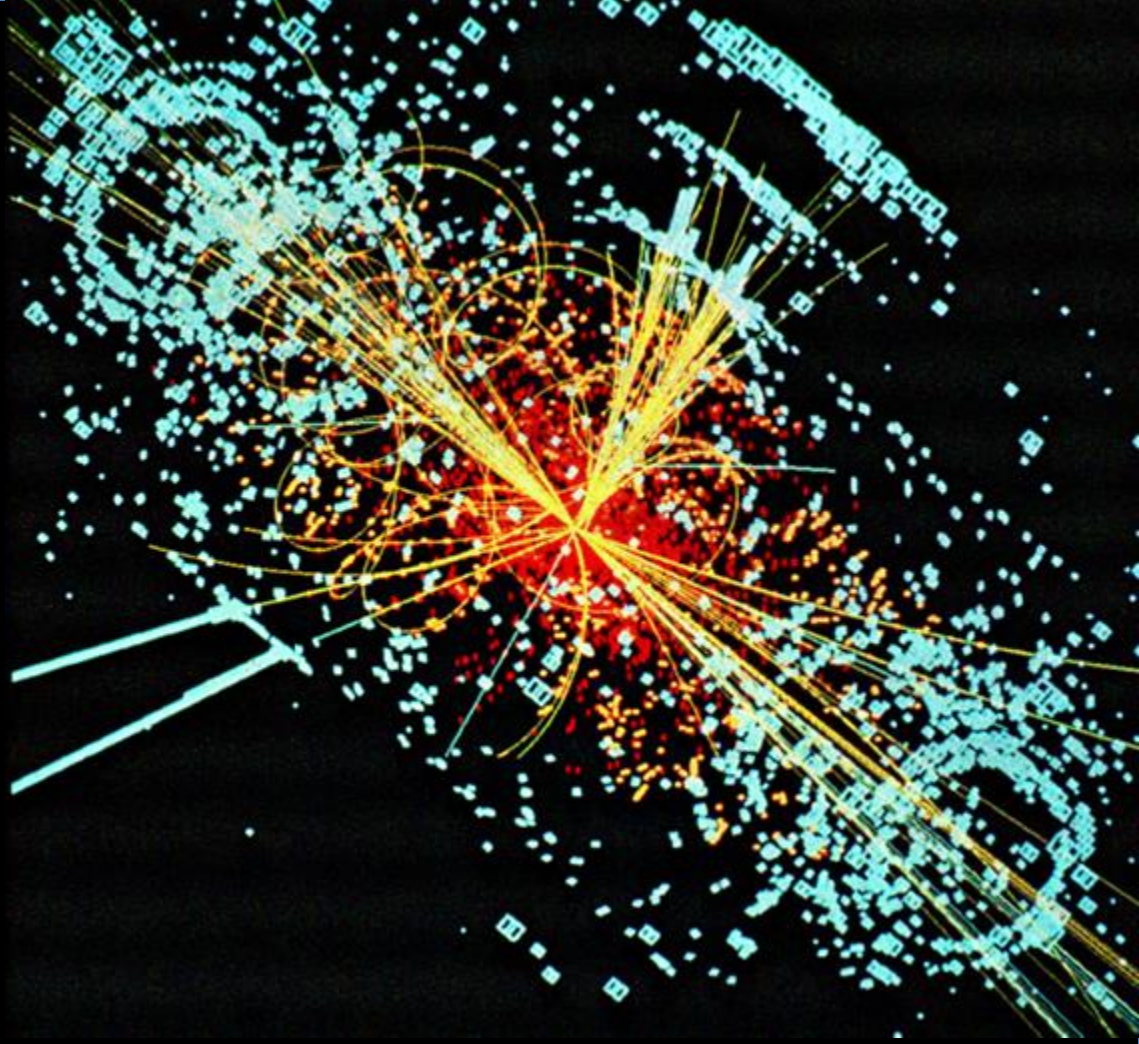
How partnership accelerates Open Science:

High Energy Physics and INSPIRE, a case study of a complex repository ecosystem

For the INSPIRE Collaboration:
Sünje Dallmeier-Tiessen
Bernard Hecker

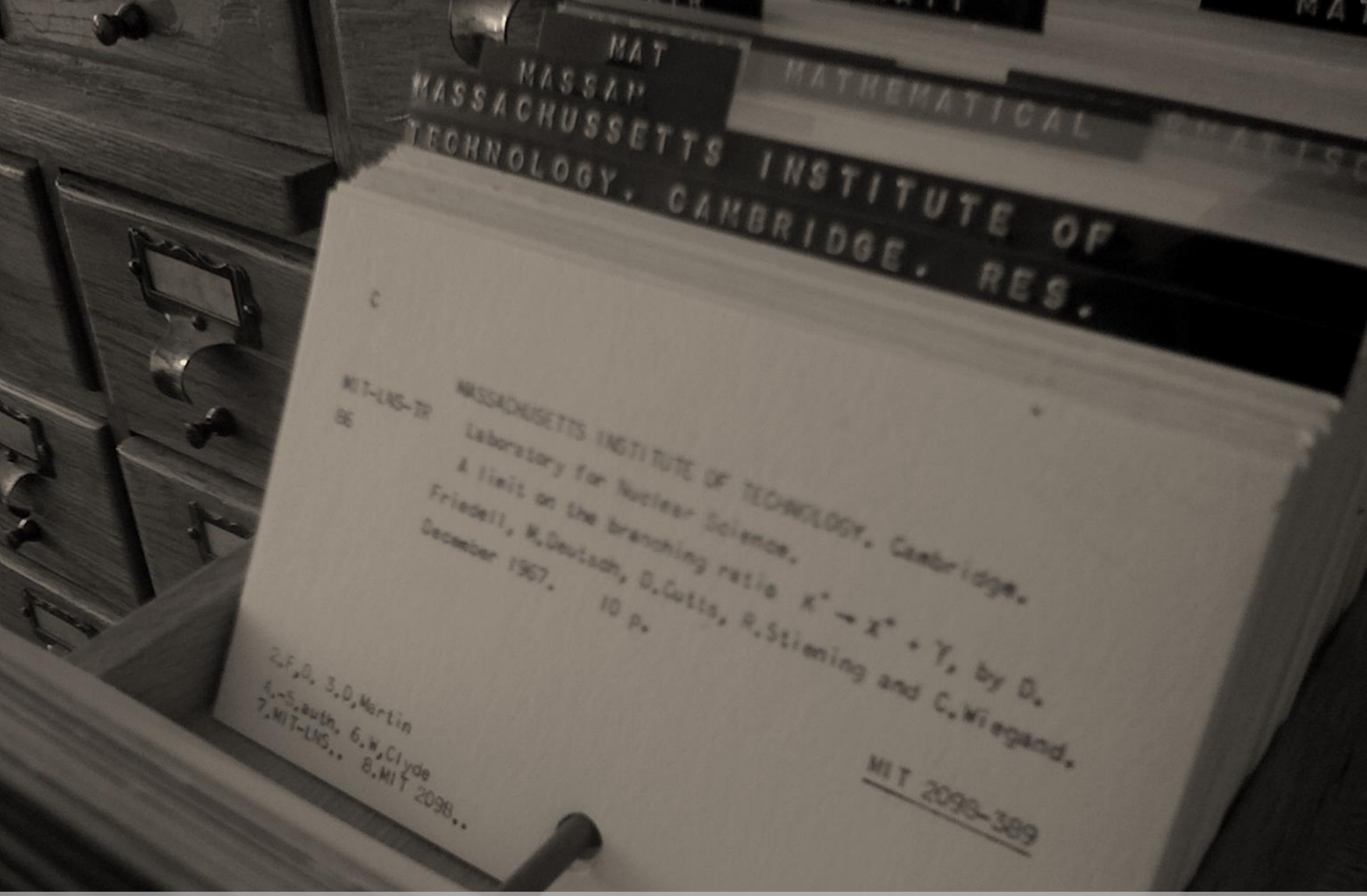
Open Repositories 2013

HISTORY



Once upon a time HEP folks wrote papers…

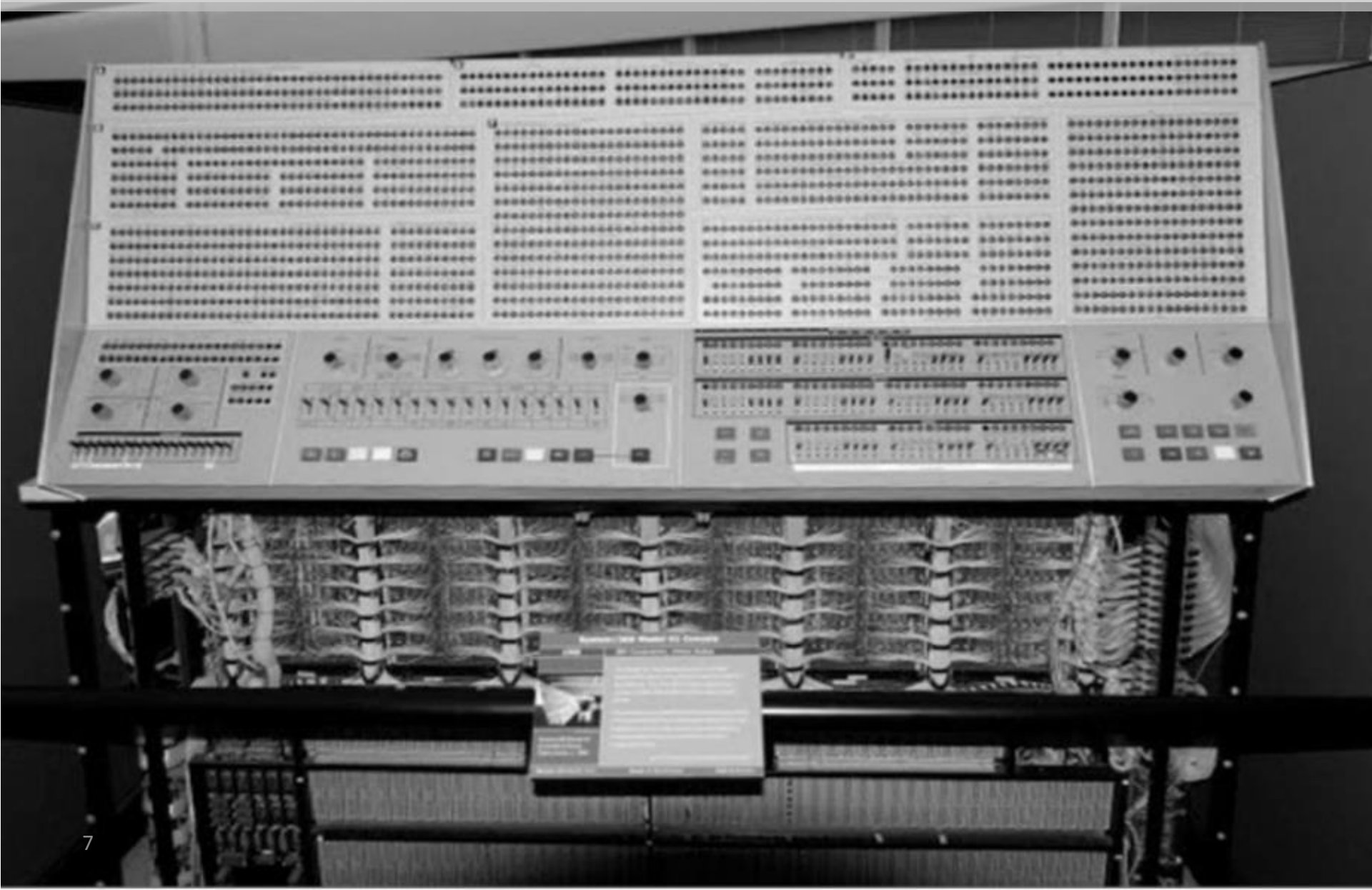
…then went to the mailroom…



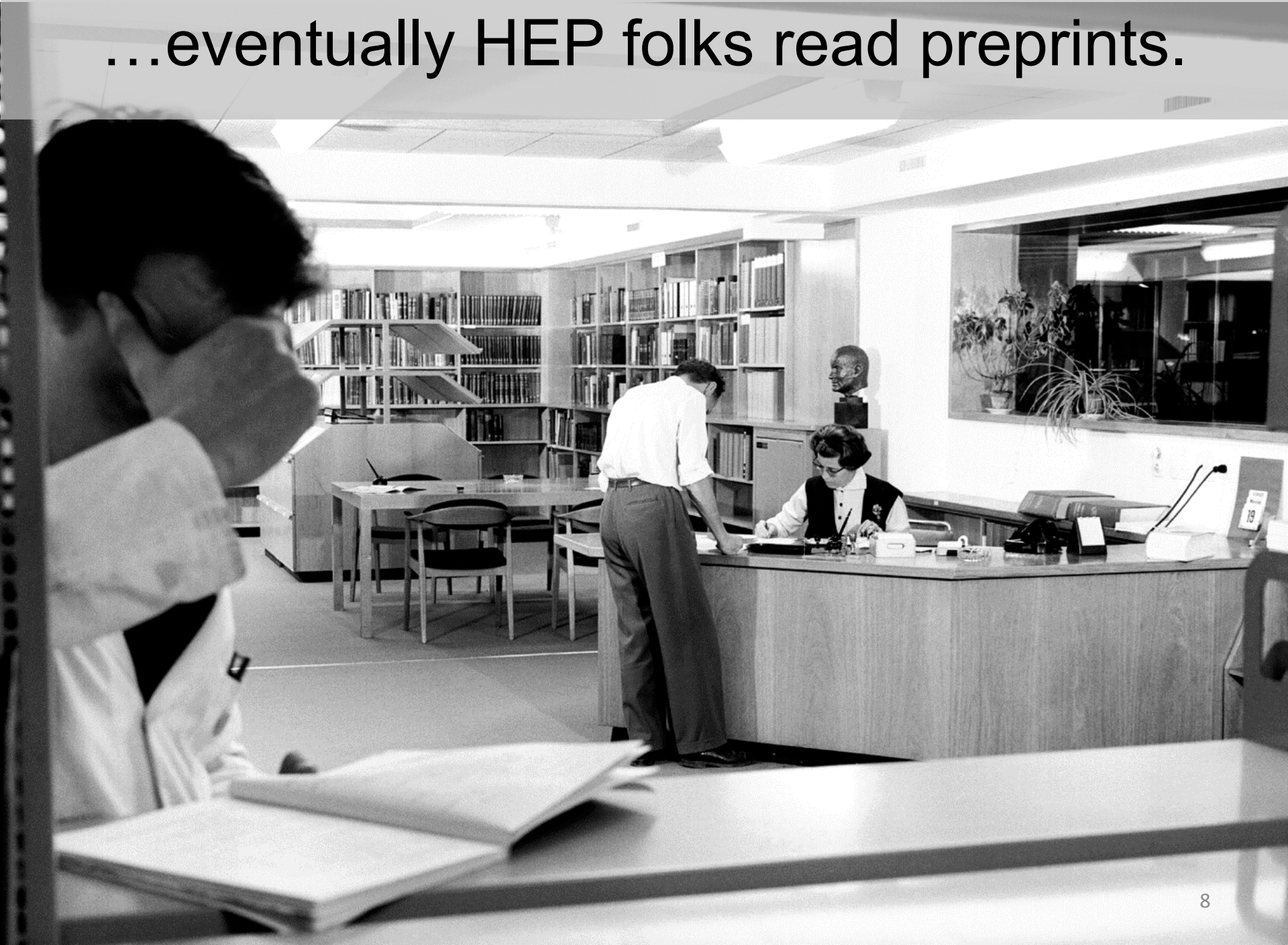
…libraries got and catalogued *preprints*…

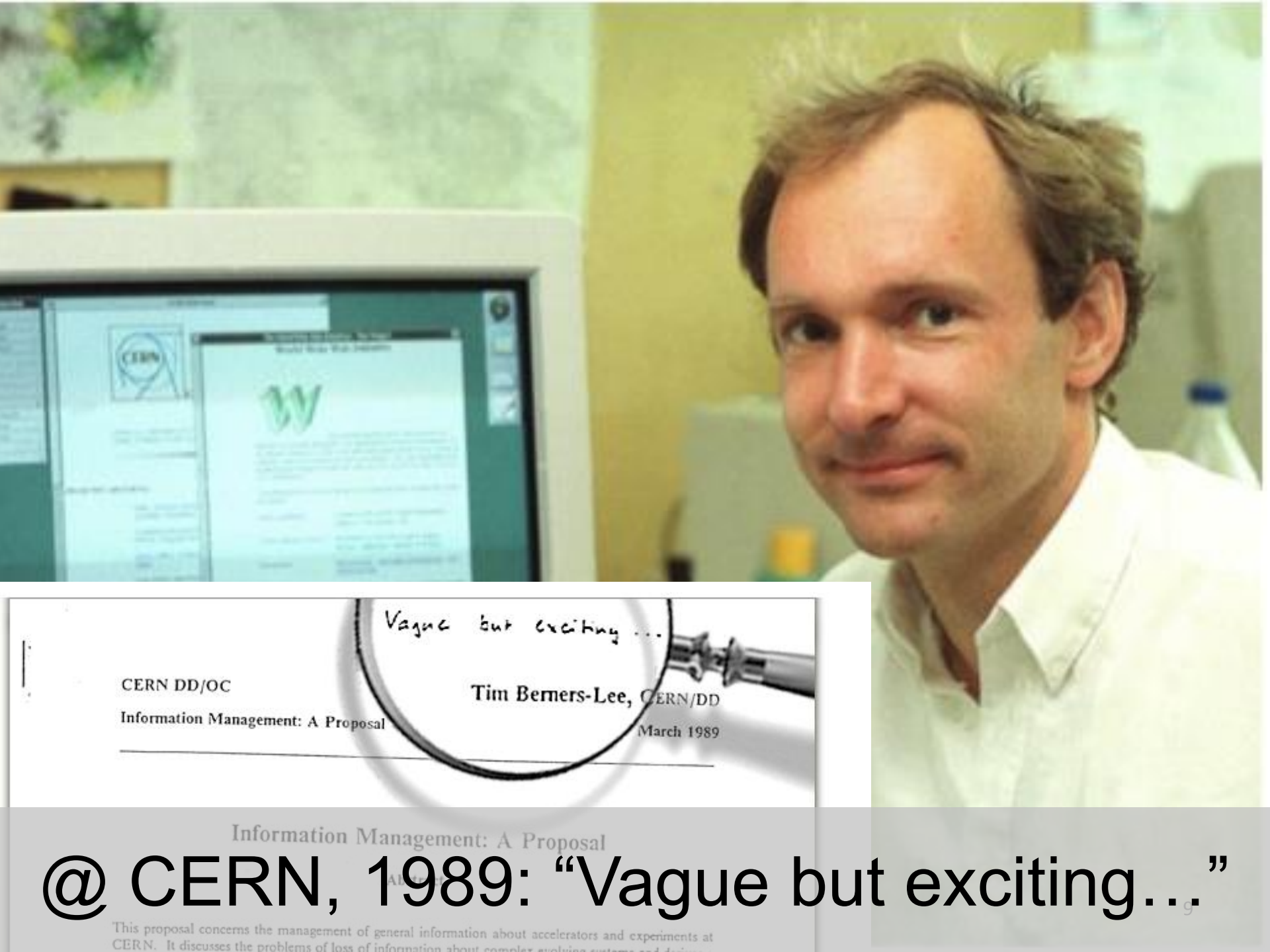
…in 1969, SLAC library used computers...

…like this one for the catalog...



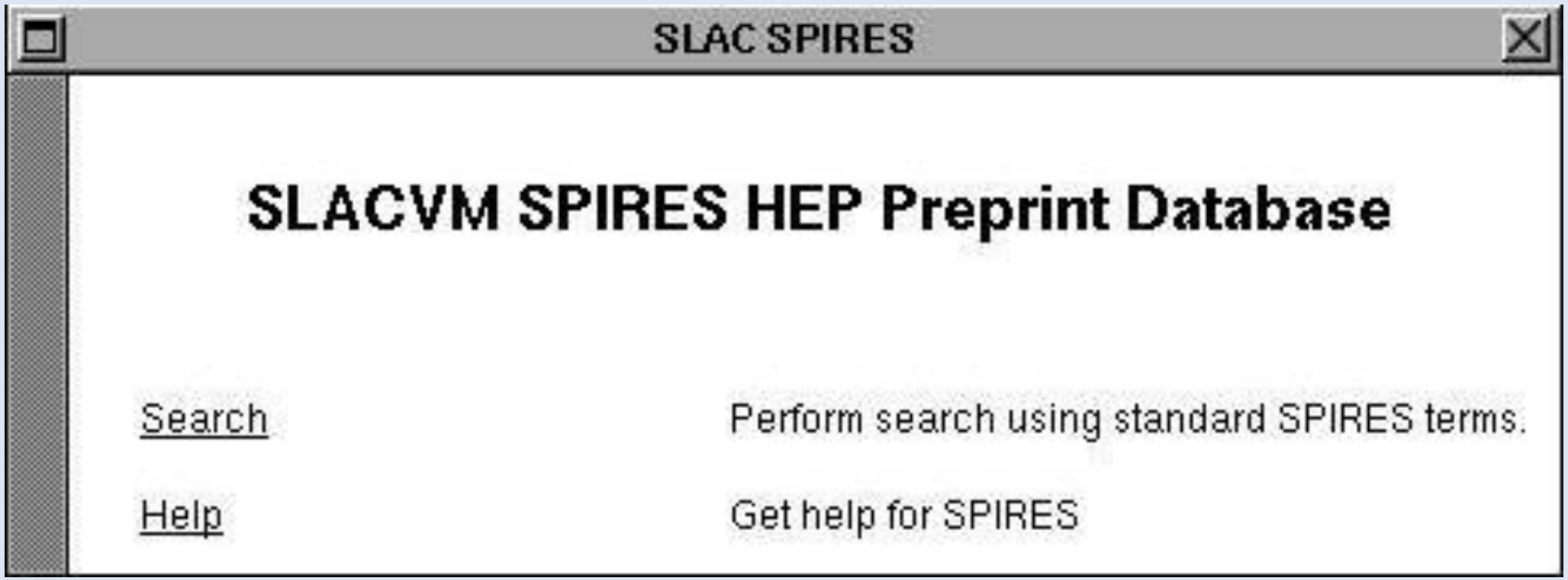
…eventually HEP folks read preprints.





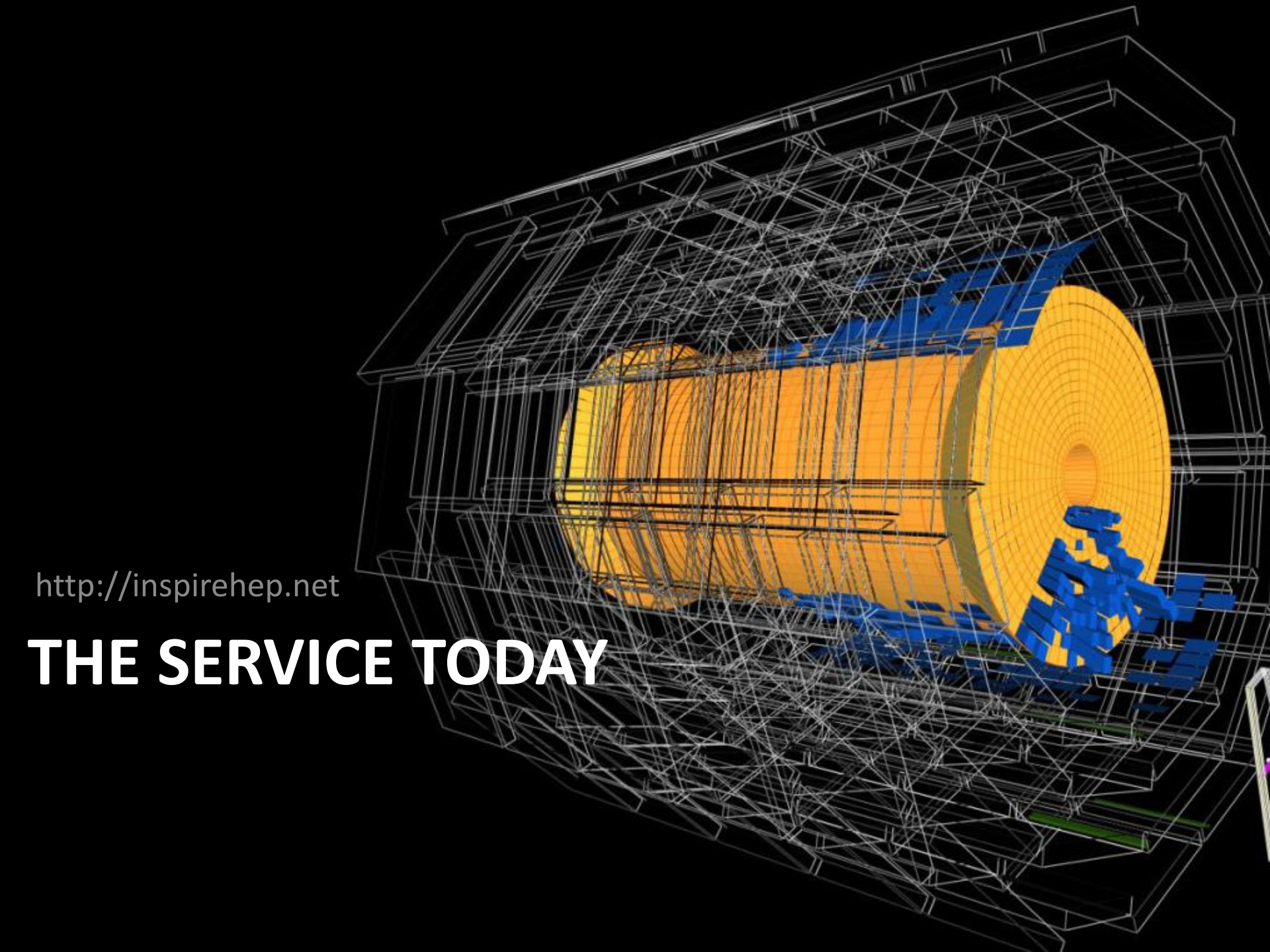
@ CERN, 1989: “Vague but exciting…”

WWW + SPIRES



- first web site outside of Europe (1991)
- first database on the web
- the web's first "killer app", according to Tim Berners-Lee

http://www.slac.stanford.edu/history/earlyweb/history.shtml



http://inspirehep.net

THE SERVICE TODAY

SPIRES is now INSPIRE

– open, searchable High Energy Physics collection

– now on CERN's INVENIO digital library platform
  - open source, standards-based (OAI-PMH, DOIs, etc.)

– collaboration of CERN, Fermilab, DESY, and SLAC

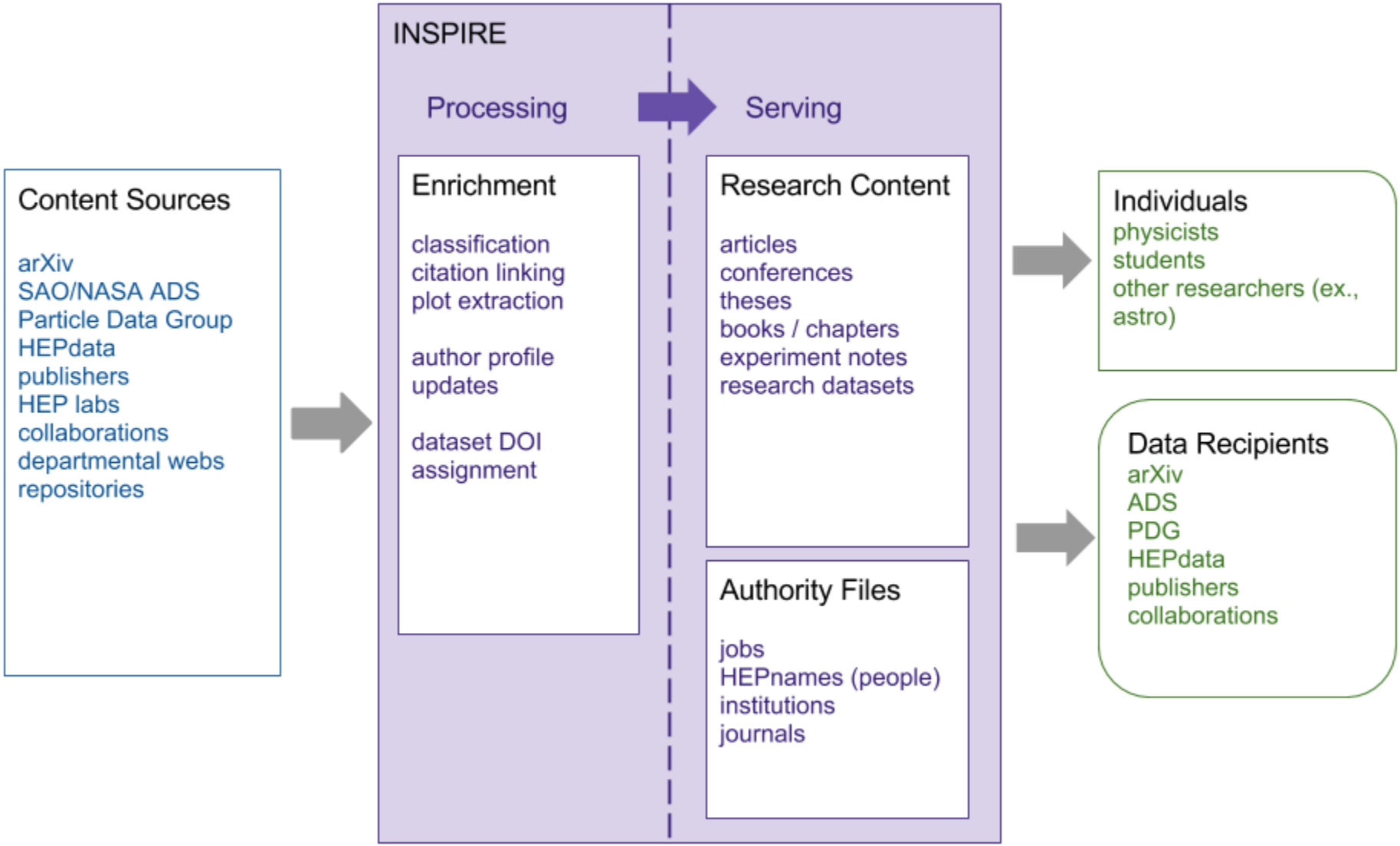
Offering several types of databases

- High Energy Physics ("HEP") research
  - preprints (arXiv), published articles, theses, conference proceedings and papers, data etc.
  - metadata (curated), full text (increasing), data (increasing)
  - over a million records
- supporting databases
  - researcher profiles and publication lists
  - jobs
  - conference listings
  - journal index
  - institutional index

INSPIRE is unique in the HEP information ecosystem

- essential information source for HEP
  - aggregates and connects relevant information
    - one portal, unified search syntax
  - expert curation, data enhancement
  - most complete HEP information source
- high level of trust
  - a decades-long history of service to HEP
  - community-based
  - long term institutional commitment

INSPIRE block model



Welcome to INSPIRE! INSPIRE is out of beta and ready to replace SPIRES. SPIRES will be switched off soon
feedback@inspirehep.net.

HEP :: HEPNAMES :: INSTITUTIONS :: CONFERENCES :: JOBS :: HELP ..:::..

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

http://inspirehep.net

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
- author:randall | author:sundrum cited:450->1350

Additional Help:

- More search tips and full help

INSPIRE UPDATES

See our blog at blog.inspirehep.net for updates on new features and other news. You can also follow us at @inspirehep on twitter. To send us feedback use feedback@inspirehep.net. The data in INSPIRE is updated daily and should be the same as what is available from SPIRES, or better. To correct data in INSPIRE (or SPIRES), let us know at help@inspirehep.net.

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HEP :: HEPNAMES :: INSTITUTIONS :: CONFERENCES :: JOBS :: EXPERIMENTS :: JOURNALS :: HELP

Information | References (147) | Citations (1268) | Files | Plots

Observation of a new particle in the search for the Standard Model Higgs boson with the ATLAS detector at the LHC

ATLAS Collaboration (Georges Aad (Freiburg U.) *et al.*) *Show all 2932 authors*

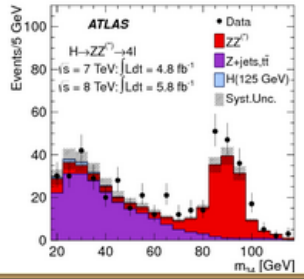
Jul 2012 - 24 pages

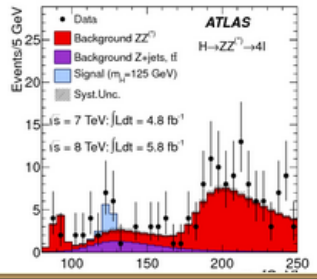
Phys.Lett. B716 (2012) 1-29
DOI: 10.1016/j.physletb.2012.08.020
CERN-PH-EP-2012-218
e-Print: arXiv:1207.7214 [hep-ex] | PDF
Experiment: CERN-LHC-ATLAS

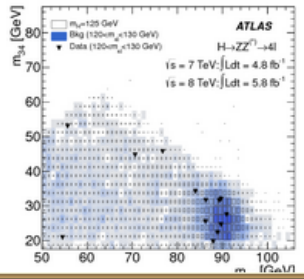
Abstract: A search for the Standard Model Higgs boson in proton-proton collisions with the ATLAS detector at the LHC is presented. The datasets used correspond to integrated luminosities of approximately 4.8 fb^-1 collected at sqrt(s) = 7 TeV in 2011 and 5.8 fb^-1 at sqrt(s) = 8 TeV in 2012. Individual searches in the channels H->ZZ^(*)->llll, H->gamma gamma and H->WW->e nu mu nu in the 8 TeV data are combined with previously published results of searches for H->ZZ^(*), WW^(*), bbbar and tau^+tau^- in the 7 TeV data and results from improved analyses of the H->ZZ^(*)->llll and H->gamma gamma channels in the 7 TeV data. Clear evidence for the production of a neutral boson with a measured mass of 126.0 +/- 0.4(stat) +/- 0.4(sys) GeV is presented. This observation, which has a significance of 5.9 standard deviations, corresponding to a background fluctuation probability of 1.7x10^-9, is compatible with the production and decay of the Standard Model Higgs boson.

Note: 24 pages plus author list (38 pages total), 12 figures, 7 tables, revised author list, matches version to appear in Physics Letters B

Keyword(s): INSPIRE: Higgs particle: mass: measured | new particle: Higgs particle | background | p p: scattering | Higgs particle: radiative decay | final state: two-photon | gauge boson: pair production | Higgs particle: decay modes | new particle: spin | CERN LHC Coll | ATLAS | experimental results | Higgs particle --> ZZ0 | Higgs particle --> 2photon | Higgs particle --> W+ W- | Higgs particle --> tau+ tau- | Higgs particle --> bottom anti-bottom | Z0 --> lepton+ lepton- | W --> lepton neutrino | 7000: 8000 GeV-cms







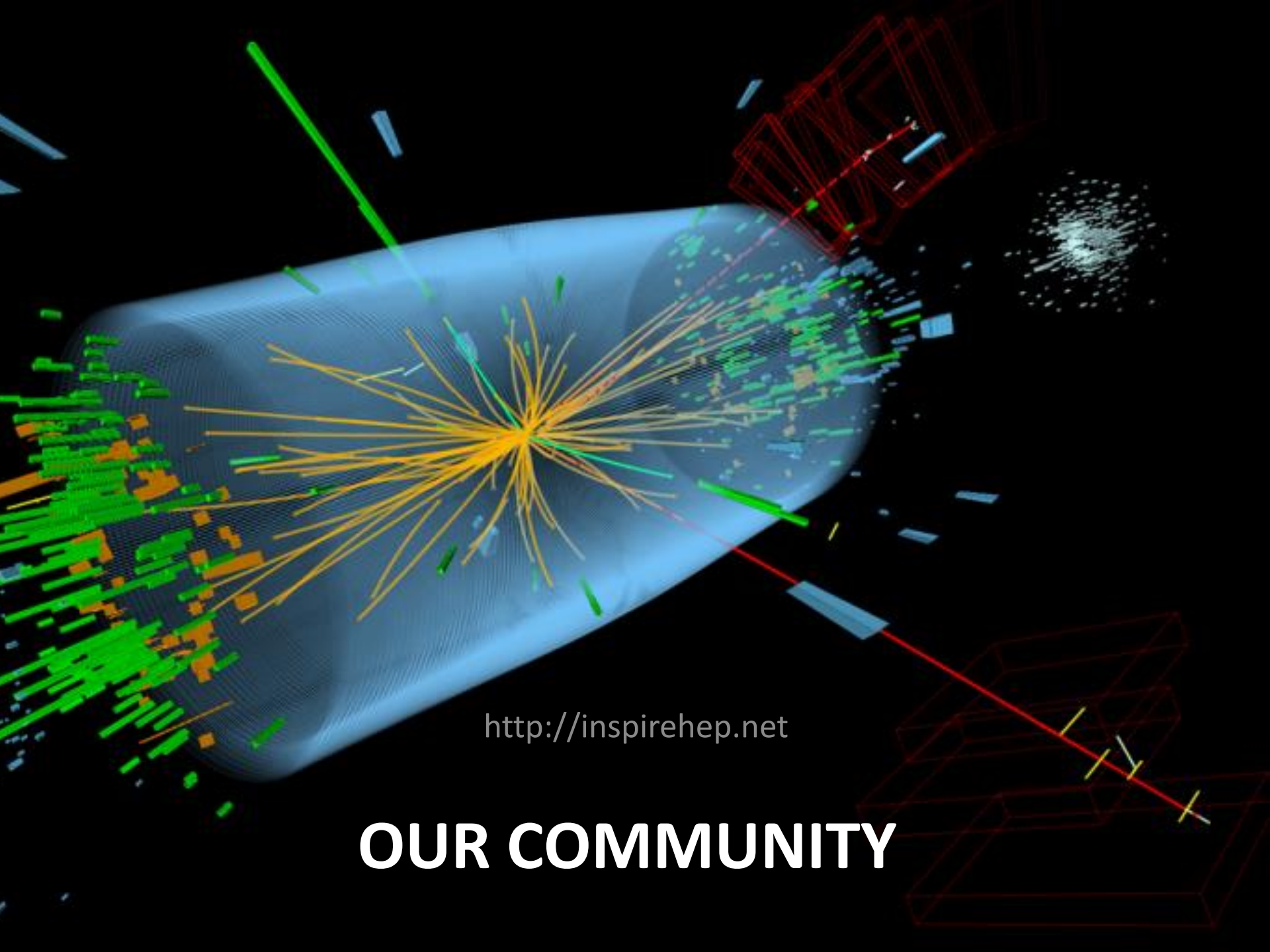
Show more plots

HEP **12** records found Search took 0.39 seconds.

1. **Quark Elastic Scattering as a Source of High Transverse Momentum Mesons**
   R.D. Field, R.P. Feynman (Caltech). Nov 1976. 87 pp.
   Published in **Phys.Rev. D15 (1977) 2590-2616**
   CALT-68-565
   DOI: 10.1103/PhysRevD.15.2590
   References | BibTeX | LaTeX(US) | LaTeX(EU) | Harvmac | EndNote
   ADS Abstract Service; Phys. Rev. D Server
   Detailed record - Cited by 1076 records 1000+ - Attribute this paper - Edit record - Manage files

2. **Current matrix elements from a relativistic quark model**
   R.P. Feynman, M. Kislinger, F. Ravndal (Caltech). 1971.
   Published in **Phys.Rev. D3 (1971) 2706-2732**
   DOI: 10.1103/PhysRevD.3.2706
   References | BibTeX | LaTeX(US) | LaTeX(EU) | Harvmac | EndNote
   ADS Abstract Service; Phys. Rev. D Server
   Detailed record - Cited by 838 records 500+ - Attribute this paper - Edit record - Manage files

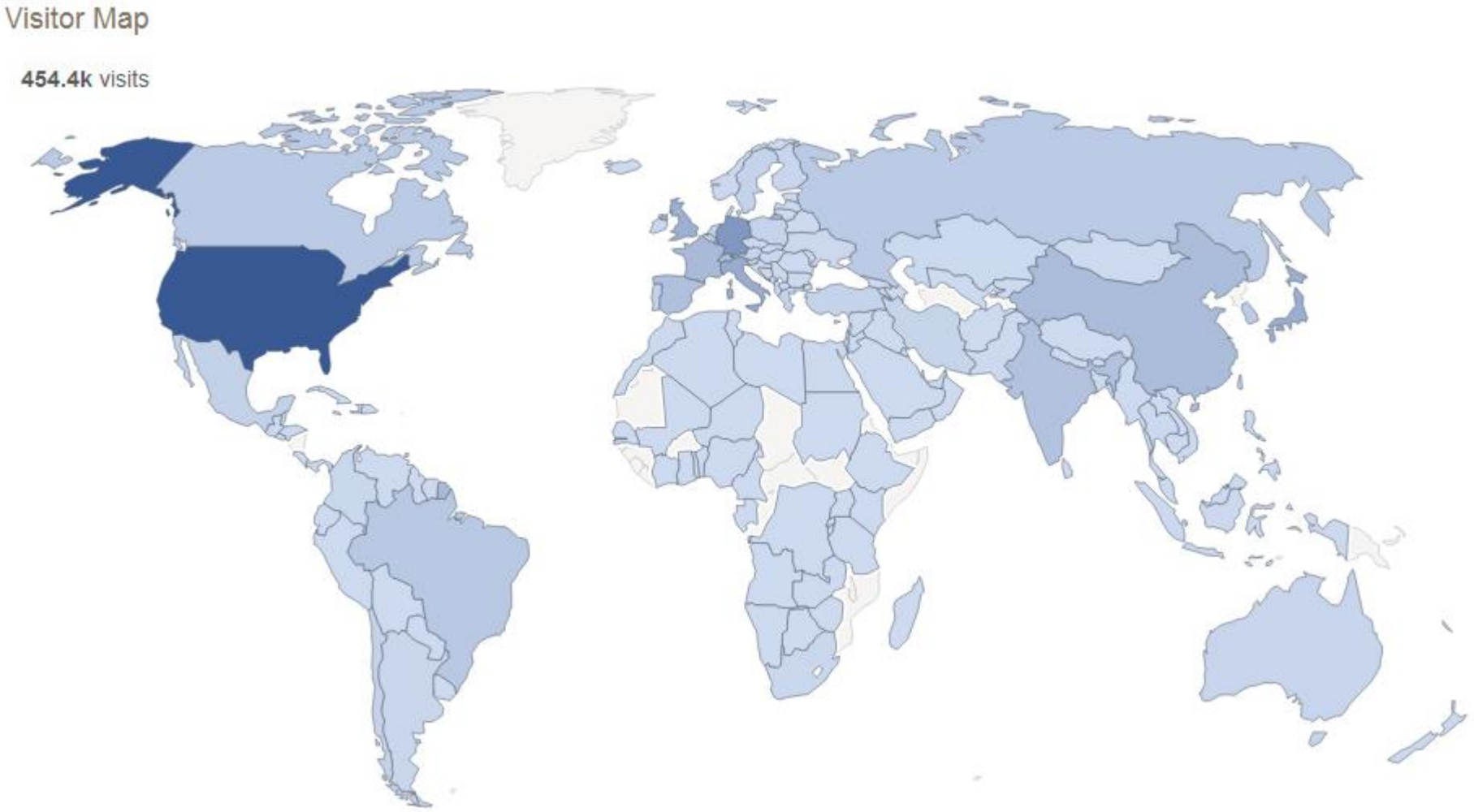
3. **Theory of Fermi interaction**
   R.P. Feynman, Murray Gell-Mann (Caltech). 1958.
   Published in **Phys.Rev. 109 (1958) 193-198**
   DOI: 10.1103/PhysRev.109.193
   References | BibTeX | LaTeX(US) | LaTeX(EU) | Harvmac | EndNote
   Phys. Rev. Server



OUR COMMUNITY

Experimentalists and Theorists

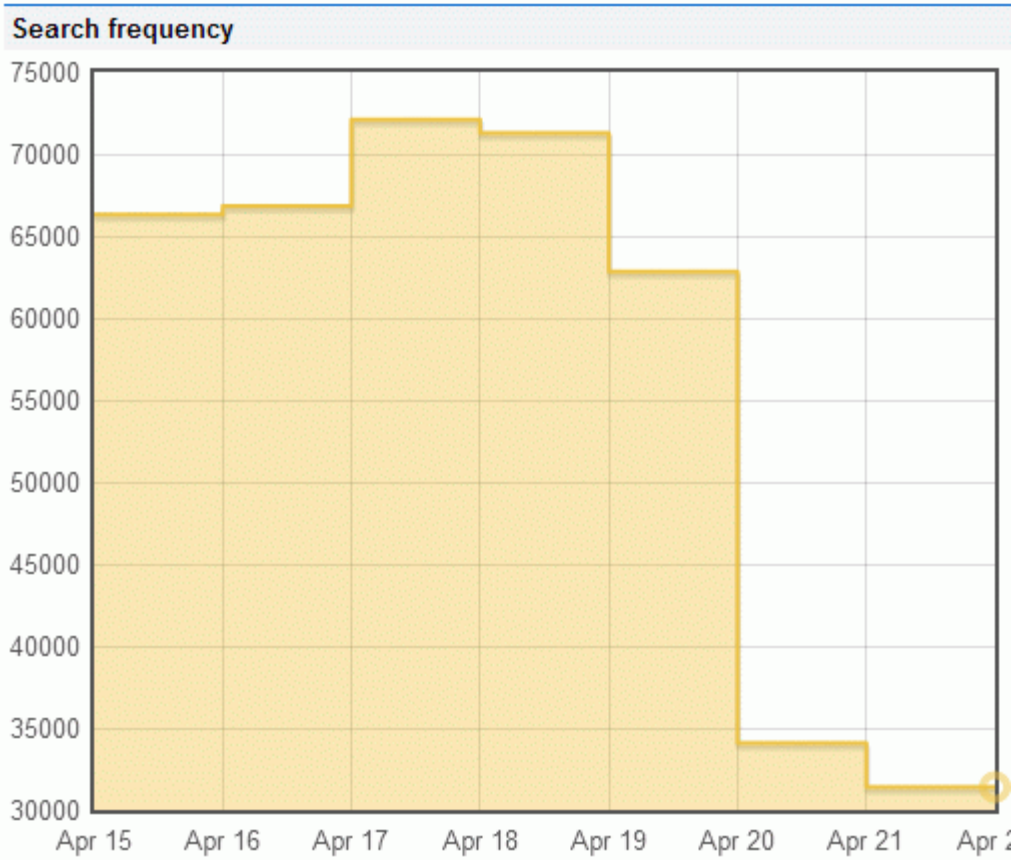
INSPIRE usage is global



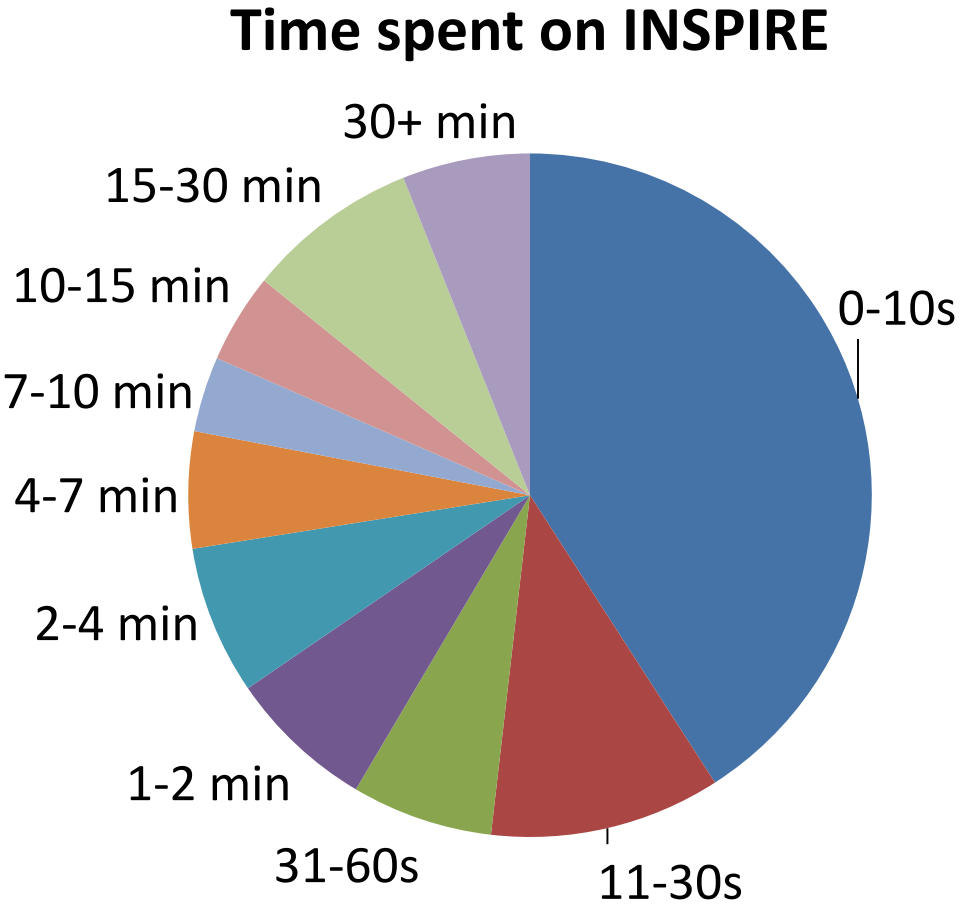
May 2013 visits

busy day = 70,000+ searches

searches/month:
~ 1,540,000



INSPIRE “live” 2013



From and for the community

- Built by the community
- Continuous observation of usage
- Feedback about services & community needs
- Continuous adaptation in response
  - Facilitate more user input
  - **Author-centric layer**
  - Crowdsourcing
  - **Research data integration**

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AUTHOR SERVICES

Welcome to INSPIRE, the High Energy Physics information system. Please direct questions, comments or concerns to feedback@inspirehep.net.

Ellis, Jonathan Richard (956 papers relevant to High Energy Physics)

This is me. Verify my publication list.

Name variants

Ellis, Jonathan Richard (1)
Ellis, Jonathan R. (2)
Ellis, John.R. (1)
Ellis, John R. (842)
Ellis, John (72)
Ellis, J.R. (12)
Ellis, J. (25)
Ellis, J (1)

Papers

	All papers	Single authored
All papers	956	234
Book	2	0
ConferencePaper	233	158
Introductory	21	19
Lectures	46	36
Published	626	54
Review	105	72
Thesis	1	1
Proceedings	16	0

Affiliations

CERN (849)
SLAC (32)
King's Coll. London

Collaborations

CPLEAR Collaboration (3)
ILC Collaboration (2)
CHEEP Study Groups (1)

Citations (from papers in INSPIRE):

Citations summary

Generated on 2013-06-25

956 papers found, 781 of them citeable (published or arXiv)

Citation summary results	Citeable papers	Published only
Total number of papers analyzed:	781	626
Total number of citations:	57,070	54,295
Average citations per paper:	73.1	86.7
Breakdown of papers by citations:		
Renowned papers (500+)	12	12
Famous papers (250-499)	40	39

Citation summary

Citation summary results	Citeable papers	Published only
Total number of papers analyzed:	781	626
Total number of citations:	57,070	54,295
Average citations per paper:	73.1	86.7
Breakdown of papers by citations:		
Renowned papers (500+)	12	12
Famous papers (250-499)	40	39
Very well-known papers (100-249)	110	104
Well-known papers (50-99)	133	126
Known papers (10-49)	269	236
Less known papers (1-9)	171	97
Unknown papers (0)	46	12
h_{HEP} index [?]	122	120

See additional metrics

Exclude self-citations or RPP

Warning: The citation search should be used and interpreted with great care. Read the fine print

Citation summary - expanded

Citesummary excluding self-citations or RPP citations

Generated on 2013-06-26

956 papers found, 781 of them citeable (published or arXiv)

Citation summary results	Citeable papers	Citeable papers excluding self cites	Citeable papers excluding RPP	Published only	Published only excluding self cites	Published only excluding RPP
Total number of papers analyzed:	781	781	781	626	626	626
Total number of citations:	57,070	47,817	57,070	54,295	45,425	54,295
Average citations per paper:	73.1	61.2	73.1	86.7	72.6	86.7
Breakdown of papers by citations:						
Renowned papers (500+)	12	10	12	12	10	12
Famous papers (250-499)	40	29	40	39	28	39
Very well-known papers (100-249)	110	88	110	104	83	104
Well-known papers (50-99)	133	119	133	126	112	126
Known papers (10-49)	269	272	269	236	245	236
Less known papers (1-9)	171	208	171	97	132	97
Unknown papers (0)	46	55	46	12	16	12
h_{HEP} index [?]	122	113	122	120	110	120

Back to citesummary

Hybrid approach to author disambiguation

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Attribute papers for: J.R.Ellis.1

Navigation: Run paper attribution for another author

Names variants:

Ellis, J. (26); Ellis, J. R. (12); Ellis, John (72); Ellis, John R. (843); Ellis, Jonathan R. (2); Ellis, Jonathan Richard (1);

Papers (956) | Papers removed from this profile (1)

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

Search:

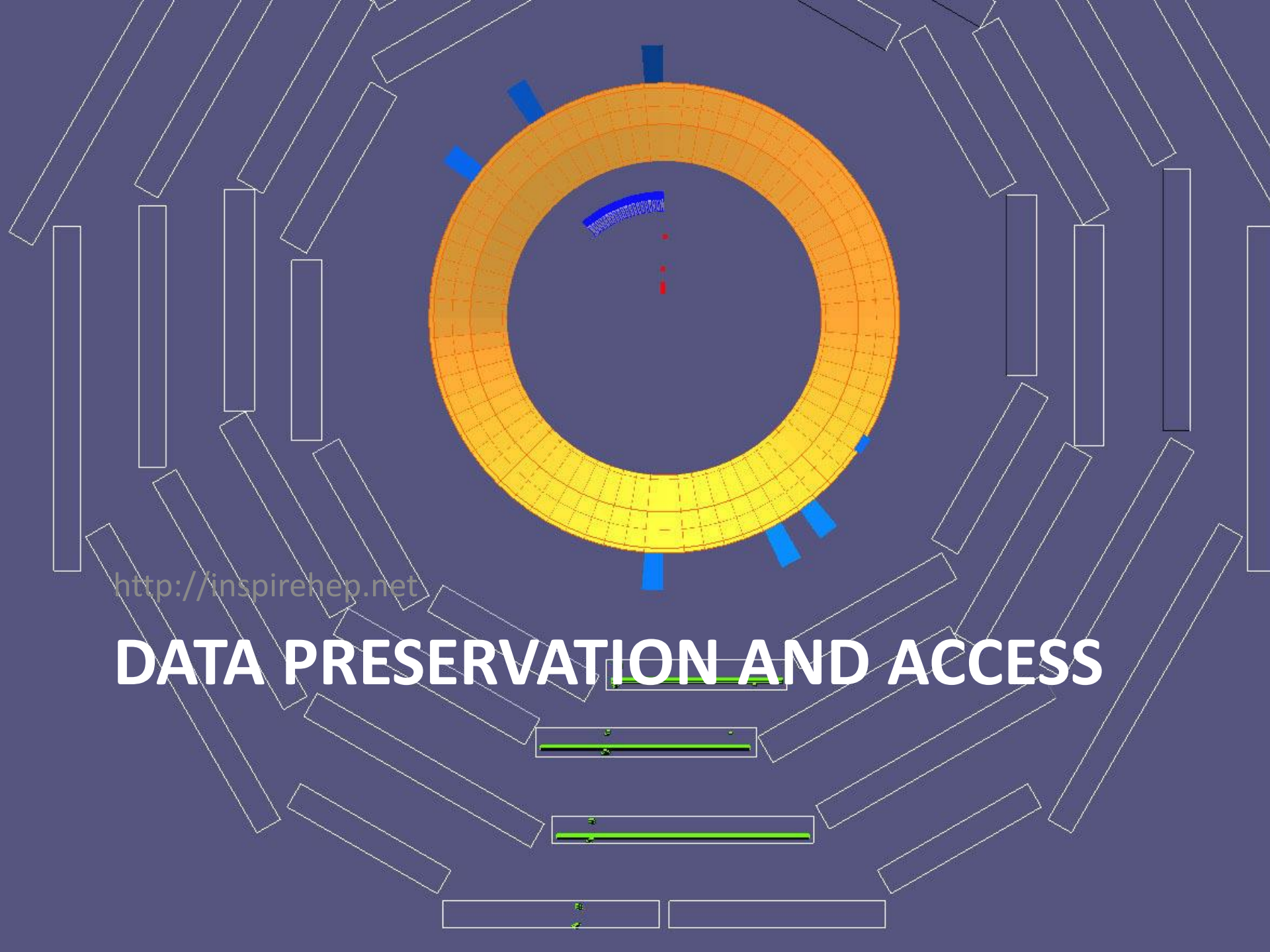
Paper Short Info	Author Name	Affiliation	Date	Experiment	Actions
1. **Physics at the CLIC multi-TeV linear collider** CLIC Physics Working Group Collaboration (E. Accomando (INFN, Turin) *et al.*).	Ellis, J.	CERN	2004-06	N.A.	Marked as this person's paper But it's *not* this person's paper. Assign to another person
2. **Physics at a future Neutrino Factory and super-beam facility** ISS Physics Working Group Collaboration (A. Bandyopadhyay (Harish-Chandra Res. Inst.) *et al.*).	Ellis, J.	CERN	2007-10	N.A.	Marked as this person's paper But it's *not* this person's paper. Assign to another person
3. **The Probable Fate of the Standard Model** J. Ellis (CERN), J.R. Espinosa (CERN & ICREA, Barcelona), G.F. Giudice, A. Hoecker (CERN), A.	Ellis, J.	CERN	2009-07	N.A.	Marked as this person's paper But it's *not* this person's paper.

Crowdsourcing

- Authors are invited to “claim” their publications on INSPIRE
- Already active flow of input from authors and readers, currently focused on articles and references
  - Corrections
  - Additions
- Expanding and improving these features is a strategic focus

ORCID

- Relevant: Global HEP community with lots of interactions with adjacent fields
- On INSPIRE: implementation on author page
  - Connect all HEP materials with your ORCID
  - Show records registered with ORCID on INSPIRE
- ORCID-Datacite interoperability in focus to connect authors and data better [ODIN-Project]



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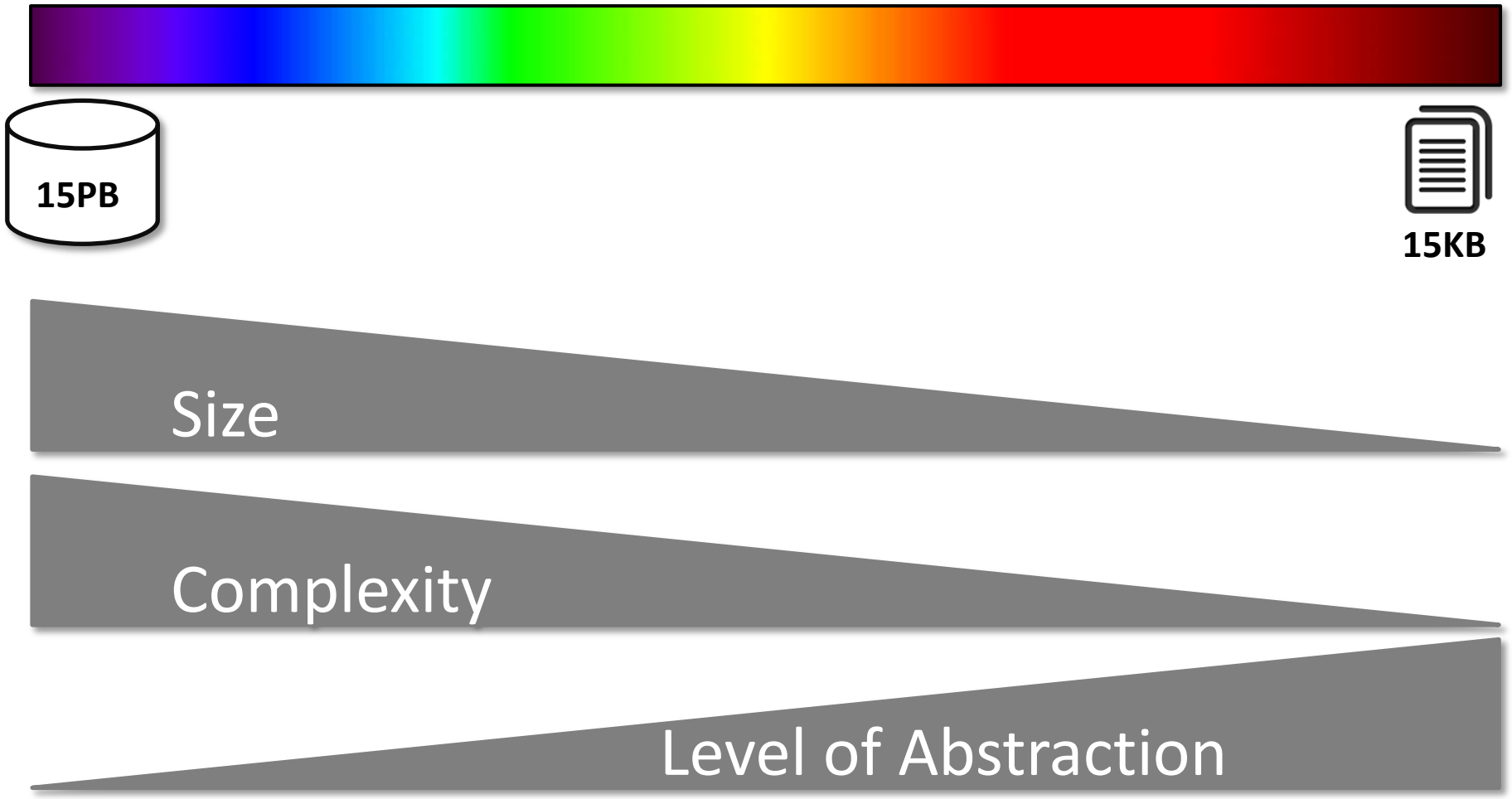
DATA PRESERVATION AND ACCESS

Spectrum of Research Data in HEP



INSPIRE supports research data

- Data linked to articles or “standalone”
  - plots, images, tables
  - data files, relevant code snippets
  - fulltext documents (PDF, latex, etc.)
- Data can be assigned DOIs by INSPIRE
  - this makes the data citeable!
  - file size limit: "within reason" to support reuse

Data integration on INSPIRE

http://inspirehep.net/record/849050

DOI Service

INSPIRE HEP

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Information | References | Citations | Files | Plots | HepData

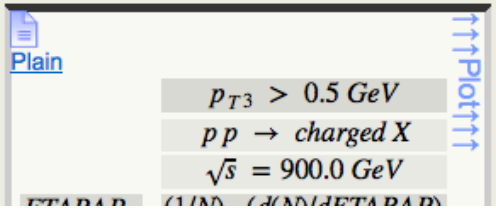
Charged-particle multiplicities in pp interactions at $\sqrt{s} = 900$ GeV measured with the ATLAS detector at the LHC - ATLAS Collaboration (Aad, G. *et al.*) Phys.Lett. B688 (2010) 21-42 arXiv:1003.3124 [hep-ex] CERN-PH-EP-2010-004

THIS DATA COMES FROM THE DURHAM HEPDATA PROJECT

SUMMARY:

Comments: Average value of charged particle multiplicity per event and unit of pseudorapidity in the pseudorapidity range from -0.2 to 0.2.

DOI: 10.7484/INSPIREHEP.DATA.AK5E.37XJ



Data Collection (Mockup)

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Data Search

High-Energy Physics Data

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

Search Advanced Search

None

How to Search

SPIRES syntax is (mostly) supported (requires "find")

find a richter
find cn ATLAS and date > 2012
find cn CMS and refers to a witten

New techniques:

citedby:author:ellis -refersto:author:witten

Additional Help:

More search tips and full help

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Reviews
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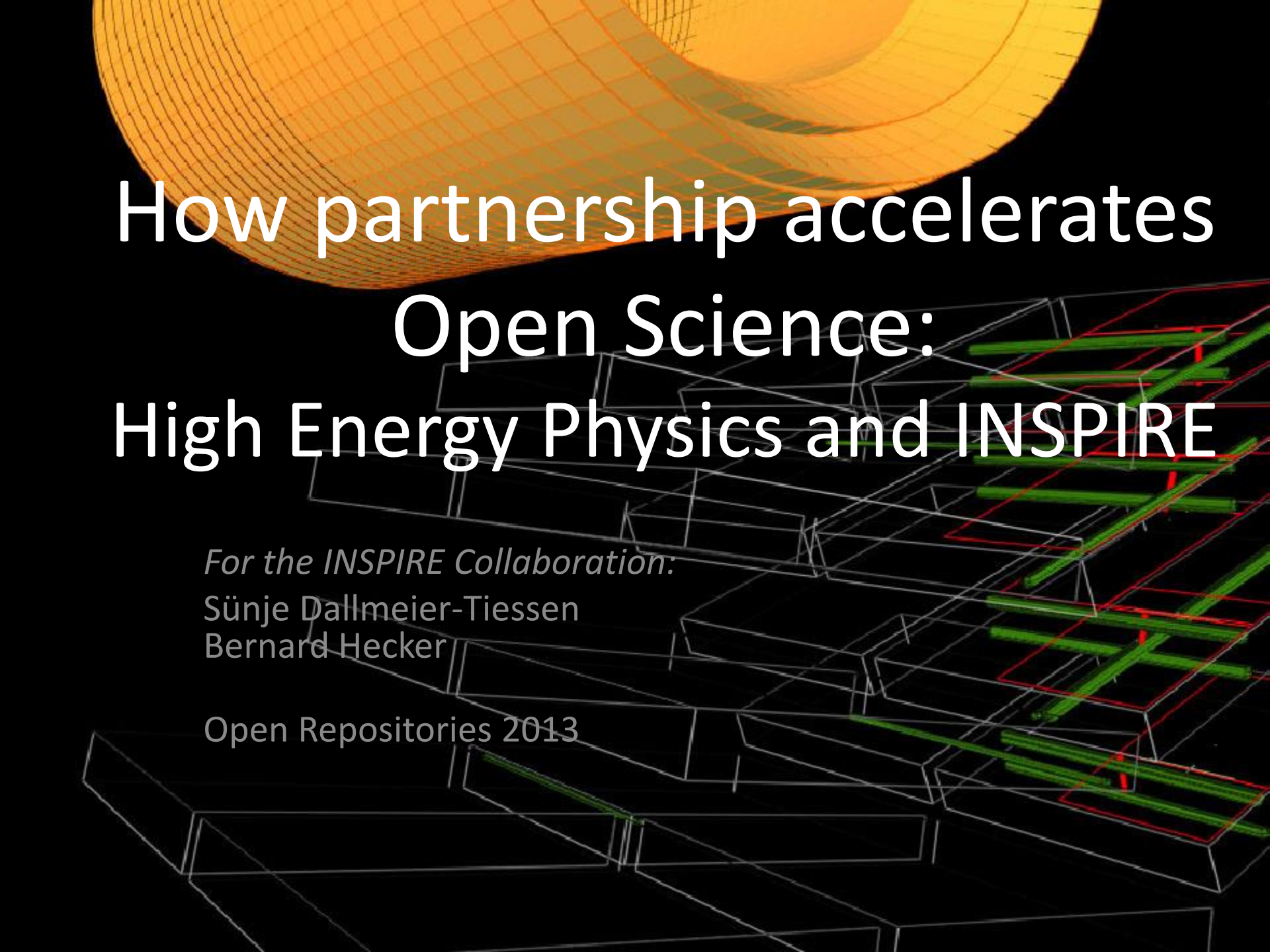
arXiv
HepData
International Lattice Data Grid



How partnership accelerates Open Science: High Energy Physics and INSPIRE

For the INSPIRE Collaboration:
Sünje Dallmeier-Tiessen
Bernard Hecker

Open Repositories 2013