 10 p.

2.F.O. 3.D. Martin
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Superluminal neutrinos?




Measurement of the neutrino velocity with the OPERA detector in the CNGS beam

T. Adam^a, N. Agafonova^b, A. Aleksandrov^{c,1}, O. Altinok^d, P. Alvarez Sanchez^c, S. Aoki^f, A. Ariga^g, T. Ariga^g, D. Autiero^h, A. Badertscherⁱ, A. Ben Dhahbi^g, A. Bertolin^j, C. Bozza^k, T. Brugière^h, F. Brunet^l, G. Brunetti^{h,m,2}, S. Buontempo^c, F. Cavannaⁿ, A. Cazes^h, L. Chaussard^h, M. Chernyavskiy^o, V. Chiarella^p, A. Chukanov^q, G. Colosimo^r, M. Crespi^r, N. D'Ambrosio^s, Y. Déclais^h, P. del Amo Sanchez^l, G. De Lellis^{t,c}, M. De Serio^u, F. Di Capua^c, F. Cavanna^p, A. Di Crescenzo^{t,c}, D. Di Ferdinando^v, N. Di Marco^s, S. Dmitrievsky^q, M. Dracos^a, D. Duchesneau^l, S. Dusini^j, J. Ebert^w, I. Eftimiopolous^c, O. Egorov^x, A. Ereditato^g, L.S. Espositoⁱ, J. Favier^l, T. Ferber^w, R.A. Fini^u, T. Fukuda^y, A. Garfagnini^{z,j}, G. Giacomelli^{m,v}, C. Girerd^h, M. Giorgini^{m,v,3}, M. Giovannozzi^c, J. Goldberg^{aa}, C. Göllnitz^w, L. Goncharova^o, Y. Gornushkin^q, G. Grella^k, F. Grianti^{ab,p}, E. Gschewentner^c, C. Guerin^h, A.M. Guler^d, C. Gustavino^{ac}, K. Hamada^{ad}, T. Hara^f, M. Hierholzer^w, A. Hollnagel^w, M. Ieva^u, H. Ishida^y, K. Ishiguro^{ad}, K. Jakovcic^{ac}, C. Jollet^a, M. Jones^c, F. Juget^g, M. Kamiscioglu^d, J. Kawada^g, S.H. Kim^{af,4}, M. Kimura^y, N. Kitagawa^{ad}, B. Klicek^{ac}, J. Knuesel^g, K. Kodama^{ag}, M. Komatsu^{ad}, U. Kose^j, I. Kreslo^g, C. Lazzaroⁱ, J. Lenkeit^w, A. Ljubicic^{ac}, A. Longhin^p, A. Malgin^b, G. Mandrioli^v, J. Marteau^h, T. Matsuo^y, N. Mauri^p, A. Mazzoni^r, E. Medinaceli^{z,j}, F. Meisel^g, A. Meregaglia^a, P. Migliozzi^c, S. Mikado^y, D. Missiaen^c, K. Morishima^{ad}, U. Moser^g, M.T. Muciaccia^{ah,u}, N. Naganawa^{ad}, T. Naka^{ad}, M. Nakamura^{ad}, T. Nakano^{ad}, Y. Nakatsuka^{ad}, D. Naumov^q, V. Nikitina^{ai}, S. Ogawa^y, N. Okateva^o, A. Olchevsky^s, O. Palamara^s, A. Paoloni^p, B.D. Park^{af,5}, I.G. Park^{af}, A. Pastore^{ag,u}, L. Patrizii^v, E. Pennacchio^h, H. Pessard^l, C. Pistillo^g, N. Polukhina^o, M. Pozzato^{m,v}, K. Pretzl^g, F. Pupilli^s, R. Rescigno^k, T. Roganova^{ai}, H. Rokujo^f, G. Rosa^{aj,ac}, I. Rostovtseva^x, A. Rubbiaⁱ, A. Russo^c, O. Sato^{ad}, Y. Sato^{ak}, A. Schembri^s, J. Schuler^a, L. Scotto Lavina^{g,6}, J. Serrano^c, A. Sheshukov^q, H. Shibusawa^y, G. Shoziyev^{ai}, S. Simone^{ah,u}

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[F. Tamburini](#) (1), [M. Laveder](#) (2), ((1) Department of Astronomy, University of Padova, Padova, Italy (2) Department of Physics, University of Padova, Padova, Italy)
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Higgs rumour analysis points to 125 GeV

December 2, 2011

A [rumour that reached our comment section](#) suggests that a signal for the Higgs boson has been seen at 125 GeV with 2-3 sigma significance. This would be a great result if confirmed because at this mass the standard model has problems with vacuum stability that are likely to require supersymmetry or something similar to stabilize. If on the other hand the Higgs were at 140 GeV we would be left with a simple but

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1 Dec



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Where do we stand on the Higgs boson search? Latest results and what's next on the #Higgs at the #LHC
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HOT TOPICS

Life of a Postdoc

For some college majors, it's four years and done. Those entering a career in particle physics know the fun is just getting started. That's because the path from undergrad to professor spans at least a decade and requires taking jobs at several physics institutions, often across multiple continents. Two to three of those years (and sometimes more) will be spent as a postdoctoral researcher, a period of time where you're no longer a graduate student but not quite a professor. During this time, physicists take on more responsibilities, mentor students and focus on completing additional research. Quantum Diaries bloggers — some of whom are completing their postdocs and some who just started — have written on what it is they're doing during this crucial time in their careers.

[Dr. Matthews Says, 'Just Ask!'](#)

By Zoe Louise Matthews | November 23, 2011

A lot has been building to this: a lifetime of obsession with physics and discovery; four years of hard study; about three and a half of the most exciting years of my life, working on the ALICE experiment; eight months of balancing an awesome career in nuclear physics with the mammoth task of writing a book. Now, at long last, my Ph.D. journey is finally over.

[Read more](#) | [Zoe's blog](#)

[Change of State](#)

By Aidan Randle-Conde | November 25, 2011

A few weeks ago I bumped into one my group's former students, Rozmin. She's still jetlagged from her journey here and she had the look on her face that told me she'd been through the change of state. She'd transitioned from a grad student to a postdoc. The metamorphosis is not an easy one, and in fact no matter how much time you spend preparing for it, and how long it takes, there are always some surprises.

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How to choose a good scientific problem.



Uri Alon in *Molecular Cell* (2009)

Choosing good problems is essential for being a good scientist. But what is a good problem, and how do you choose one? The subject is not usually discussed explicitly within our profession. Scientists are expected to be smart enough to figure it out...



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Error bars in experimental biology.



Geoff Cumming, Fiona Fidler, David L Vaux in *The Journal of Cell Biology* (2007)

Error bars commonly appear in figures in publications, but experimental biologists are often

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Popular papers

A Supersymmetry Primer

CDS

Stephen P Martin in *Nature* (1997)

I provide a pedagogical introduction to supersymmetry. The level of discussion is aimed at readers who are familiar with the Standard Model and quantum field theory, but who have had little or no prior exposure to supersymmetry. Topics covered...

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The ATLAS leak ...

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Higgs Gossip: Observation of a $\gamma\gamma$ resonance at a mass...

By [S.C. Kavassalis](#)
Posted: April 22, 2011

► [Observation of a \$\gamma\gamma\$ resonance at a mass - CERN Document Server: Home cdsweb.cern.ch/record/1346326](#)

Update (April 25th, 2011) at end.

So I woke up this morning to several emails about a strange “Higgs sighting” at ATLAS. On a [Woit's blog](#), a commenter named [Higgs?](#) shared an abstract purporting observations of some 115 GeV resonance at CERN. It claims to be from an “internal note” from the ATLAS Collaboration.

Higgs? says:
[April 21, 2011 at 12:45 pm](#)
Internal Note
Report number ATL-COM-PHYS-2011-415

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About the Author




Sarah Kavassalis:
Permanent student of mathematics, physics and, sometimes, the philosophy of their intersection. Research interests in mathematical relativity, non-trivial spacetime topologies, discrete spacetimes, order theory and the related philosophy of mathematics.


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Breeding orchid species creates a new perfume


From: BioMedCentral | Apr 22, 2010 | 1,108 views

Some orchids mimic the scent of a female insect in order to attract males for pollination. Researchers writing in the open access journal BMC Evolutionary Biology (<http://bit.ly/9WkDMA>) found that breeding two of these orchid species to generate a novel hybrid resulted in a new scent. This new odour had no effect on normal solitary bees from the area but was highly attractive to another s... [\(more info\)](#)

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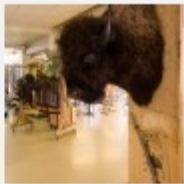
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Considering cafeterias



Bison haché and some chaps on a mannequin

3 DAYS AGO

by [lots-o-love](#) in [Considering cafeterias](#)

0

It's so cute when the cafeteria dudes up for a theme week. A few weeks ago we got a mounted bison head, old-West wanted posters, the stars-and-stripes pinned over the crêpe station, and a mannequin wearing chaps and moccasins. Oh, and the only thing vaguely relevant on the menu seemed to be bison haché (bison burgers sans buns—*sans buns!*).



BINNING

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Monday 21 November 2011

Lego model of the Atlas detector at the Large Hadron Collider

What can I say? You just have to see it ...

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Posted by
Jon Butterworth
11.15 GMT


Friday 18 November 2011

Faster than light neutrinos get a bit more convincing

Jon Butterworth: An important cross-check of the OPERA result – pulses instead of blobs – comes up with the same weird answer

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Posted by
Jon Butterworth
21.54 GMT

Wednesday 16 November 2011

Gentlemen prefer gluons

Lily Asquith on the awesome power of the genie in the proton

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Posted by
Lily Asquith
18.43 GMT



*I haven't thought about blogging from a librarian point of view.
Whether it should be archived... well... probably yes.*

My motivations for blogging vary with the blogpost

The first is to provide the audience with more information and context, should they desire it, behind science headlines & stories, especially those close to my own research of course. I think particle physics in general and the LHC in particular provide high profile yet unthreatening science stories. Showing people the real scientific process in such cases may help them understand the scientific parts of the debates on e.g climate change, vaccines or embryo research.

The second is that scientists are underrepresented in the wider culture and political debate. I see blog as part of a continuum between tabloid headlines and academic journals.

I could imagine contemporary accounts of e.g. the Higgs search would be of interest to future geeks.



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Test of the τ -Model of Bose-Einstein Correlations and Reconstruction of the Source Function in Hadronic Z-boson Decay at LEP

The L3 Collaboration ([Achard, P.](#) et al.)

arXiv:1105.4788, CERN-PH-EP-2011-080, Eur.Phys.J. C71, 1648, 2011; 10.1140/epjc/s10052-011-1648-8 Date-Upd:2011-08-26

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 nucl-th/9804026 [The Physics of Hanbury Brown-Twiss intensity interferometry: From stars to nuclear collisions](#) - Baym, Gordon Acta Phys.Polon. B29 (1998) 1839-1884 . nucl-th/9804026

 hep-ph/0110088 [Bose-Einstein correlations in Z fragmentation and other reactions](#) - Kittel, Wolfram Acta Phys.Polon. B32 (2001) 3927-3972 . hep-ph/0110088

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 arXiv:1005.3294 [Measurement of Bose-Einstein correlations with first CMS data](#) - CMS Collaboration ([Khachatryan, Vardan](#) et al.) Phys.Rev.Lett. 105 (2010) 032001 . arXiv:1005.3294 [hep-ex] . CMS-QCD-10-003, CERN-PH-EP-2010-010, FERMILAB-PUB-10-171-CMS

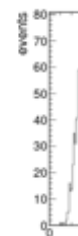
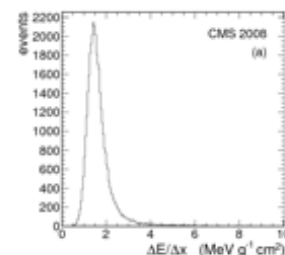
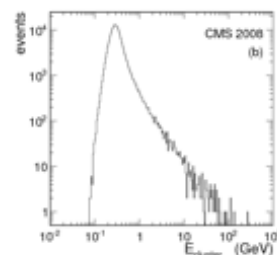
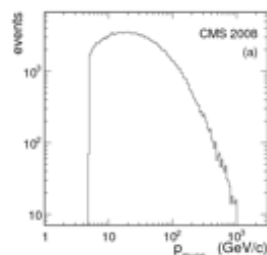
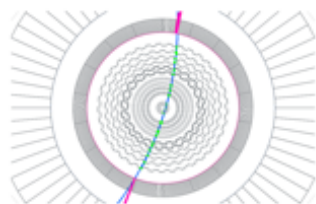
Measurement of the Muon Stopping Power in Lead Tungstate.

CMS Collaboration (Serguei Chatrchyan *et al.*) [Show all 2442 authors.](#)
Nov 2009

JINST 5 (2010) P03007
e-Print: [arXiv:0911.5397 \[physics.ins-det\]](#)

Abstract: A large sample of cosmic ray events collected by the CMS detector is exploited to measure the specific energy loss of muons in the lead tungstate of the electromagnetic calorimeter. The measurement spans a momentum range from 5 GeV/c to 1 TeV/c. The results are consistent with the expectations over the entire range. The calorimeter energy scale, set with 120 GeV/c electrons, is validated down to the sub-GeV region using energy deposits, of order 100 MeV, associated with low-momentum muons. The muon critical energy in lead tungstate is measured to be 160^{+5}_{-6} plus or minus 8 GeV, in agreement with expectations. This is the first experimental determination of muon critical energy.

Keyword(s): INSPIRE: [lead: tungsten](#) | [muon: energy loss](#) | [calorimeter: electromagnetic](#) | [cosmic radiation](#) | [CMS](#)



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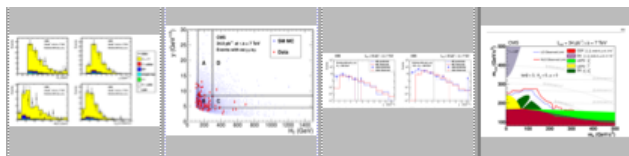
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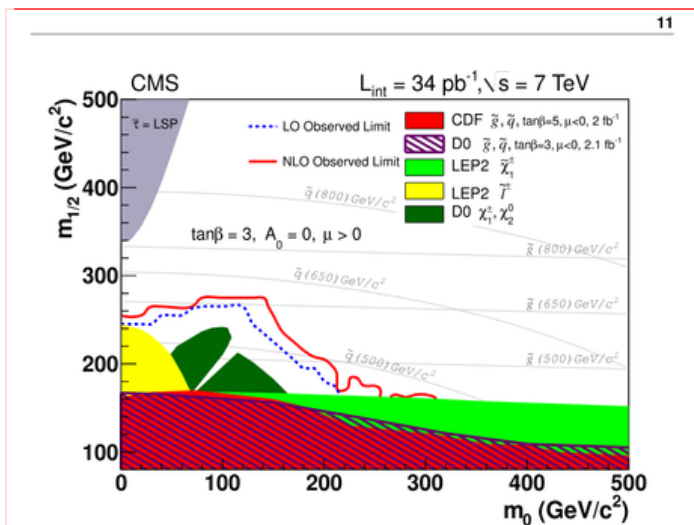


Figure 4: The observed 95% CL exclusion contour at NLO (solid red line) and LO (dashed blue line) in the CMSSM ($m_0, m_{1/2}$) plane for $\tan\beta = 3$, $A_0 = 0$ and $\mu > 0$. The area below the curve is excluded by this measurement. Exclusion limits obtained from previous experiments are presented as filled areas in the plot. Thin grey lines correspond to constant squark and gluino masses.

9 Additional Information for Model Testing

Other models of new physics in the dilepton final state can be confronted in an approximate way by simple generator-level studies that compare the expected number of events in 34 pb^{-1} with the upper limits from Section 8. The key ingredients of such studies are the kinematic requirements described in this paper, the lepton efficiencies, and the detector responses for H_T , y , and $E_{\text{T}}^{\text{miss}}$. The muon identification efficiency is $\approx 95\%$; the electron identification efficiency varies approximately linearly from $\approx 63\%$ at $p_T = 10 \text{ GeV}/c$ to 91% for $p_T > 30 \text{ GeV}/c$. The lepton isolation efficiency depends on the lepton momentum, as well as on the jet activity in the event. In tt events, it varies approximately linearly from $\approx 83\%$ (muons) and $\approx 89\%$ (electrons) at $p_T = 10 \text{ GeV}/c$ to $\approx 95\%$ for $p_T > 60 \text{ GeV}/c$. In LM0 events, this efficiency is decreased by $\approx 5\text{--}10\%$ over the whole momentum spectrum. Electrons and muons from LM1 events have the same isolation efficiency as in tt events at low p_T and $\approx 90\%$ efficiency for $p_T > 60 \text{ GeV}/c$. The average detector response (the reconstructed quantity divided by the generated

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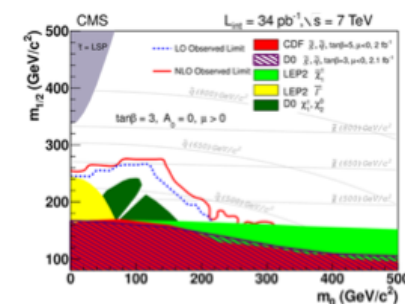


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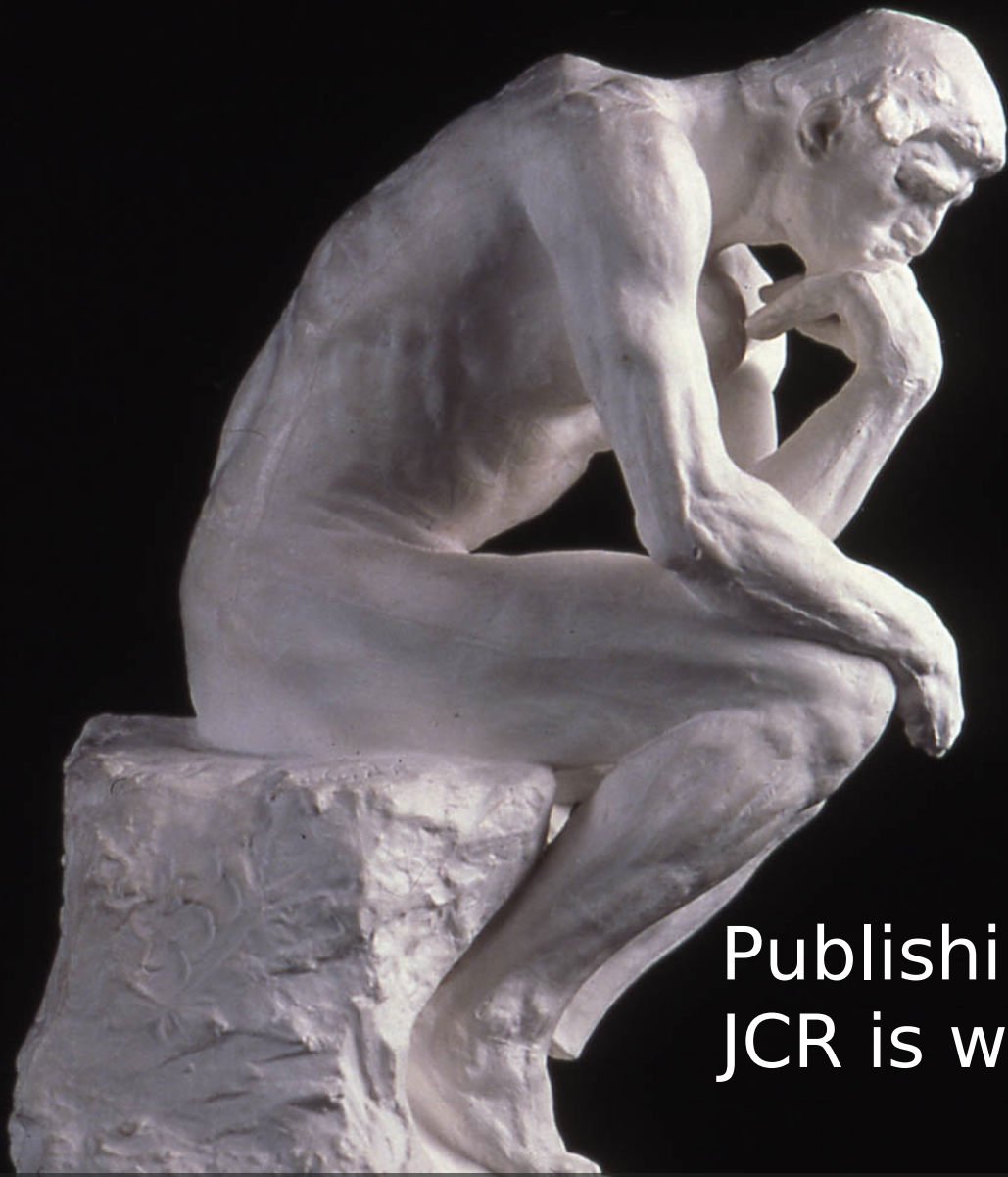
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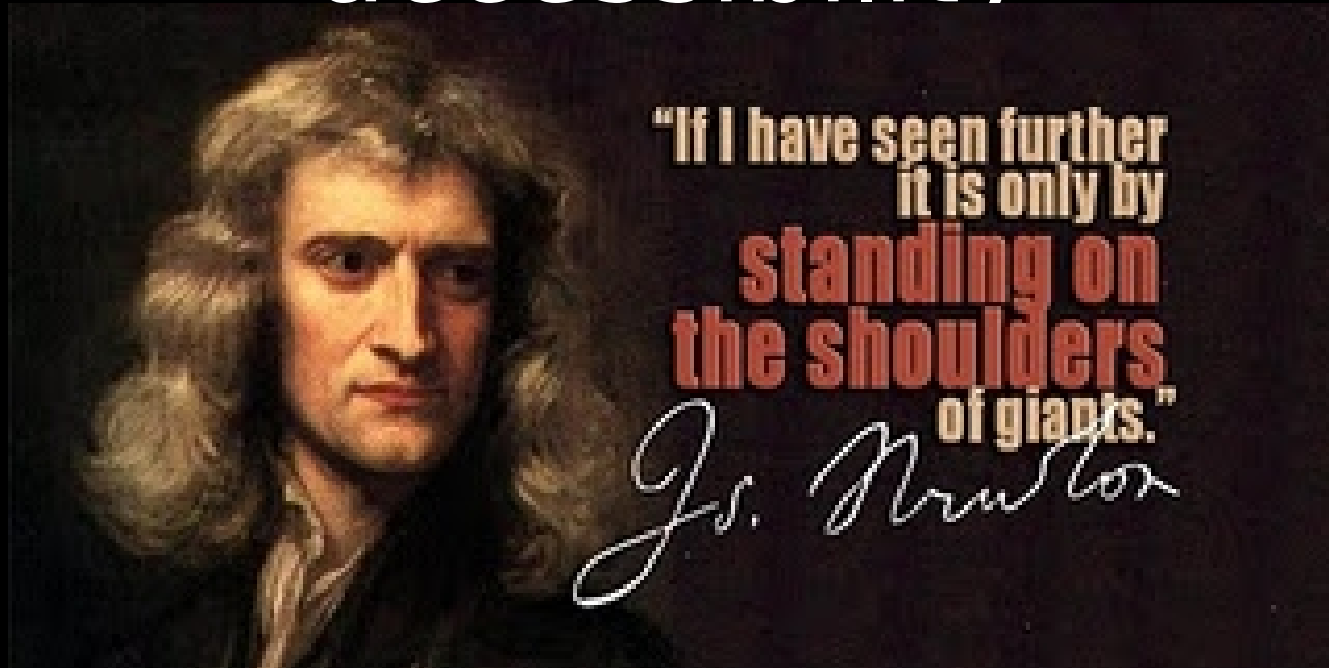


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- Seminar?
- arXiv => then the blog sphere will explode?





Can the decision makers in 2011 control
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They were themselves wild(er) 30 ago

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Grazie per l'incoraggiamento, comunque!

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A PHENOMENOLOGICAL PROFILE OF THE HIGGS BOSON

John Ellis, Mary K. Gaillard *) and D.V. Nanopoulos *)
CERN -- Geneva

The situation with regard to Higgs bosons is unsatisfactory. First it should be stressed that they may well not exist. Higgs bosons are introduced to give intermediate vector bosons masses through spontaneous symmetry breaking. However, this symmetry breaking could be achieved dynamically ¹⁰⁾ without elementary Higgs bosons. Thus the confirmation or exclusion of their existence would be an important constraint on gauge theory model-building. Unfortunately, no way is known to calculate the mass of a Higgs boson, at least in the context of the popular Weinberg-Salam ¹¹⁾ model, and experimental lower limits ¹²⁾⁻¹⁴⁾ on its mass are

We should perhaps finish with an apology and a caution. We apologize to experimentalists for having no idea what is the mass of the Higgs boson, unlike the case with charm ^{3),4)} and for not being sure of its couplings to other particles, except that they are probably all very small. For these reasons we do not want to encourage big experimental searches for the Higgs boson, but we do feel that people performing experiments vulnerable to the Higgs boson should know how it may turn up.

Potrebbe non esistere. Non c'è modo di calcolarne la massa, e ve ne chiediamo scusa. Non vogliamo incoraggiare grandi ricerche sperimentali, ci sentiamo soltanto in dovere di mettervi in guardia.

Grazie, sul serio.

J. Ellis, M.K. Gaillard, D. Nanopoulos, *A phenomenological profile of the Higgs boson*, Nucl. Phys. B 106, 2 (1976) 292-34

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 - Claudio E: Ocram ha sicuramente ragione, però il fatto di avere una vita sessuale triste e...
 - Ocram: Smarco esiste, ovviamente, semplicemente non si chiama Smarco, ma Ocram. Ocram si arrabbia...
 - Claudio E: ci siamo...
 - Dos: ma chi scopre che NON esiste riceve ugualmente un qualche

Thank you for your attention

Jens.Vigen@cern.ch