PPA Information Resource Summit

A Theorist's View

M. E. Peskin
May 2007

Outline:

The future of ‘the paper’

Good things that we are now doing

Good things that we could be doing

Things that we should be doing

Traditional scholarship is based on transmitting research results by refereed journal publication and subsequent citation, forming an unbroken chain.

Today we have many more modern ways to communicate.

Nevertheless, I believe that we should continue to value

the paper as the means for announcement and defence of a new research result

completeness of citation and indexing to record and use what the community has developed

A researcher should not propose or accept a result until he or she has had a chance to sit quietly and think hard about it. Any deviation from this idea lowers our standards unacceptably.

Nevertheless, we do communicate by seminars, conference talks, blogs, comments

-- by and brief and incompletely documented Phys. Rev. Letters.

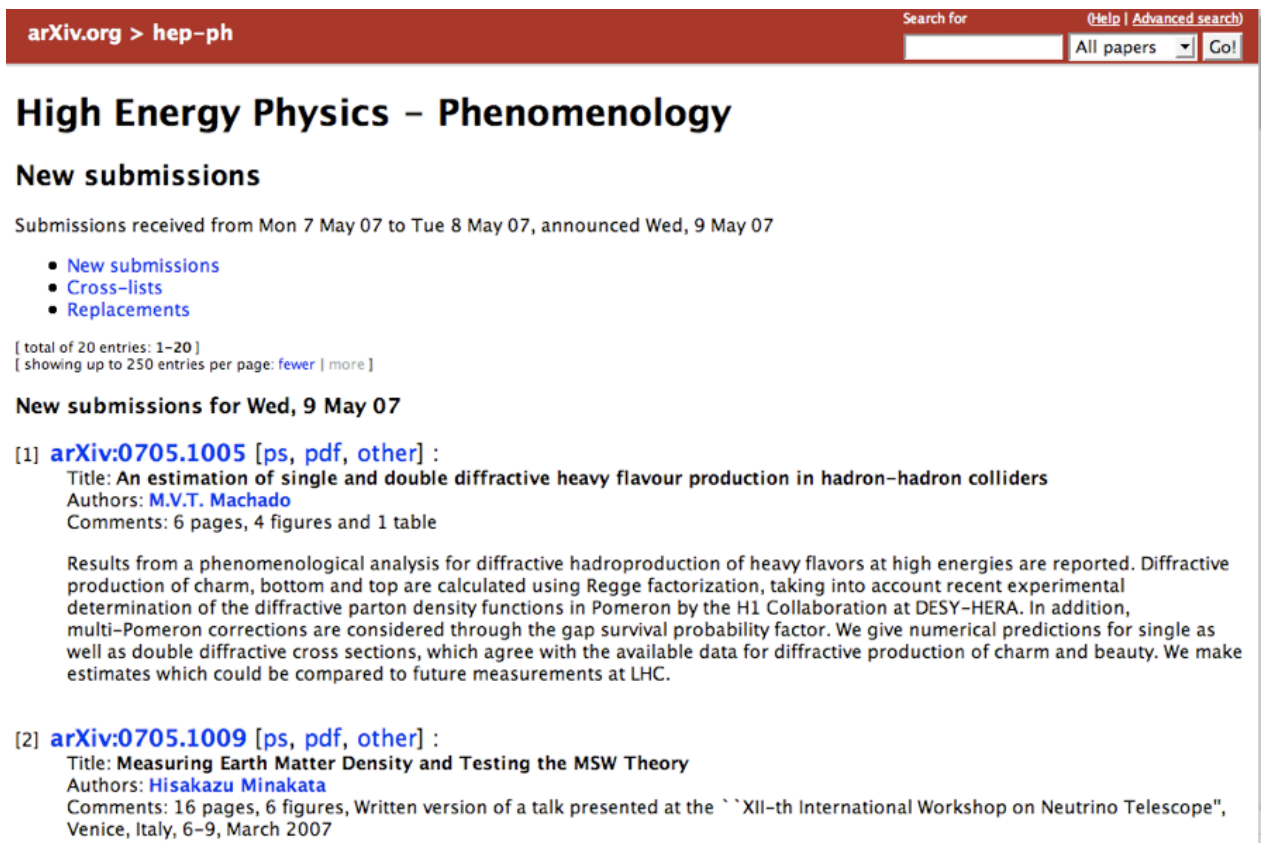
Any means for communicating ideas is good.

We do have to be sure that these easier and less formal means of communication do not replace the completed research paper as our primary mode of exchange.

Many developement of the past decade have made it much easier to communicate and search for research results.

1. Desktop electronic access to the literature.

2. Eprints - instantaneous worldwide communication of results



arXiv.org > hep-ph

Search for (Help | Advanced search) All papers Go!

High Energy Physics – Phenomenology

New submissions

Submissions received from Mon 7 May 07 to Tue 8 May 07, announced Wed, 9 May 07

- New submissions
- Cross-lists
- Replacements

[total of 20 entries: 1-20]
[showing up to 250 entries per page: fewer | more]

New submissions for Wed, 9 May 07

[1] arXiv:0705.1005 [ps, pdf, other] :
Title: **An estimation of single and double diffractive heavy flavour production in hadron-hadron colliders**
Authors: M.V.T. Machado
Comments: 6 pages, 4 figures and 1 table

Results from a phenomenological analysis for diffractive hadroproduction of heavy flavors at high energies are reported. Diffractive production of charm, bottom and top are calculated using Regge factorization, taking into account recent experimental determination of the diffractive parton density functions in Pomeron by the H1 Collaboration at DESY-HERA. In addition, multi-Pomeron corrections are considered through the gap survival probability factor. We give numerical predictions for single as well as double diffractive cross sections, which agree with the available data for diffractive production of charm and beauty. We make estimates which could be compared to future measurements at LHC.

[2] arXiv:0705.1009 [ps, pdf, other] :
Title: **Measuring Earth Matter Density and Testing the MSW Theory**
Authors: Hisakazu Minakata
Comments: 16 pages, 6 figures, Written version of a talk presented at the ``XII-th International Workshop on Neutrino Telescope'', Venice, Italy, 6-9, March 2007

I preferentially download eprints rather than published articles even when the article has appeared in a refereed journal.

I prefer 1-column to 2-column format

I find large-size figures useful for close study

Proofreading is typically better in the eprint

Eprints of my PRL's contain a few extra formulae that would not fit into the published 4-page version.

Eprints are not guaranteed to incorporate the referee's comments, but generally authors do make an update. New versions also incorporate corrections identified after publication.

I also use the older literature extensively, and I appreciate the availability of the Science Direct and PROLA archives.

ScienceDirect

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Quick Search Title, abstract, keywords Author e.g. j s smith

search tips Journal/book title Volume Issue Page Clear

Physics Letters B
Volume 154, Issues 5-6, 9 May 1985, Pages 435-440

Abstract | Abstract + References | PDF (430 K)

Add to my Quick Links | Cited By | E-mail Article | Save as

doi:10.1016/0370-2693(85)90425-3 Cite or Link Using DOI

W's, Z's and jets

S. D. Ellis[1, 2], **R. Kleiss and W. J. Stirling**
CERN, CH 1211, Geneva 23, Switzerland
Received 24 January 1985. Available online 10 October 2002.

Abstract

The process $p+\bar{p} \rightarrow W^{\pm}, Z^0$ plus 2 jets is discussed in the context
expected rate for this process and the correlations anticipated be

References

1. UA1 Collab., G. Arnison *et al.Phys. Lett.* **122B** (1983), p. 103.
K)

APS physics **Physical Review Online Archive**

AMERICAN PHYSICAL SOCIETY

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Abstract/title Search Phys. Rev. D Volume: 45 Page/Article: Retrieve

Phys. Rev. D 45, 142 - 160 (1992)
[Issue 1 – January 1992]

[Previous article | Next article | Issue 1]

☐ **View** Page Images or PDF (3216 kB) **Export Citation:** BibTeX EndNote (RIS)

Multilepton signals from supersymmetry at hadron supercolliders

Howard Baer
Physics Department, Florida State University, Tallahassee, Florida 32306

Xerxes Tata
Department of Physics and Astronomy, University of Hawaii, Honolulu, Hawaii 96822

Jeffrey Woodside
Department of Physics and Ames Laboratory, Iowa State University, Ames, Iowa 50011

Received 7 August 1991

We have developed a new event generator SUSYSM to simulate the production of squarks and gluinos at hadron supercolliders including all the cascade decays as given by the minimal supersymmetric model. The simulation incorporates final-state hadronization and fragmentation effects for the decays of heavy flavors. We have used this to compute the rates for $E\!\!\!/_T$ events, same-sign dilepton events, n_l=3, 4, and 5 isolated-lepton events, and single or

Almost all theorists and, increasingly, many experimenters post conference writeups on arXiv. Then these articles are seamlessly indexed by SPIRES and are available in full text.

9) Supersymmetry **results at the Tevatron.**
By CDF Collaboration and D0 Collaboration (Giulia Manca *for the collaboration*). FERMILAB-CONF-05-202-E, May 2005. 4pp.
Presented at 40th Rencontres de Moriond on QCD and High Energy Hadronic Interactions, La Thuile, Aosta Valley, Italy, 12-19 Mar 2005.
e-Print: **hep-ex/0505056**

References | LaTeX(US) | LaTeX(EU) | Harvmac | BibTeX
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)
Fermilab Library Server (fulltext available)
Conference Info
EXP FNAL-E-0823 | EXP FNAL-E-0830
Link to this record

10) **Combination of CDF and D0 limits on a gauge mediated SUSY model using diphoton and missing transverse energy channel.**
By CDF and DO Collaborations (V. Buescher *et al.*). FERMILAB-PUB-05-052, Apr 2005. 5pp.
e-Print: **hep-ex/0504004**

References | LaTeX(US) | LaTeX(EU) | Harvmac | BibTeX | Keywords | Cited 7 times
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)
Fermilab Library Server (fulltext available)
EXP FNAL-E-0823
EXP FNAL-E-0830
Link to this record

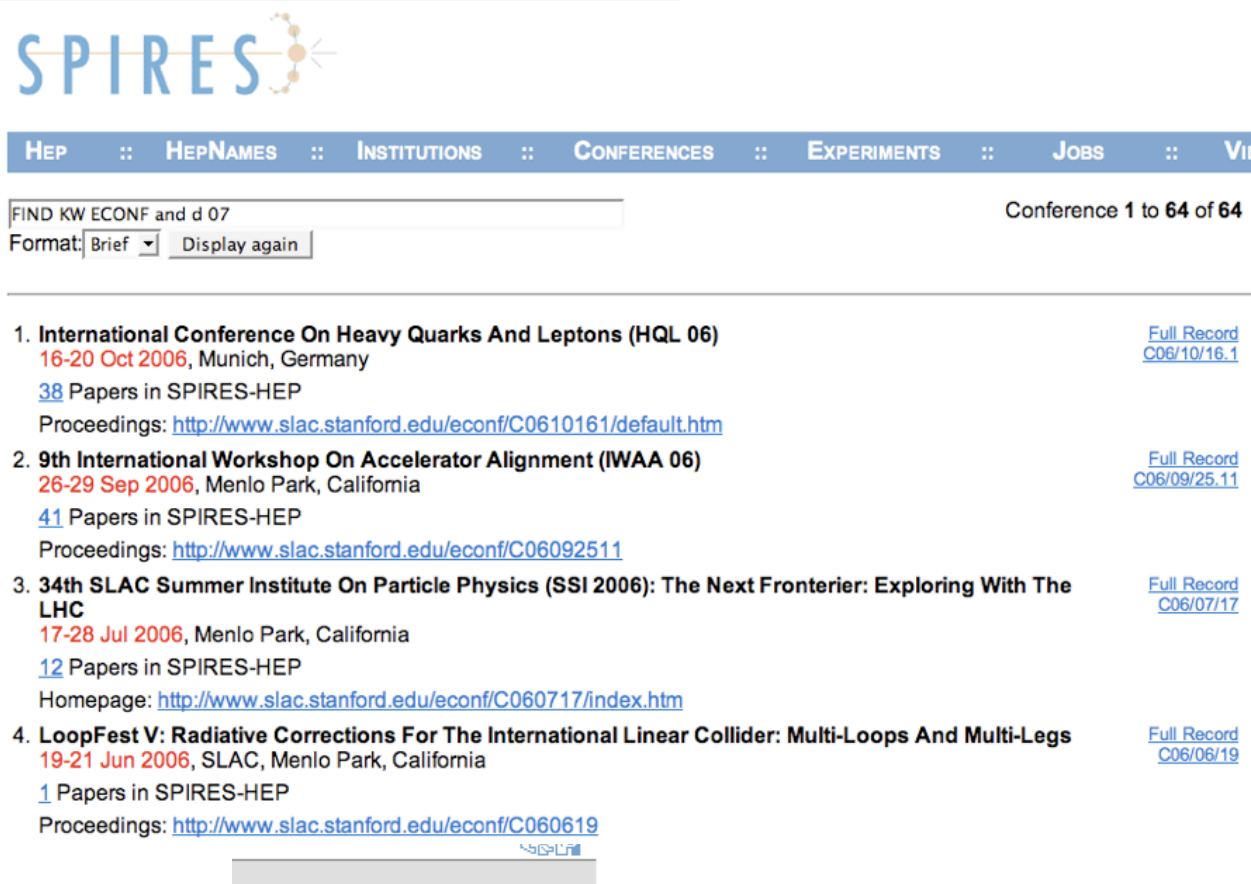
11) **SUSY searches at the Tevatron experiments.**
By CDF and D0 Collaborations (T. Kurca *for the collaboration*). Apr 2004. 6pp.
Prepared for 12th International Workshop on Deep Inelastic Scattering (DIS 2004), Strbske Pleso, Slovakia, 14-18 Apr 2004.
Published in *Strbske Pleso 2004, Deep inelastic scattering* 963-968

LaTeX(US) | LaTeX(EU) | Harvmac | BibTeX
DIS04 Server
Conference Info
EXP FNAL-E-0823 | EXP FNAL-E-0830
Link to this record

most recent published missing ET SUSY search from CDF - Int.J.Mod.Phys. A (2001)

No one should publish conference proceedings anymore. The irreducible expense of a journal is in refereeing and copy-editing; for a conference, this is done free by the organizers. So why are we spending library budgets on proceedings volmes ?

We do need an organized way to archive and search for conference articles. SLAC (eConf) and CERN (indico) provide this. Can both be indexed at a common site?



3. Citation searching: find a seminal article and search forward

4) Higgs boson theory and phenomenology.
Marcela Carena (Fermilab) , Howard E. Haber (UC, Santa Cruz) . FERMILAB-PUB-02-114-T, SCIPP-02-07, Au
Published in **Prog.Part.Nucl.Phys.50:63-152,2003**.
e-Print: **hep-ph/0208209**

TOPCITE = 100+
References | LaTeX(US) | LaTeX(EU) | Harvmac | BibTeX | Keywords | Cited 153 times
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)
Journal Server
ADS Abstract Service

7) **Electroweak constraints on warped models with custodial symmetry.**
Marcela Carena (Fermilab) , Eduardo Ponton (Columbia U.) , Jose Santiago (Fermilab) , C.E.M. Wagner (Argonne & Chicago U., E & KICP, Chicago) . ANL-HEP-PR-07-02, Jan 2007. 38pp.
e-Print: **hep-ph/0701055**

References | LaTeX(US) | LaTeX(EU) | Harvmac | BibTeX | Cited 11 times
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)
Link to this record

8) **Physics impact of ILC Higgs coupling measurements: The Effect of theory uncertainties.**
Andrew Droll, Heather E. Logan (Carleton U.) . Dec 2006. 35pp.
e-Print: **hep-ph/0612317**

References | LaTeX(US) | LaTeX(EU) | Harvmac | BibTeX
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)
Link to this record

9) **Connecting (Supersymmetry) LHC Measurements with High Scale Theories.**
Gordon L. Kane, Piyush Kumar, David E. Morrissey (Michigan U., MCTP) , Manuel Toharia (Michigan U., MCTP & Michigan U.) .
MCTP-06-37, SU-4252-842, Dec 2006. 39pp.
e-Print: **hep-ph/0612287**

References | LaTeX(US) | LaTeX(EU) | Harvmac | BibTeX | Cited 1 time
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)
Link to this record

10) **The Neutralino sector in the U(1)-extended supersymmetric standard model.**
S.Y. Choi (Chonbuk Natl. U. & DESY) , H.E. Haber (UC, Santa Cruz) , J. Kalinowski (Warsaw U.) , P.M. Zerwas (DESY & UC, Santa Cruz) . DESY-06-066, IFT-06-022, SCIPP-06-12, Dec 2006. 50pp.
e-Print: **hep-ph/0612218**

References | LaTeX(US) | LaTeX(EU) | Harvmac | BibTeX | Cited 3 times
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)

For such searches to be complete and accurate, we need a database that is:

machine-generated from the arXiv and other sources

curated, and proofread through user corrections

built to unify different electronic versions of the same document.

This is provided by SPIRES.

14) **Measurement of the W boson helicity in** top **quark decay at D0.**
By D0 Collaboration (V.M. Abazov *et al.*). FERMILAB-PUB-06-345-E, Sep 2006. 7pp.
Published in **Phys.Rev.D75:031102,2007**.
e-Print: **hep-ex/0609045**

References | LaTeX(US) | LaTeX(EU) | Harvmac | BibTeX | Cited 4 times
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)
Journal Server
Fermilab Library Server (fulltext available)
Phys. Rev. D Server
EXP FNAL-E-0823
Link to this record

15) Top **Quark Mass Measurements.**
By CDF and D0 Collaboration (A.P. Heinson *for the collaboration*). FERMILAB-CONF-06-287-E, D0-NOTE-5226, Aug 2006. 5pp.
To appear in the proceedings of CIPANP 2006: 9th Conference on the Intersections of Particle and Nuclear Physics, Westin Rio Mar Beach, Puerto Rico, 30 May - 3 Jun 2006.
Published in **AIP Conf.Proc.870:223-227,2006**. Also in *Rio Grande 2006, Intersections of particle and nuclear physics* 223-227
e-Print: **hep-ex/0609028**

References | LaTeX(US) | LaTeX(EU) | Harvmac | BibTeX | Cited 5 times
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)
AIP Conference Server
Journal Server
Fermilab Library Server (fulltext available)
Conference Info
EXP FNAL-E-0823 | EXP FNAL-E-0830
Link to this record

4. Web availability of essential resource data, thanks to the Particle Data Group and affiliates

HEPDATA ON-LINE DATA REVIEW

STRUCTURE FUNCTIONS IN DEEP INELASTIC LEPTON SCATTERING.

IoP publications: T. Gehrmann et al 1999 *J.Phys.G.Nucl.Part.Phys:* 25 A1-A157
R G Roberts and M R Whalley et al 1991 *J.Phys.G.Nucl.Part.Phys:* 17 D1-D151

HEPDATA ON-LINE DATA REVIEW

This is an up-to-date collection of data on the structure functions F2, xF3, and related quantities, plus the polarised asymmetries A1 and A2 and structure functions G1 and G2, from lepton deep inelastic scattering off protons and nuclei. The relevant experiments at CERN, Fermilab, SLAC and DESY from 1985 are covered. Newer data from Jefferson Lab (JLAB) are also included.

Select data from a specific experimental colla

CERN	Fern
BCDMS EMC WA25 NMC CDHSW WA59 SMC NA58/COMPASS WA95/CHORUS	E6 CCFR/

or select data for a specific measurement:

Measurement
F2 and xF3 - proton F2 and xF3 - nucleon F2 and xF3 - neutron F2 - deuteron F2 - nuclear F2 - charm

Durham University

Parton Distribution Functions

Unpolarized Parton Distributions

Access the parton distribution code, on-line calculation and graphical display of the distributions, ffrom CTEQ, GRV, MRS and Alekh

CTEQ distributions, fortran code and grids
GRV distributions, fortran code and grids
MRST distributions, fortran code and grids, C++ code
ALEKHIN distributions, fortran,C++ and Mathematica code, and grids

On-line Parton Distribution Calculator with Graphical Display.
- now includes PDF error calculations from MRST2001E and CTEQ6.

Public access to the ZEUS 2002 PDFs , ZEUS 2005 jet fit PDFs and H1 PDF 2000 sets.

J. Bluemlein, H. Boettcher and A.Guffanti - hep-ph/0607200 BBG06_NS

Polarized Parton Distributions

Currently available parametrizations:

E.Leader, A.V.Sidorov and D.B.Stamenov, Eur.Phys.J.C23 (2002) 479: LSS2001
E.Leader, A.V.Sidorov and D.B.Stamenov, Phys.Rev.D73 (2006) 034023: LSS2005
M. Glueck, E. Reya, M. Stratmann and W. Vogelsang, Phys. Rev. D53 (1996) 4775: GRSV
M. Glueck, E. Reya, M. Stratmann and W. Vogelsang, Phys. Rev. D63 (2001) 094005: GRSV2000
T. Gehrmann and W.J. Stirling, Phys. Rev. D53 (1996) 6100: GS
J. Bluemlein and H. Boettcher - Nucl.Phys.B636(2002)225: BB
Asymmetry Analysis Collaboration - M. Hirai et al- Phys. Rev. D69 (2004) 054021: AAC
D. de Florian and R. Sassot, Phys. Rev. D62 (2000) 094025: DS2000
D. de Florian, G.A. Navarro and R. Sassot, Phys. Rev. D71 (2005) 094018: DNS2005

So we are doing many things right.

But there are other things that we could be doing to make this system more effective

1. Better integrate current resources:

   merge the SPIRES and ADS citation databases

   index public collections of Ph.D. theses

   index public physics notes of experimental collaborations

   index conference talks in Indico system

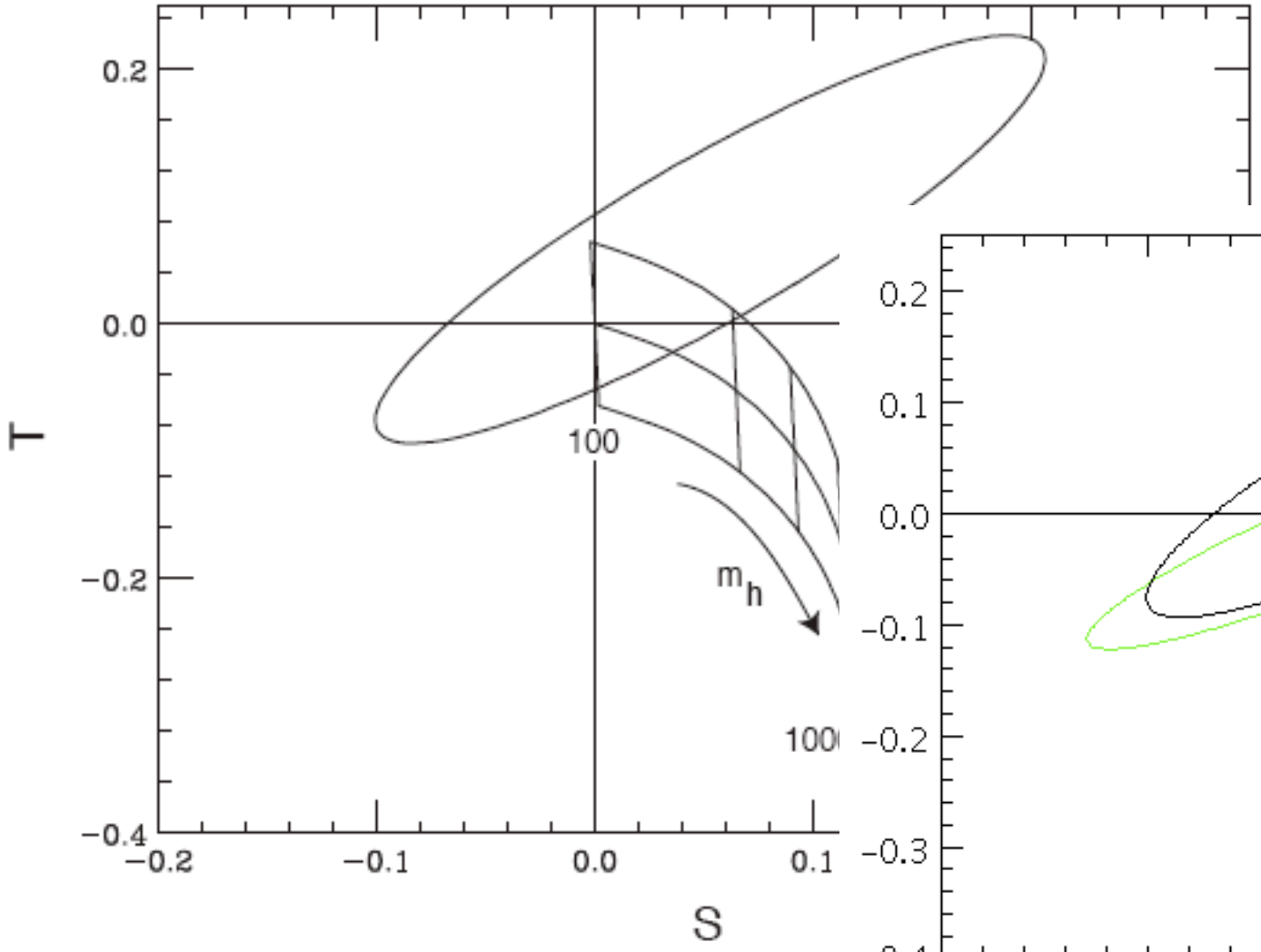
2. Provide support for interactive elements of scientific papers:

computer codes used in the analysis

active figures that can redraw themselves with new data

archives of specialized datasets used in the analysis
(e.g., as ROOT files)

It would be good to have academic rewards -- recognition in tenure and promotion processes -- for people who contribute Web resources useful to the community.



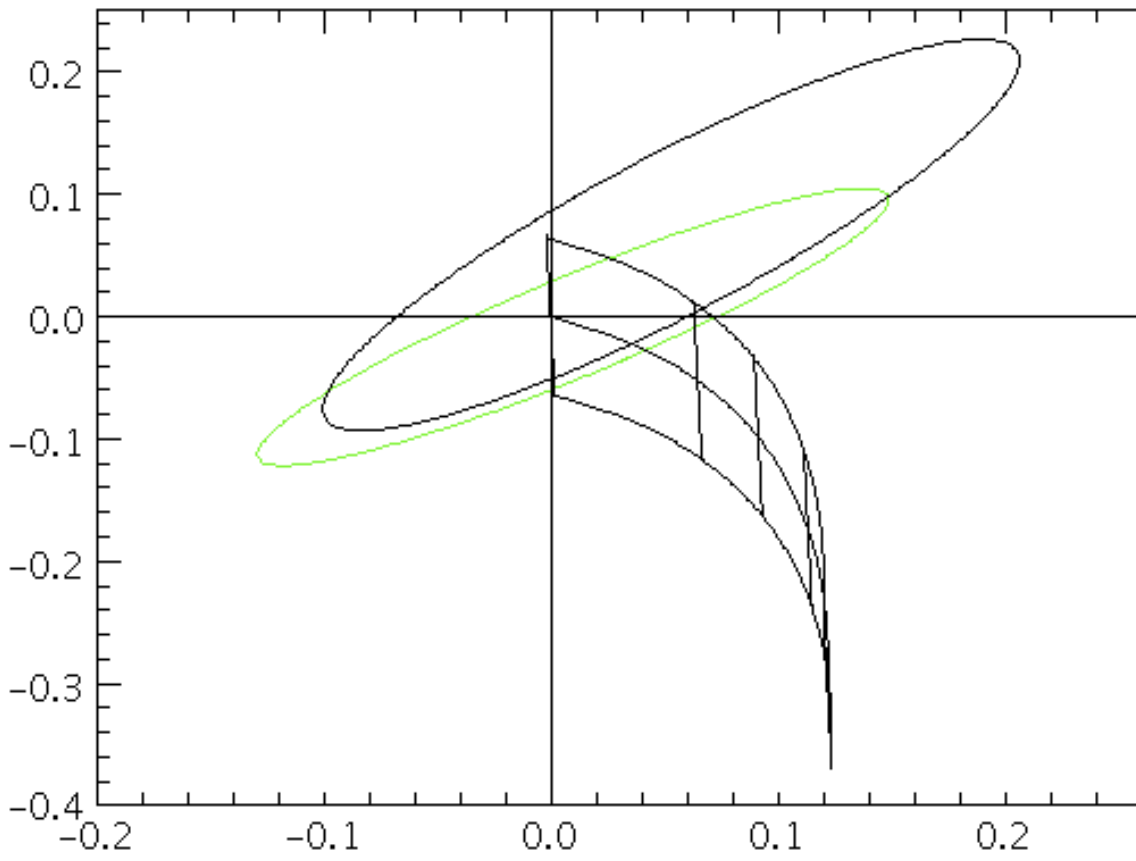


Figure 1: Fit of the precision electroweak data to the MS
described in the text. The fit is based on the values of m

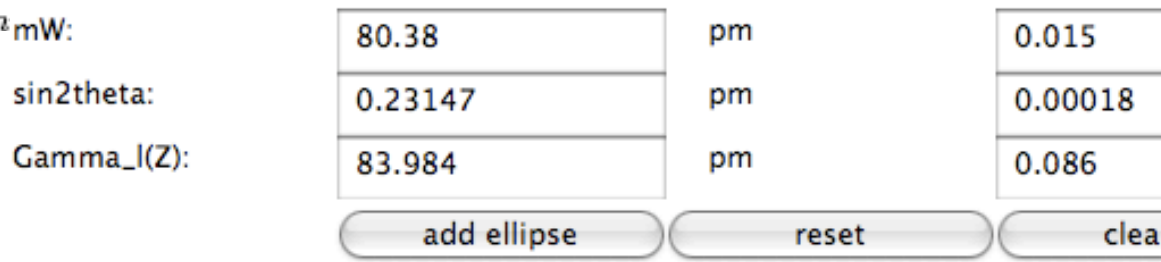


Figure 1: Fit of the precision electroweak data to the MSM plus the S, T paramet
sinwtheta_eff, Gamma_l shown in Table 1. The ellipse shows the 68% two-dime

active figure, from Peskin and Wells, hep-ph/0101342

3. Organize the recommendation of new papers:

An alternative to refereeing and rejecting papers is recommending papers that have new and interesting ideas. Since we are saturated with information, it is best to have recommendations of important papers to read.

People not at major institutions would find this service especially valuable.

This idea was tried in 1995 but did not catch on. Web 2.0 presents new tools toward this goal. Can their use be organized and made easy, so that it becomes a part of our community participation ?

The Virtual Review

A journal for the physics community

Table of Contents

Quantum aspects of gravity (7/95)
Steve Giddings
Heavy quark effective theory
Mitchell Golden
Heavy-to-light decays of *B* mesons
Paul Mende
String propagation near black holes
Paul Mende
Strings and two-dimensional QCD
Washington Taylor

Recommended Reading in Field Theory and Particle Physics

- Michael Peskin
- Roger Poultney (last list)
- Miao Li

There are also long-range issues. These items that cannot be solved without serious thought and consultation, but they should be solved.

1. Archiving the arXiv.

It would be wonderful if you could submit a paper to the arXiv and have a guarantee that this paper could still be read in 100 years. I would gladly accept restriction on graphics file formats or versions of rendering software in order to have this assurance.

If author-supplied articles would have this level of permanence, we could dispense with print journals and really make the transition to arXiv plus society-mediated refereeing services. This would not be free, but we could save a factor ~2 in cost.

Anyway, we should be able to read papers - permanently - in the form that the author would most like to see.

2. Rational publishing and search in experimental HEP.

Here is a little table of the number of Phys. Rev. and PRL papers by 3 large collaborations at US accelerators:

PRD/PRL	2003	2004	2005	2006
BaBar	13 / 28	21 / 30	37 / 21	42 / 27
CDF	6 / 9	13 / 12	17 / 20	9 / 19
D0	2 / 2	2 /13 +1	2 / 10	9 / 10

What is wrong with these numbers ?

Few journal publications considering the size of the collaborations.

High ratio of PRL to Phys. Rev. D papers.

and also remember:

Each 4-page PRL submitted by the collaboration is backed by a document of about 100 pages that is private to the collaboration. This document is necessary to understand what was actually done in the analysis.

Much of the publication record of CDF and D0 consists of "public physics analysis notes" which are condensations of these larger documents. To find them, you much search the CDF and D0 web sites.

Most ATLAS and CMS prospective analyses are also only available only as informal notes in the collaboration web archives.

CDF Run II QCD Group Results

Results are sorted as follows: Preliminary Submitted Published

Preliminary

Analysis	Dataset	Last Update
Jets		
Inclusive Jet Production using the Midpoint Jet Algorithm	1.04 fb-1	June 2006
Dijet Production	1.13 fb-1	March 2007
Z + Jets	1.1 fb-1	Feb. 2007
W + Jets	320 pb-1	Feb. 2006
Search for W/Z Hadronic Decays in Photon Events	184 pb-1	June 2005
Heavy Flavor Jets		
Inclusive b-jet Production	300 pb-1	Sep. 2005
b-bbar Dijet Production using SVT	260 pb-1	Jan. 2007
Photon + Heavy Flavor Production	340 pb-1	July 2006
Photon + Heavy Flavor Production using SVT	208 pb-1	Oct. 2006
b-jet Shapes	300 pb-1	Oct. 2006
b-jet energy scale from Z → b bbar	584 pb-1	March 2007
Underlying Event / Fragmentation		
Underlying Event in Inclusive Jet Production	75 pb-1	April 2003
Two-Particle Momentum Correlations in Jets	385 pb-1	Oct. 2005
Kt Distributions of Particles in Jets	774 pb-1	July 2006
Diffraction / Exclusive Production		
Diffractive Dijet Production	128 pb-1	Feb. 2006
Dijet Production in DPE and Exclusive Dijet Production	310 pb-1	July 2006
Exclusive γγ Production	532 pb-1	April 2006
Exclusive χ_c Production	93 pb-1	Sep. 2003

HEP collaborations are rule-bound and slow-moving. I hope that they will change their ways and publish like normal scientists. While we wait for that to happen:

SPIRES should index the public analysis documents of the major collaborations.

Ph.D. thesis are a gold mine of information. SPIRES indexes theses, but often not linked to the experiment, and not generating (and findable by) citations. We should establish as a norm that all HEP Ph.D. theses be posted on hep-ex !

ATLAS and CMS should be proactive in helping SPIRES to index their analysis documents. We hope that the LHC results will be interesting and controversial. All of us - even theorists - need the information to evaluate these results.

This would be the real 'Open Access'.

3. Extending full bibliography to the rest of physics.

SPIRES and ADS give excellent coverage of HEP and astrophysics, with many features that I have praised in this talk. You understand how valuable these resources are when you try searches in other areas of physics.

The leading tools there are 'hand-crafted' databases such as INSPEC and ISI Web of Science and the automatically generated but uncurated Google Scholar.

I typically use Google Scholar to search in condensed matter physics. I find this useful because Google Scholar has excellent coverage of Phys. Rev. B. I do not hope for a complete bibliography.

It would be helpful if physicists in other subfields would adopt the eprint system. This is happening slowly. In certain fields of CMP, direct searches in arXiv are very effective.

In biomedical fields, our colleagues distrust eprints. They are wrong, but these attitudes are hard to change. The retrogressive embargo policies of Science and Nature are also a problem here.

I have hoped for long time that libraries at synchrotron light facilities might be interested in indexing condensed matter physics and biophysics. As their missions enlarge, perhaps SLAC, DESY, and KEK will now take up this challenge.

On the whole, though, I am very happy with the current situation for scientific information in HEP.

The innovations of the last 15 years have brought us to a new level of ease and power in finding the information we need for our research.

Thank you!