



# The CERN Scientific Information Service presented in a few minutes

*Open access to literature and data*

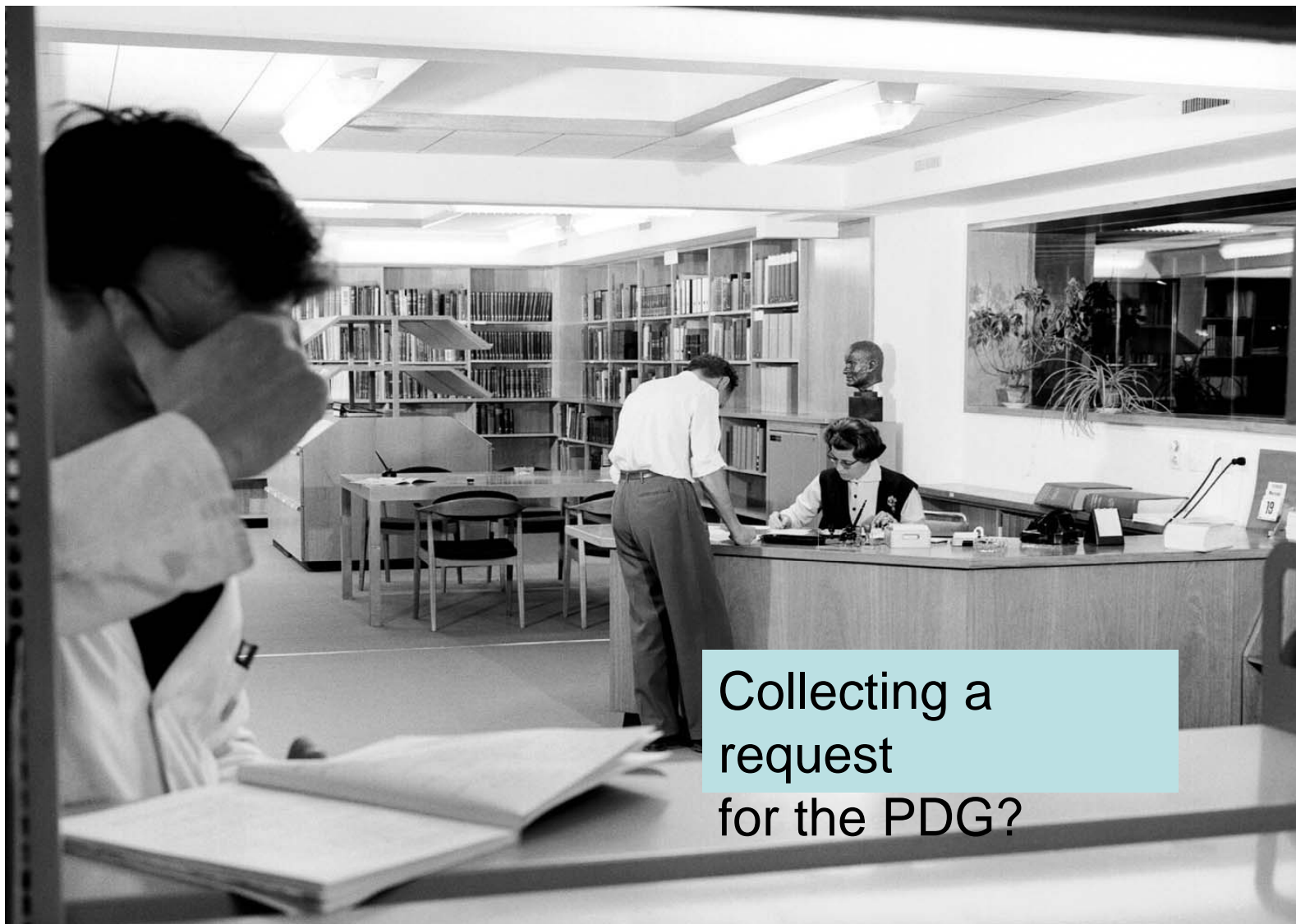
Jens Vigen

10 October 2008

PDG Collaboration Meeting, CERN



# Librarians...



Collecting a  
request  
for the PDG?



## RPP 1957 -2008 online

-Some doi-linking  
problems are known

- Not all versions are  
Open Access

-The very first  
UCRL/8030 is still  
missing

# Review of Particle Physics

## Description

The 2008 Review summarizes much of particle physics. Using data from previous editions, plus 2778 new measurements from 645 papers, we list, evaluate, and average measured properties of gauge bosons, leptons, quarks, mesons, and baryons. We also summarize searches for hypothetical particles such as Higgs bosons, heavy neutrinos, and supersymmetric particles. All the particle properties and search limits are listed in Summary Tables. We also give numerous tables, figures, formulae, and reviews of topics such as the Standard Model, particle detectors, probability, and statistics. Among the 108 reviews are many that are new or heavily revised including those on CKM quark-mixing matrix,  $V_{ud}$  &  $V_{us}$ ,  $V_{cb}$  &  $V_{ub}$ , top quark, muon anomalous magnetic moment, extra dimensions, particle detectors, cosmic background radiation, dark matter, cosmological parameters, and big bang cosmology. A booklet is available containing the Summary Tables and abbreviated versions of some of the other sections of this full Review. All tables, listings, and reviews (and errata) are also available on the Particle Data Group website: <http://pdg.lbl.gov>.

## Complete collection

Hard copy available in the CERN Library Reference Collection:

- **Review of Particle Physics 2008**  
*C. Amsler et al., Phys. Lett., B 667 (2008) 1-1340*
- **Review of Particle Physics 2006**  
*W.-M. Yao et al., J. Phys., G 33 (2006) 1-1232*
- **Review of Particle Physics 2004**  
*S. Eidelman et al., Phys. Lett., B 592 (2004) 1-1109*
- **Review of Particle Physics 2002**  
*K. Hagiwara et al., Phys. Rev., D 66 (2002) 010001*
- **Review of Particle Physics 2000**  
*D. E. Groom et al., Eur. Phys. J., C 15 (2000) 1-878*
- **Review of Particle Physics 1998**  
*C. Caso, et al., Eur. Phys. J., C 3 (1998) 1-794*
- **Review of Particle Physics 1996**  
*R. M. Barnett et al., Phys. Rev., D 54 (1996) 1-708*
- **Review of Particle Properties 1994**  
*L. Montanet et al., Phys. Rev., D 50 (1994) 1173-1826*
- **Review of Particle Properties 1992**  
*K. Hikasa et al., Phys. Rev., D 45 (1992) S1-S574*
- **Review of Particle Properties 1990**  
*J. J. Hernández et al., Phys. Lett., B 239 (1990) 1-516*
- **Review of Particle Properties 1988**  
*G. P. Yost et al., Phys. Lett., B 204 (1988) 1-486*
- **Review of Particle Properties 1986**  
*M. Aguilar-Benítez et al., Phys. Lett., B 170 (1986) 1-350*
- **Review of Particle Properties 1984**  
*C. G. Wohl et al., Rev. Mod. Phys. 56 (1984) S1-S304*
- **Review of Particle Properties 1982**  
*M. Roos et al., Phys. Lett., B 111 (1982) 1-294*
- **Review of Particle Properties 1980**  
*C. Bricman et al., Rev. Mod. Phys. 52 (1980) S1-S286*
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- **Review of Particle Properties 1976**  
*T. G. Trippe et al., Rev. Mod. Phys. 48 (1976) S1-S245*
- **Review of Particle Properties 1974**  
*V. Chaloupka et al., Phys. Lett., B 50 (1974) 1-198*
- **Review of Particle Properties 1973**  
*T. A. Lasinski et al., Rev. Mod. Phys. 45 (1973) S1-S175*
- **Review of Particle Properties 1972**  
*P. Söding et al., Phys. Lett., B 39 (1972) 1-145*
- **Review of Particle Properties 1971**  
*A. Rittenberg et al., Rev. Mod. Phys. 43 (1971) S1-S150*
- **Review of Particle Properties 1970 Aug.**  
*M. Roos et al., Phys. Lett., B 33 (1970) 1-127*
- **Review of Particle Properties 1970 Jan.**  
*A. Barbaro-Galieri et al., Rev. Mod. Phys. 42 (1970) 87-200*
- **Review of Particle Properties 1969**  
*N. Barash-Schmidt et al., Rev. Mod. Phys. 41 (1969) 109-192*
- **Review of Particle Properties 1968 Aug.**  
*N. Barash-Schmidt et al., [UCRL-8030-Pt-1-Rev]*
- **Review of Particle Properties 1968 Jan.**  
*A. H. Rosenfeld et al., Rev. Mod. Phys. 40 (1968) 77-128*
- **Data on particles and resonant states 1967**  
*A. H. Rosenfeld et al., Rev. Mod. Phys. 39 (1967) 1-51*
- **Data on particles and resonant states 1966**  
*A. H. Rosenfeld et al., 13th International Conference on High-energy Physics*
- **Input data, references, and notes 1966 Aug.**  
*A. H. Rosenfeld et al., UCRL-8030-Rev*
- **Data on particles and resonant states 1965**  
*A. H. Rosenfeld et al., Rev. Mod. Phys. 37 (1965) 633-651*
- **Data on elementary particles and resonant states 1964**  
*A. H. Rosenfeld et al., Rev. Mod. Phys. 36 (1964) 977-1004*
- **Data on elementary particles and resonant states 1964**  
*M. Roos et al., Nucl. Phys. 52 (1964) 1-24*
- **Data on elementary particles 1963**  
*W. H. Barkas et al., [UCRL-8030]*
- **Tables on elementary particles and resonant states 1963**  
*M. Roos et al., Rev. Mod. Phys. 35 (1963) 314-323*
- **Data for elementary-particle physics 1961**  
*W. H. Barkas et al., [UCRL-8030]*
- **Data for elementary-particle physics 1958**  
*W. H. Barkas et al., [UCRL-8030-Rev]*
- **Hyperons and heavy mesons : systematics and decay 1957**  
*M. Gell-Mann et al., Annu. Rev. Nucl. Sci. 7 (1957) 407-478*
- **Data for elementary-particle physics 1957**  
*W. H. Barkas et al., [UCRL-8030]*

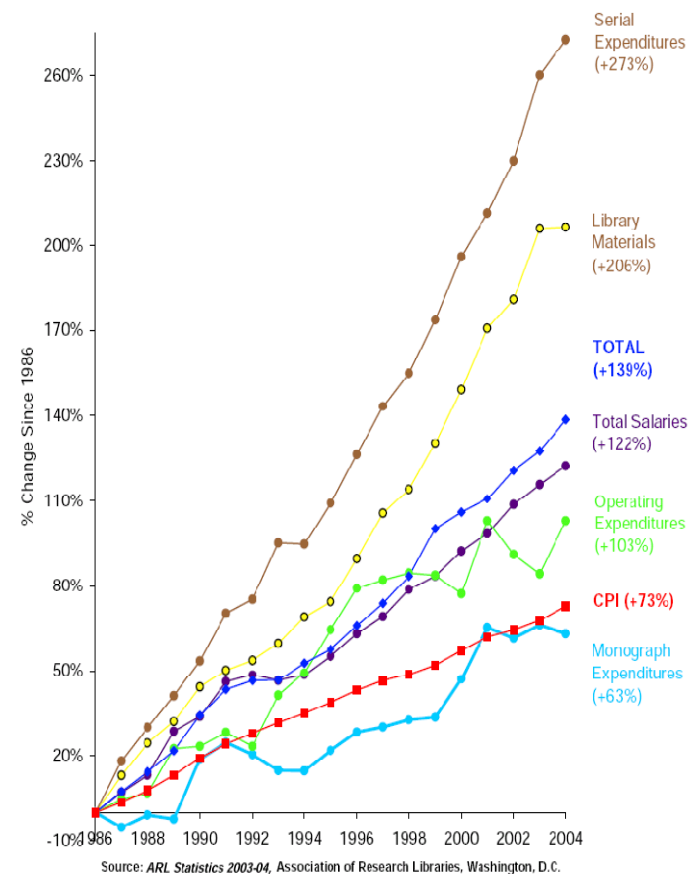
## A young and dynamic team

- 17 staff members
- 5 apprentices
- 1 external
- 6 students



## ... budgeted on a shoestring

- 750 K CHF Journals
- 100 K CHF Books
- 100 K CHF Database access
- Total 2006: 1,24 M CHF





## Open Access project: SCOAP<sup>3</sup>

As a natural extension of its mission in “accelerating Science”, CERN took the lead towards a new way to disseminate scientific results

Open Access: make Science free to read for everyone, anywhere and anytime

LHC experiments strongly support Open Access principles and publishing in Open Access journal

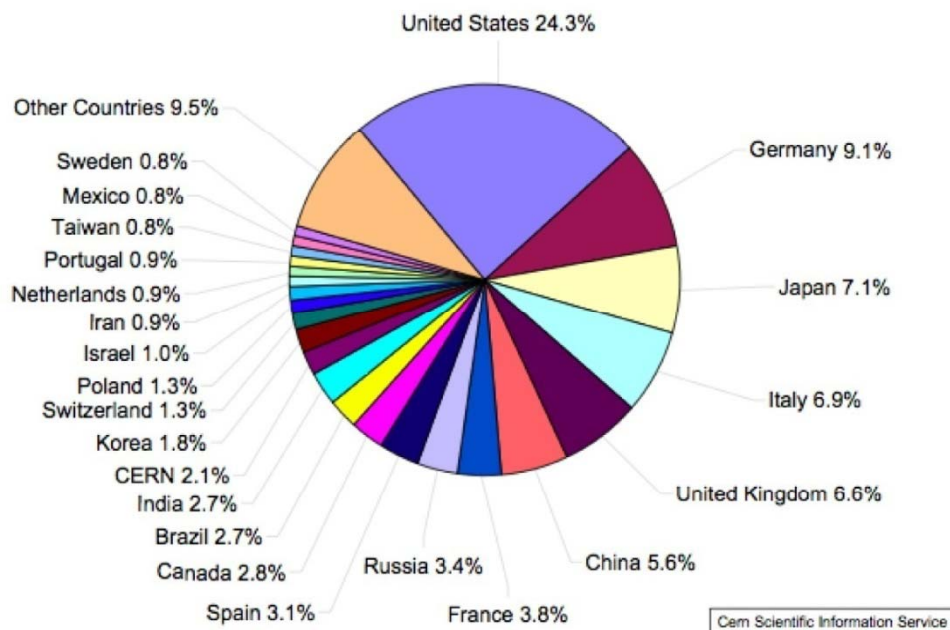
Some scientific journals today are so expensive to be effectively beyond reach. Still they are needed by the community for evaluation, grants, careers

SCOAP<sup>3</sup>: convert high-quality HEP journal to Open Access and re-organise and control the costs of scientific publishing through a call for tender



## Costs and Challenge in Open Access

**Open Access and peer-review price-tag for the worldwide HEP community: 10M€/year (CERN share: 2%) (Member States: 40%) (United States: 25%)**



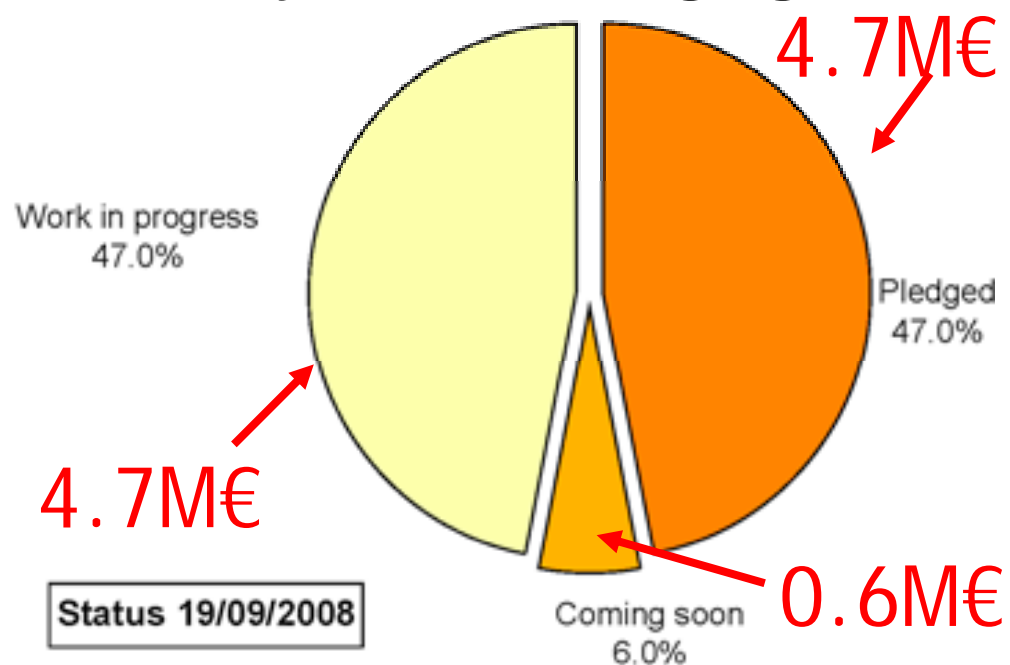
**Challenge:**  
**Overcome the inertia of 350 years of tradition on the timescale of the LHC physics results**

**Each country contributes in proportion to its HEP production, re-directing funds currently used to purchase journals**



# SCOAP<sup>3</sup> fund-raising

**In one year over 50% of funds pledged or about to be pledged by HEP funding agencies, laboratories, libraries**



Austria	Italy
Belgium	Netherlands
CERN	Norway
Denmark	Romania
France	Slovakia
Germany	Sweden
Greece	JISC (UK)
Hungary	

47 US partners (>50%)

Australia

Turkey

**Discussions in progress with all countries not yet in the list, in the Member States, Asia and the Americas**

**Success only through unanimity, beyond majority**

**Imminent transition from fund-raising phase to an executive phase, set up a governing board and launch a call for tender**



Unification of HEP literature in all forms.

Author names, etc standardized with ID.

New standardized taxonomy organizes the literature.

Web 2.0 harnesses willing scientists.

Putting resources in common to advance the common good, publishers, Inspire, ADS and arXiv work together, develop synergies to present the scientific literature to the community.

Continued collaboration with the PDG

Future plans evolve with the HEP community.



# Preserving HEP data?

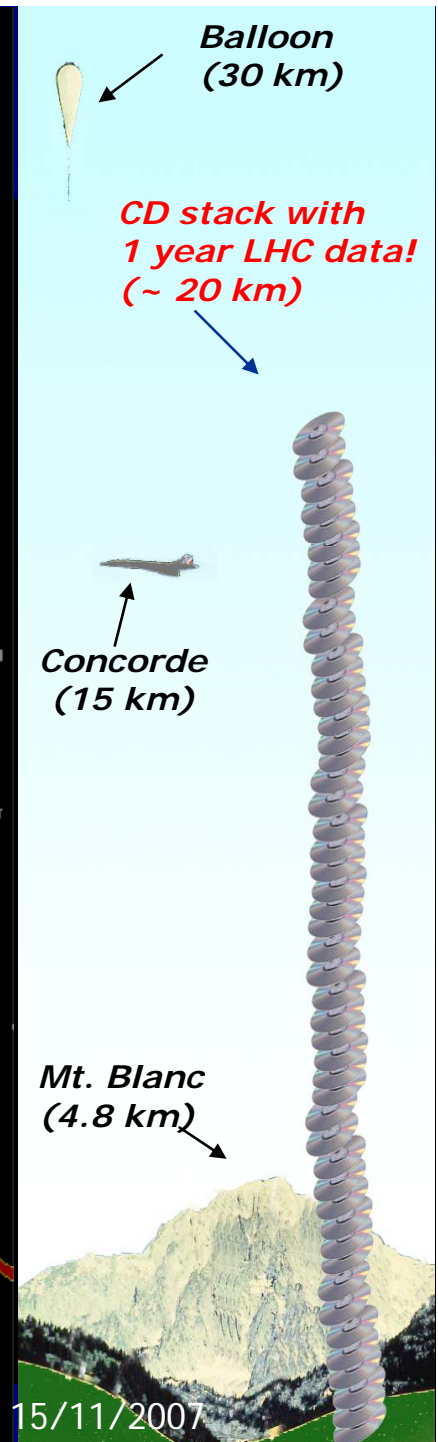
The HEP data model is highly complex. Data are traditionally not re-used as in Astronomy or Climate science.

Raw data → calibrated data → skimmed data → high-level objects → physics analyses → results.

All of the above duplicated for *in-silico* experiments, necessary to interpret the highly-complex data.

Final results depend on the grey literature on calibration constants, human knowledge and algorithms needed for each pass...oral tradition!

Years of training for a successful analysis



*Support Action*

(arm of the “Alliance for Permanent Access”)

(STFC, DNB, KB, MPG, CERN, STM, ...)

1.25 million Euros over 2 years

0.25 million Euros for CERN

- “Insight” into Permanent Access to the Records of Science
- Start thinking how to go past preprints and articles
- “How to archive, index, curate and make OA research data ?”
- Hire 1 (or 2) young physicists part-time with the group
- Hire 1 senior person for a few months
- Run a survey in the HEP community
- Organise 1 or 2 workshops



## How to find us

- Central Library: 52-1-52
- Phone: 72444
- Web site: <http://library.cern.ch>
- Email: [library.desk@cern.ch](mailto:library.desk@cern.ch)
  
- Open 24h/24h, 7days/7days, 52 weeks/52 weeks