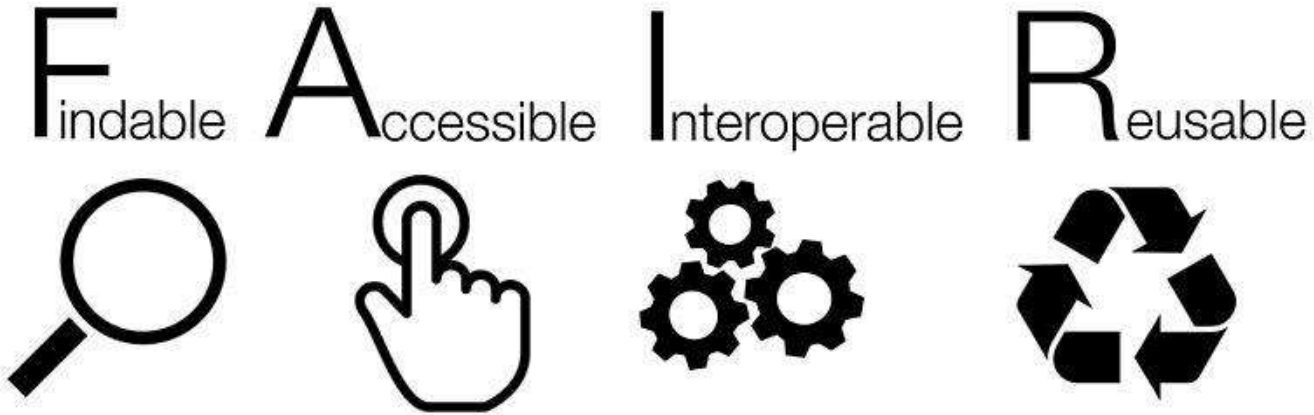
# Risk aversion narrows the future of libraries

Jens Vigen, CERN
Kristin Antelman, Caltech

# Let’s jump ahead 20 years …

How are researchers working?

# Open is the Default



# Where will libraries be?

# Library A "We've always been innovative!"

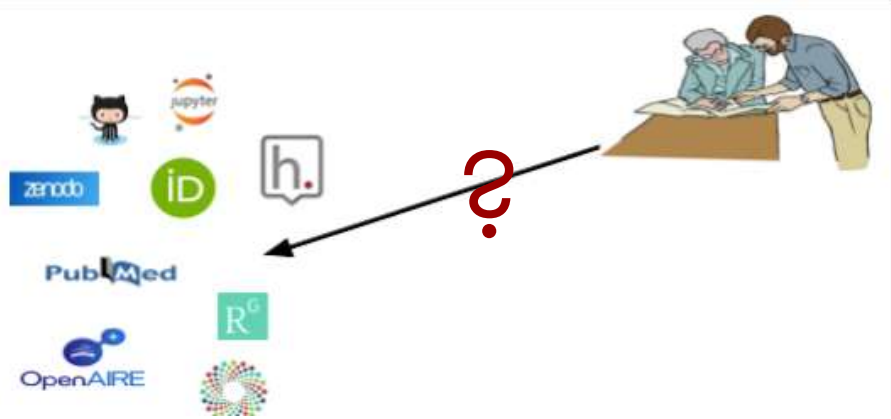
OPAC!

Ejournals!

Learning Commons!

"And we still support print…"

"Real research begins at the library…"



# Library B took a different approach

- It internalized a researcher-first mindset
- It transformed itself by letting innovators in its own institution show the way
- It hired and rewarded people who were excited by that opportunity, had good and new ideas, and the skills to turn them into library services.

Library B dared to have a vision…
and to follow through with it.

# CERN
## European Organization for Nuclear Research

- The world leading high-energy physics laboratory
- 2500 staff (mostly engineers)
- 11,000 users (mostly physicists)
- Operating the 27-km LHC accelerator
- Observed the first scalar boson in July 2012

**The CERN Convention (1953) contains what is effectively an early Open Access manifesto:**

***"… the results of its experimental and theoretical work shall be published or otherwise made generally available"***

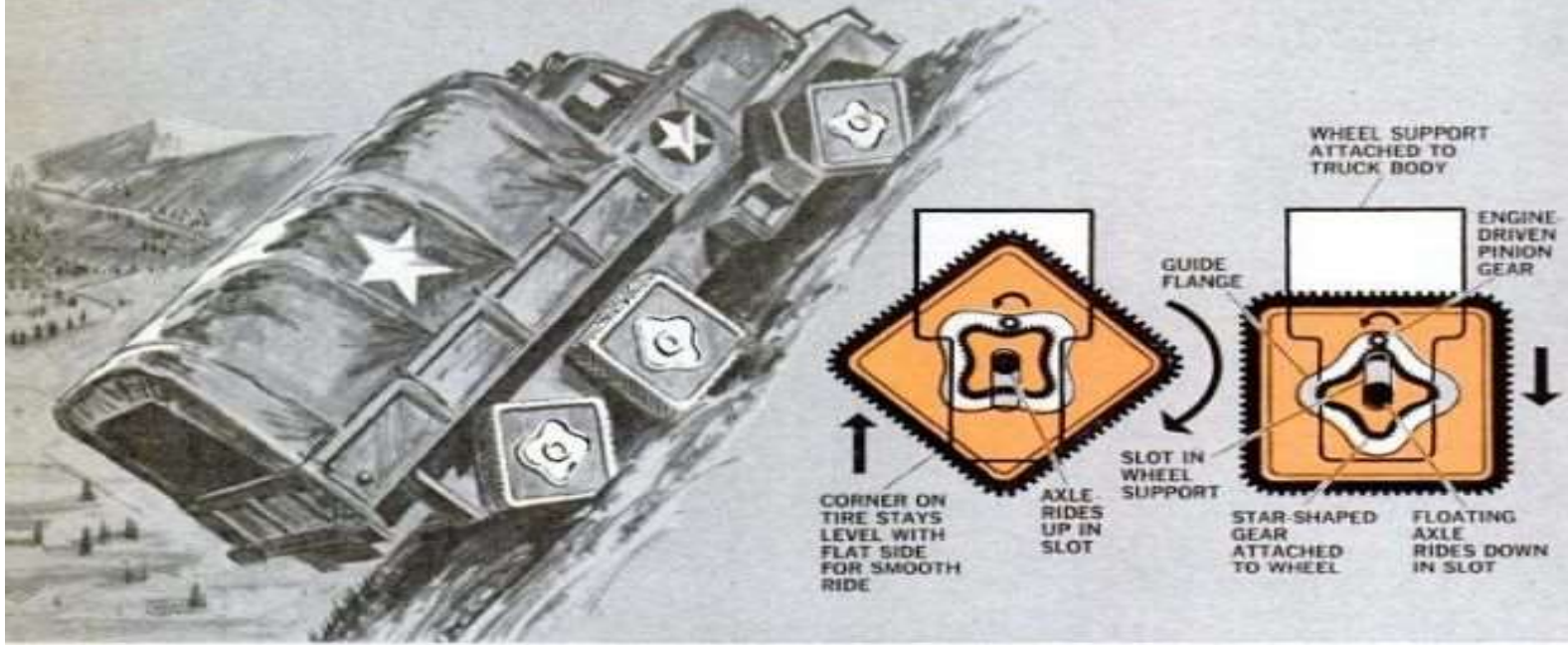
# The library is built on a solid tradition

# … always aiming for innovation

# Just patented

## PM'S PICK OF THE NEW INVENTIONS

**Prepared in cooperation with Roger S. Shashoua, Director, International Inventors Assn., Inc.**

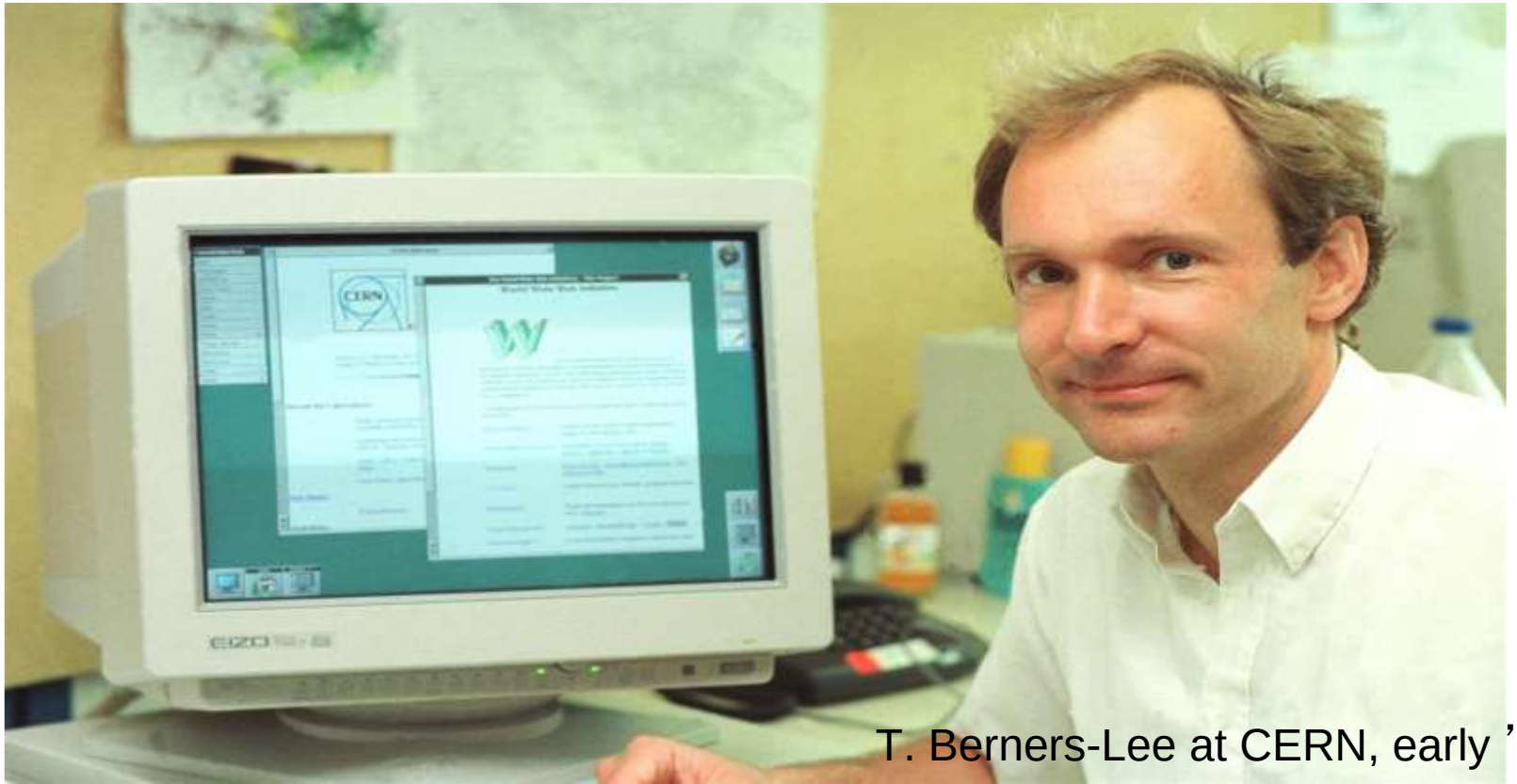



**1. SQUARE WHEELS WORK BETTER** than round ones in this system for use on rough terrain. The sharp-cornered treads dig in on snow, mud, sand or steep grades, providing increased traction for trucks, tanks and other military vehicles. At the same time, ingenious self-leveling geometry provides a smooth ride on even surfaces. Each wheel is driven by a pinion gear engaging a star-shaped ring gear. Mounted on a floating axle, the wheel automatically rides upward as the corners approach the ground and downward as the flat segments come around. This produces the effect of a round wheel with all parts of the tread equidistant to the ground, thus permitting the use of high speeds on a level terrain

# 1983: a major step forward
# an electronic catalogue in the CERN Library

# 7 years later (1990)
# a new electronic catalogue, but what about the WWW?

# One floor below sat a man with thoughts around "information management"




T. Berners-Lee at CERN, early ’90s

Vague but exciting ...

CERN DD/OC

Information Management: A Proposal

Tim Berners-Lee, CERN/DD

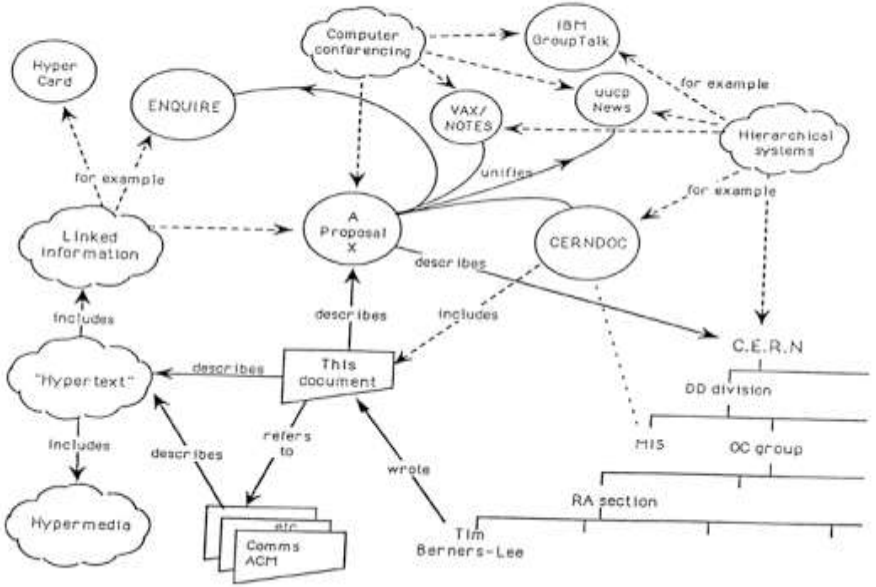
March 1989

# Information Management: A Proposal

**Abstract**

This proposal concerns the management of general information about accelerators and experiments at CERN. It discusses the problems of loss of information about complex evolving systems and derives a solution based on a distributed hypertext sytstem.

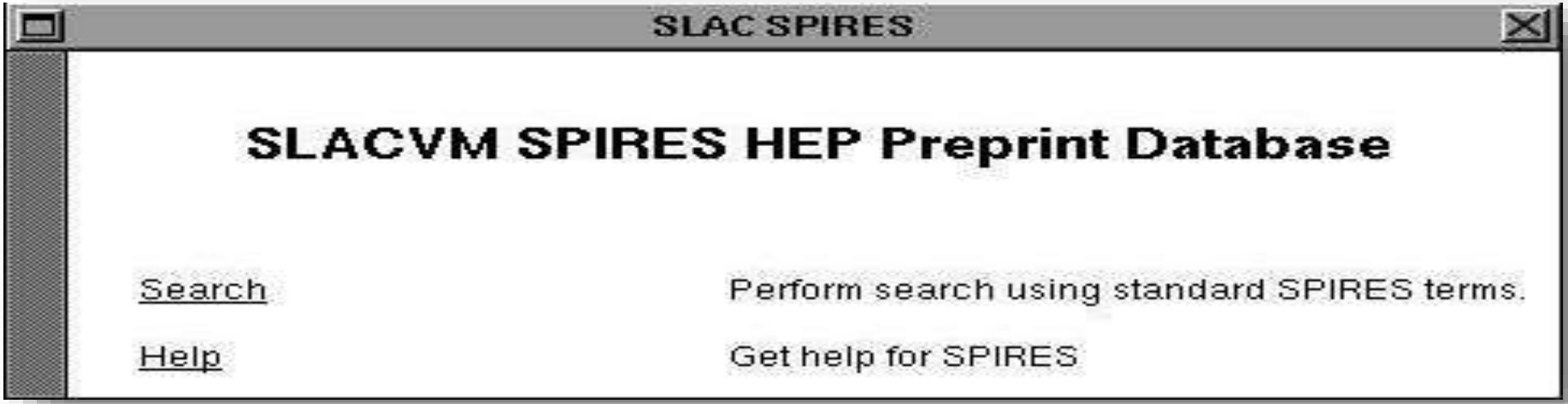
Keywords: Hypertext, Computer conferencing, Document retrieval, Information management, Project control



What was the first website in the U.S.?

*No prophet is accepted in his own country …*

SPIRES : a library catalogue




The service became “the killer application” of the new WWW,
it was run from Stanford, CA, USA, accessible via a W3 line mode browser

Date: Fri, 13 Dec 91 17:55:53 GMT+0100
From: timbl (Tim Berners-Lee)
Message-Id: <9112131655.AA11835@ nxoc01.cern.ch >
To: www-interest, www-talk
Subject: WWW to SPIRES on SLACVM - Experimental
Cc: pfkeb@kaon.slac.stanford.edu (Paul Kunz)

To day a service known as

There is an experimental W3 server for the SPIRES High energy Physics preprint
database, thanks to Terry Hung, Paul Kunz and Louise Addis of SLAC. It's only just
been put up, so don't expect perfection. With the w3 line mode browser, follow a
link to it from our home page, then type for example

K FIND AUTHOR KUNZ

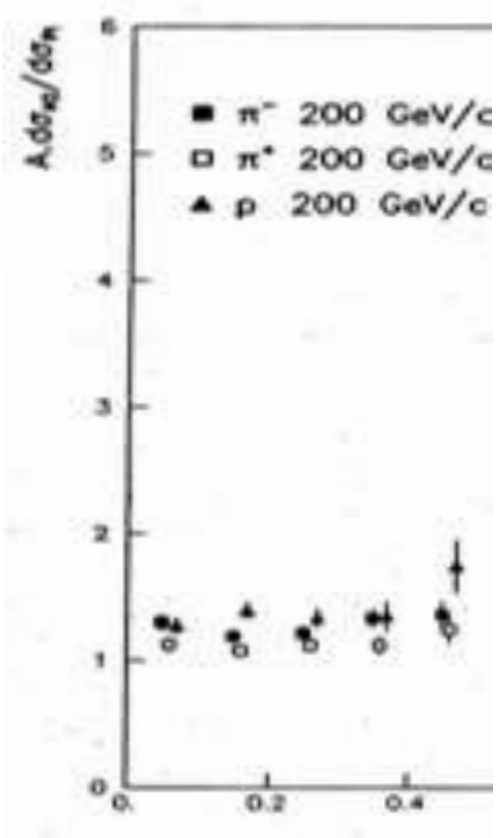
the "FIND" is necessary at the moment, though it may change later.

- Tim

To be noted:
**The "FIND" is still present 26 years later…**
(though not compulsory for making a search)
Who claimed that scientists/librarians are not conservative? ☺

Paul Kunz wrote a few days ago:

# eScience anno 2008 – and still very much the case




From: Senior CERN physicist

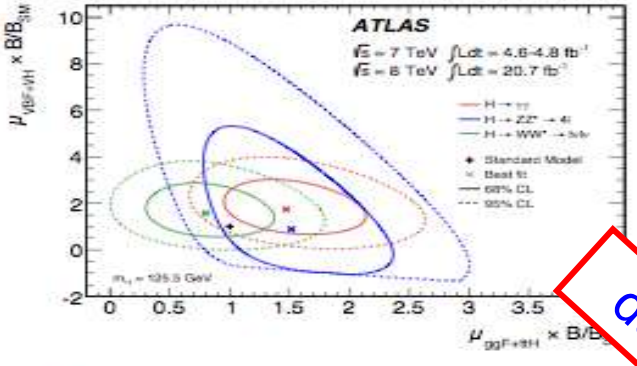
Date: March 19, 2008

To: Jens Vigen

**Subject: help with values from figure**

Dear Jens,

I need your help :-)) I need the numerical values (including errors) of a very old figure...It is from the paper Z. Phys. C 20 (1983) 101, by the NA3 experiment. It is figure 2, only the right side plot and only one of the three data sets in there, the one represented with triangles. In fact, I only want the numbers of the first points, those in the range xF= 0.0 -- 0.4.The paper exists online but the resolution is lousy and I wanted to have a good measurement of the values from the figure. My question is: could you (or one of your expert colleagues) do a high resolution scan of that figure, in the region of the four leftmost points, and send it to me as a PDF file? I will then print it and measure the values with a pencil and a ruler :-(( Thanks a lot !!!



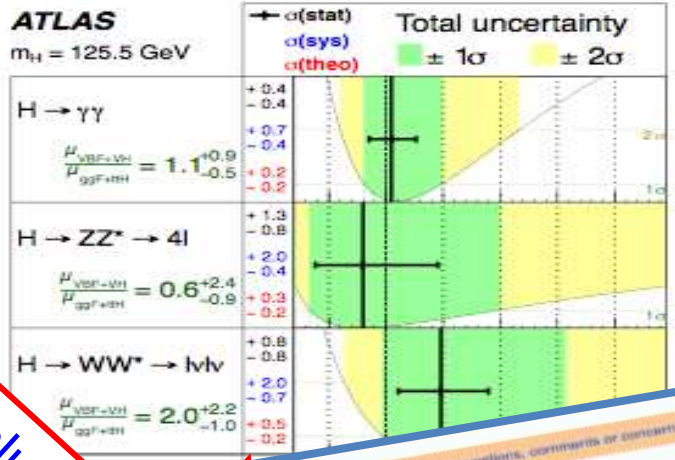




Figure 7: Likelihood contours for the $H \to \gamma\gamma$, $H \to ZZ^* \to 4\ell$ and $H \to WW^* \to \ell\nu\ell\nu$ channels in the ($\mu_{ggF+tH} \times B/B_{SM}, \mu_{VBF+VH} \times B/B_{SM}$) plane for a Higgs boson mass $m_H = 125.5$ GeV. The branching-ratio scale factors $B/B_{SM}$ can *a priori* be different for the different final states. The sharp lower edge of the $H \to ZZ^* \to 4\ell$ contours is due to the small number of events in this channel and the requirement of a positive pdf. The best fits to the data 68% (full) and 95% (dashed) CL contours SM expectation (+).

occurs
a vanish
tion in t
$H \to \tau\tau$
tivity to

*7.4. Coup*
Followi

doi for "blue graph"

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

**Data from Figure 7 from: Measurements of Higg... with the ATLAS ...**

ATLAS Collaboration (... for the collaboration)

**Cite as:** ATLAS Collaboration ( 2013 ) HepData, http://doi.org/10.7484/INSPIREHEP.DATA.RF5P.6M3K

**Description:** -2 log Likelihood for the H→ ZZ*→ 4l channel in the (μ_ggF+ttH * B/BSM ... VBF+VH * B/BSM) plane for a Higgs boson mass mH = 125.5 GeV.

**Note:** * Temporary entry *

...elements the following publication:
...production and couplings in diboson final states with the ATLAS detector at the LHC

...ion and couplings in diboson final states ...e LHC

# CERN Just Dropped 300 Terabytes of Raw Collider Data to the Internet

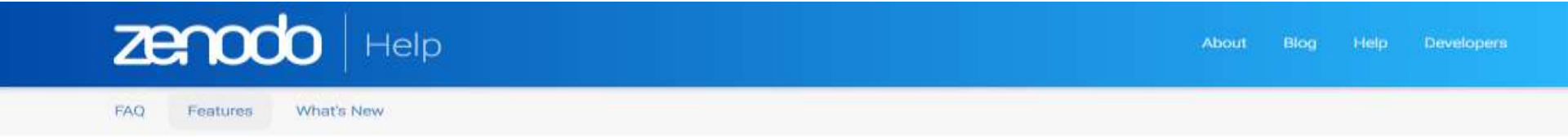
Andrew Liptak

4/23/16 5:03pm • Filed to: CERN

67.0K 72 17

Image: CERN

Share Tweet

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Citeable. Discoverable.

**— be found!**

Communities

**— create your own repository**

**Funded by**

CERN

OpenAIRE

# A scientific identity is required

ORCID Open Researcher & Contributor ID

# Assisting authors

to get an identity and enabling the local infrastructures to properly connect researchers and scientific artifacts

0137-1963-7688-2319

0243-4126-4084-6509

1792-3336-9172-961X

# A successful digital library

- A place “to look and be seen”
- Relevant services on top of good content

- One size does not fit all – get to understand your communities
- It is like building a house; if you are in the tropics you need to provide protection from the sun. It does not help to build a good heating system – even if that is what you are best at …

# Crowd sourcing book acquisition
# Who knows which book is needed?

Information | Discussion (0) | Files | Holdings

**Book**

| | |
|---|---|
| Title | **Classical mechanics : from Newton to Einstein : a modern introduction** |
| | This book at Amazon |
| Edition | 2nd ed |
| Author(s) | McCall, Martin |
| Imprint | Chichester : John Wiley & Sons, 2011. - 235 p. |
| Subject category | General Theoretical Physics |
| Abstract | This new edition of Classical Mechanics, aimed at undergraduate physics and engineering students, presents in a user-friendly style an authoritative approach to the complementary subjects of classical mechanics and relativity.   The text starts with a careful look at Newton's Laws, before applying them in one dimension to oscillations and collisions. More advanced applications - including gravitational orbits and rigid body dynamics - are discussed after the limitations of Newton's inertial frames have been highlighted through an exposition of Einstein's Special Relativity. Examples gi |
| ISBN | 9781119956129 (This book at Amazon) (electronic version)<br>9780470715727 (This book at Amazon) (print version) |

CERN library copies

1 of 4 › »
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ebook

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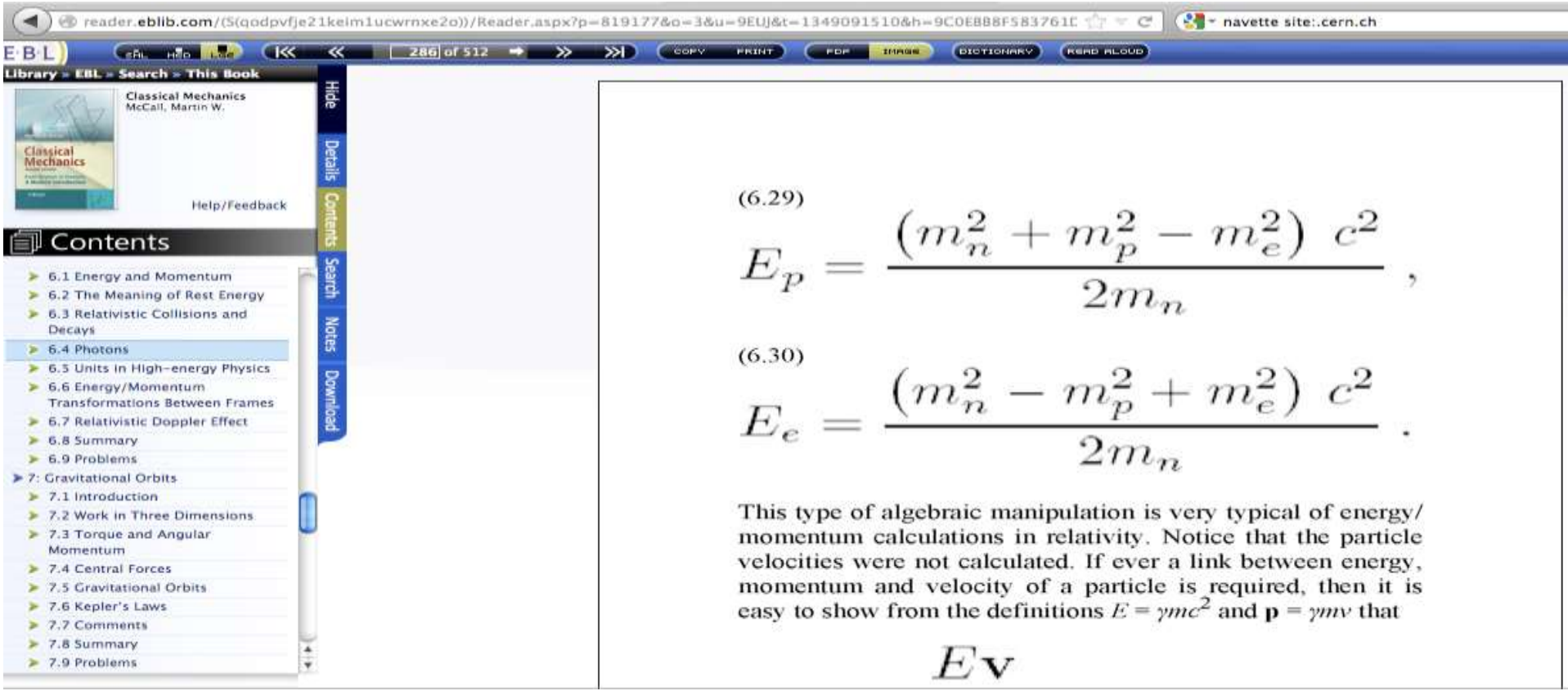
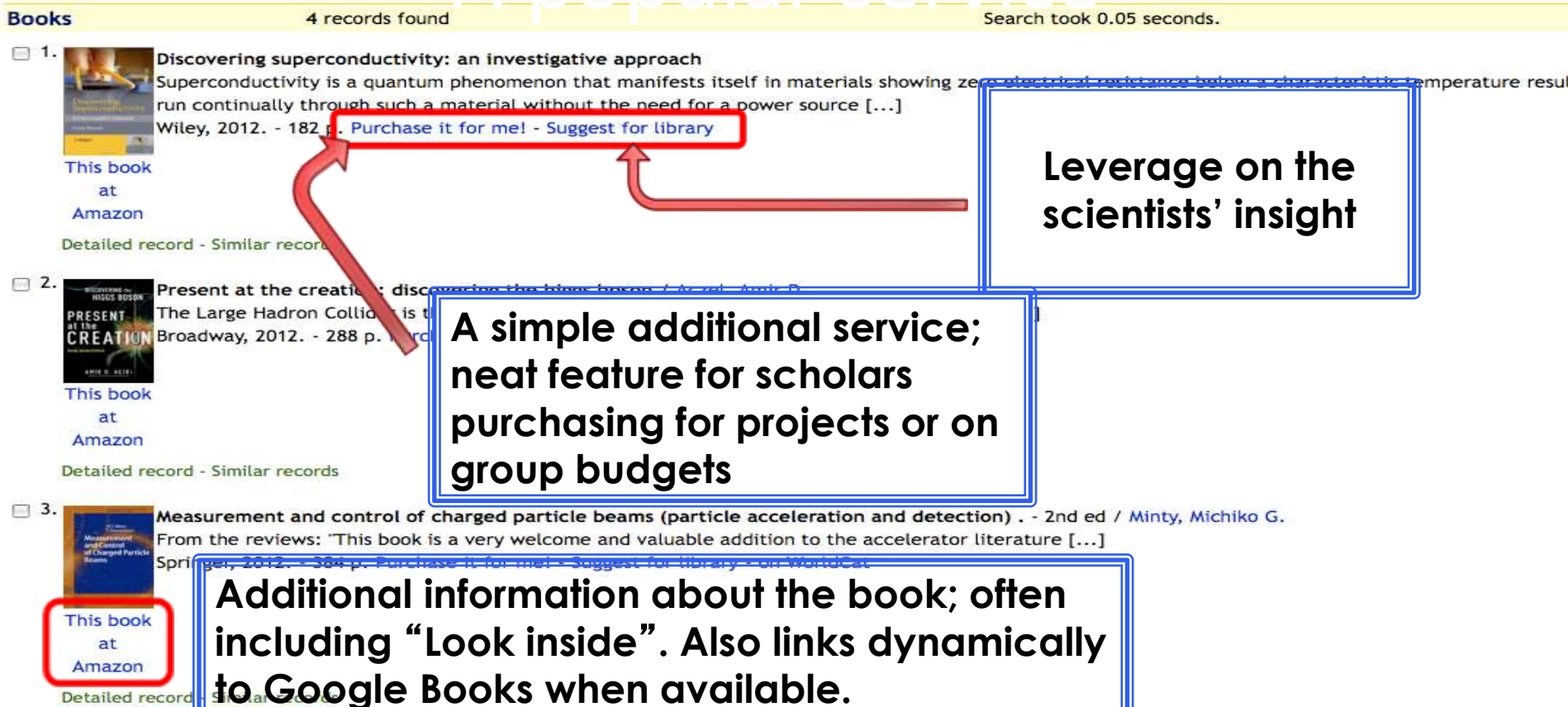
# 5 minutes browsing is for free ☺



# Patron-driven acquisition for print books



# California Institute of Technology (Caltech)

Private, research-intensive university
located in Pasadena, California

300 faculty, 600 researchers,
1000 undergraduate students,
1200 graduate students

Administers NASA's Jet
Propulsion Laboratory

# Listening to researchers

Caltech Library

# TIND ILS: a modern approach

## How to build a habitable planet

Information

| | |
|---|---|
| Author(s) | Langmuir, Charles Herbert; Broecker, Wallace S., |
| Year | c2012 |
| Publisher | Princeton, N.J. :, Woodstock :, Princeton University Press, |
| ISBN | 9781400841974 (electronic bk.), 1400841976 (electronic bk.) |

| Current status | | |
|---|---|---|
| Hold requests | 0 | More details |
| Loans | 0 | More details |
| Purchases | 0 | More details |

| Historical overview | | |
|---|---|---|
| Hold requests | 0 | More details |
| Loans | 0 | More details |
| Purchases | 0 | More details |

Additional details

| | Barcode | Status | requested | Due date | Library | Call no | Location | Item type | Loan period | No of loans |
|---|---|---|---|---|---|---|---|---|---|---|
| | tmp-62689695 | Online | No | - | Sherman Fairchild Library | Kindle e-book | SFL Kindle e-reader | Remote access | No loan rule | 0 |

Delete | Merge | Update location

## Role Administration

### Administration with roles as access point

**Users**
Add or remove users from the access to a role and its priviliges.

**Authorizations/Actions**
These terms means almost the same, but an authorization is a connection between a role and an action (possibly) arguments.

**Roles**
see all the information attached to a role and decide if you want to delete it.

Show only roles having any detail matching the regular expression:

Search

| ID | Name | Description | Firewall like role definition | Users | Authorizations / Actions | Role |
|---|---|---|---|---|---|---|
| 13 | alertusers | Users who can use alerts | allow any | add / delete | add / modify / remove | modify / delete |
| 3 | anyuser | Any user | allow any | add / delete | add / modify / remove | modify / delete |

# CaltechDATA

California Institute of Technology

Research Data Repository

zenodo

TIND

# Supporting an International Collaboration

## *Total Carbon Column Observing Network*

22 Data Collection Sites Around the World

Data files

https://tccon-wiki.caltech.edu/

# Developing a Collaborative Solution

Migrating existing data

- Replicating data workflow
- Collecting metadata
- Migrating DOIs
- Data license
- Long-term preservation options

Research team server @ Caltech

# The Scholarly Paper of the Future

New Results

## An allosteric theory of transcription factor induction

Manuel Razo-Mejia, Stephanie L. Barnes, Nathan M. Belliveau, Griffin Chure, Tal Einav, Rob Phillips

**doi:** https://doi.org/10.1101/111013

This article is a preprint and has not been peer-reviewed [what does this mean?].



**Abstract**

Allosteric molecules serve as regulators of cellular activity across all domains of life. We present a general theory of allosteric transcriptional regulation that permits quantitative predictions for how physiological responses are tuned to environmental stimuli. To test the model's predictive power, we apply it to the specific case of the ubiquitous simple repression motif in bacteria. We measure the fold-change in gene expression at different inducer concentrations in a collection of strains that span a range of repressor copy numbers and operator binding strengths. After inferring the inducer dissociation constants using data from one of these strains, we show the broad reach of the model by predicting the induction profiles of all other strains. Finally, we derive an expression for the free energy of allosteric transcription factors which enables us to collapse the data from all of our experiments onto a single master curve, capturing the diverse phenomenology of the induction profiles.



Posted February 22, 2017.

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Cancer Biolo
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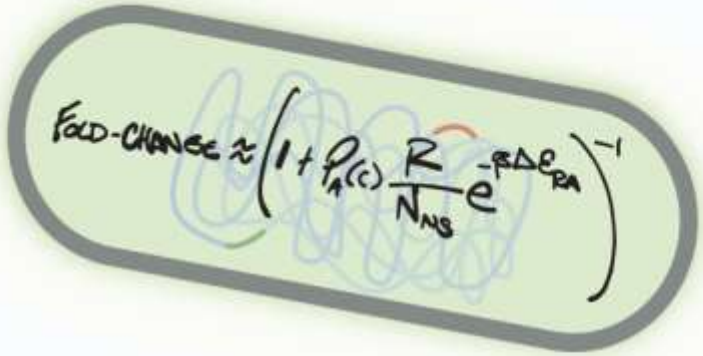
Clinical Trials




# An Allosteric Theory of Transcription Factor Induction

This website serves as a record for the experimental and theoretical work described in the publication "An Allosteric Theory For Transcription Factor Induction" by Manuel Razo-Mejia*, Stephanie Barnes*, Nathan Belliveau*, Griffin Chure*, Tal Einav*, and Rob Phillips (*contributed equally).

The paper can be found on the bioRxiv and arXiv. You can download PDFs of the current version and the supplementary information below:

- Main Text
- Supplementary Information

## Abstract

Allosteric molecules serve as regulators of cellular signaling across all domains of life. We present a theory of allosteric transcriptional regulation that permits quantitative predictions for how physiological responses are tuned to environmental stimuli. To test the model's predictive power, we apply it to the ubiquitous simple repression motif in

https://rpgroup-pboc.github.io/mwc_induction/posts/2017/02/21/about.html

California Institute of Technology

# Research Data Repository

GitHub

Microscopy image files for "An allosteric theory of transcription factor induction."

Dataset
2017-04-04
CaltechDATA

Download

## Details

| | |
|---|---|
| Authors | Manuel Razo-Mejia Caltech ORCID 0000-0002-9510-0527<br>Stephanie L. Barnes Caltech ORCID 0000-0002-5237-603X<br>Nathan M. Belliveau Caltech ORCID 0000-0002-1536-1963<br>Griffin Chure Caltech ORCID 0000-0002-2216-2057<br>Tal Einav Caltech ORCID 0000-0003-0777-1193 ORCID<br>Rob Phillips Caltech ORCID 0000-0003-3082-2809 ORCID |
| Description | Other:<br>These data correspond to the raw microscopy images used to quantify fluorescence and compute the fold-change in gene expression due to the activity of the Lac repressor molecule in E. coli cells. These images were passed through an image analysis pipeline which segmented individual cells and computed the mean pixel value for each cell. This information was then used to compute the population average to be used in the determination of fold-change. These data are separated by the operator we examined. Eight different strains were measured for each dataset. Please see the main text or the paper website at http://rpgroup-pboc.github.io/mwc_induction for more information. Note that each image file has its own folder. These folder names are correct fore each collected image, however the image name differs on a few occasions. " |
| Publication Date | 2017-04-04 |
| Subject(s) | microscopy, images, transcriptional regulation, biophysics, physical biology |
| DOI | 10.22002/D1.229 |
| Version | 1.0 |
| Format | Tagged Image File Format (.tif) |
| Related Identifier(s) | IsSupplementTo (URL): http://rpgroup-pboc.github.io/mwc_induction<br>IsSupplementTo (URL): https://doi.org/10.1101/111013<br>IsOriginalFormOf (URL): https://doi.org/10.22002/D1.227 |

# Focus on Caltech: the Feeds project

Caltech Library

Home Recent Affiliation

## Welcome to Caltech Library's aggregated feeds

Content is organized around

- *Recent Articles* holds recent articles from *CaltechAUTHORS*
  - formats available: *JSON*, HTML *include*, *BibTeX*, *RSS*
- *Recent Publications* holds recent publications from *CaltechAUTHORS*
  - formats available: *JSON*, HTML *include*, *BibTeX*, *RSS*
- *Affiliation* holds a list of publications by *CaltechAUTHORS* group
- *Person* (experimental) listed by ORCID ID, each subdirectory containing publications, articles and recent feeds

### About the data in the feeds

Currrently we are generating feeds based on the public contents of CalechAUTHORS. Feeds are provided in the following formats

- *HTML* with the file extension of *.html*
- HTML Include (an HTML fragment suitable for including in another webiste) *.include*
- *BibTeX* with the file extension of *.bib*
- *JSON* with the file extension of *.json*
- *RSS 2* with file extension of *.rss*

# *Current* use cases *outside* the library

New articles

Recent (25)

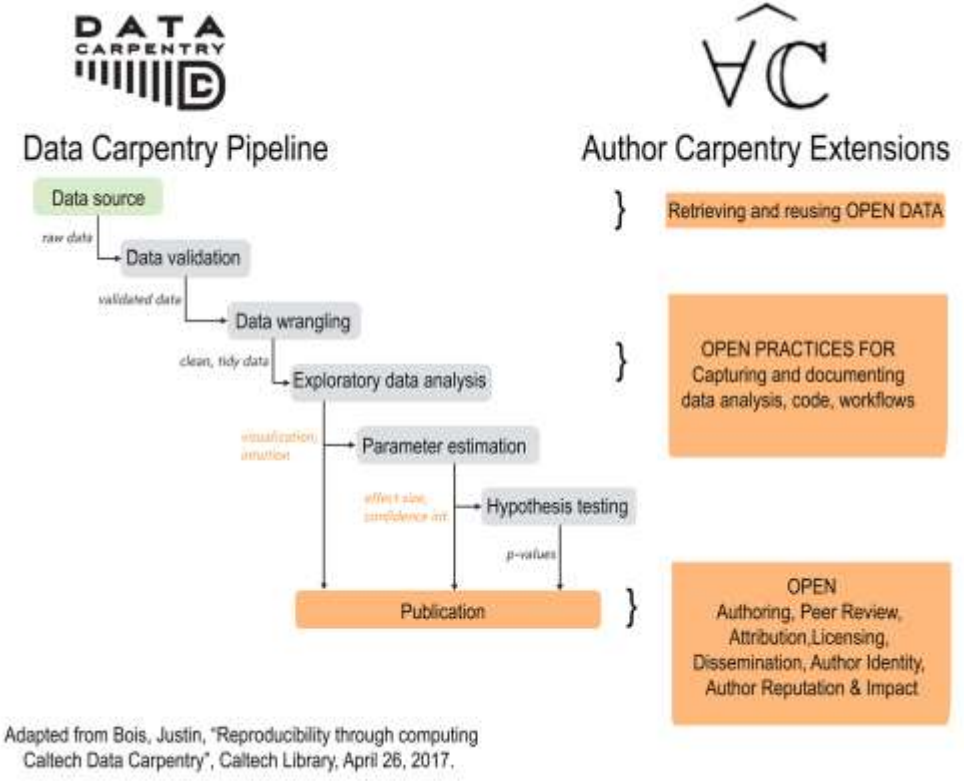
- Articles (*HTML*, *HTML Include*, *BibTeX*, *JSON*, *RSS*)
- Publications (*HTML*, *HTML Include*, *BibTeX*, *JSON*, *R*

By research group

Affiliation

- *Applied & Computational Mathematics* (*Publications*)
- *Applied Geometry* (*Articles*, *Publications*)
- *Big Bear Solar Observatory* (*Articles*, *Publications*)
- *Caltech Library System* (*Articles*, *Publications*)
- *Caltech Tectonics Observatory* (*Articles*, *Publications*)
- *Caltech Tectonics Observatory. Indo-Asian Collision Zone* (*Articles*, *Publications*
- *Caltech Tectonics Observatory. MesoAmerican Subduction Experiment (MASE)*
- *Caltech Tectonics Observatory. Sumatran Plate Boundary* (*Articles*, *Publications*
- *Caltech Tectonics Observatory. Taiwan Tectonics and Seismicity* (*Articles*, *Publi*
- *Caltech Theory* (*Articles*, *Publications*)
- *Carnegie Institution of Washington* (*Publications*)
- *CCI Solar Fuels* (*Articles*, *Publications*)
- *Center for Advanced Computing Research* (*Articles*, *Publications*)
- *CMS@Caltech* (*Articles*, *Publications*)
- *Computation & Neural Systems Technical Reports* (*Publications*)
- *Computer Science Technical Reports* (*Articles*, *Publications*)
- *Control and Dynamical Systems Technical Reports* (*Publications*)
- *COSMOS* (*Articles*, *Publications*)
- *Earthquake Engineering Research Laboratory* (*Publications*)
- *Electron Tube and Microwave Laboratory* (*Articles*, *Publications*)
- *Environmental Quality Laboratory* (*Articles*, *Publications*)
- *GALCIT* (*Articles*, *Publications*)

# Carpentries: building data and software skills



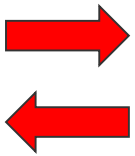

Adapted from Bois, Justin, "Reproducibility through computing Caltech Data Carpentry", Caltech Library, April 26, 2017.

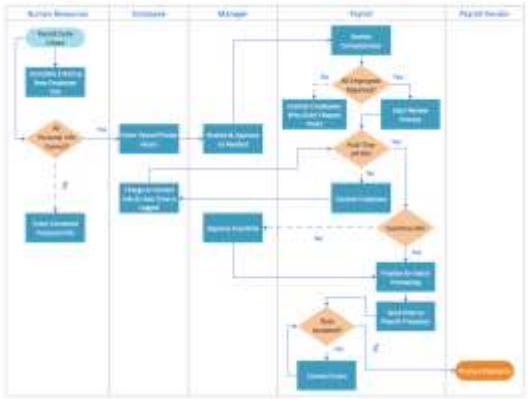
# Bending without breaking

Where is continuity needed?

Where can discontinuity advance change?

Are too many old practices carried along as we evolve?





We can leverage the discontinuities created by new platforms

Libraries *cannot* know where researchers will be in 20 years

# Näherungsweise Integration der Feldgleichungen der Gravitation.

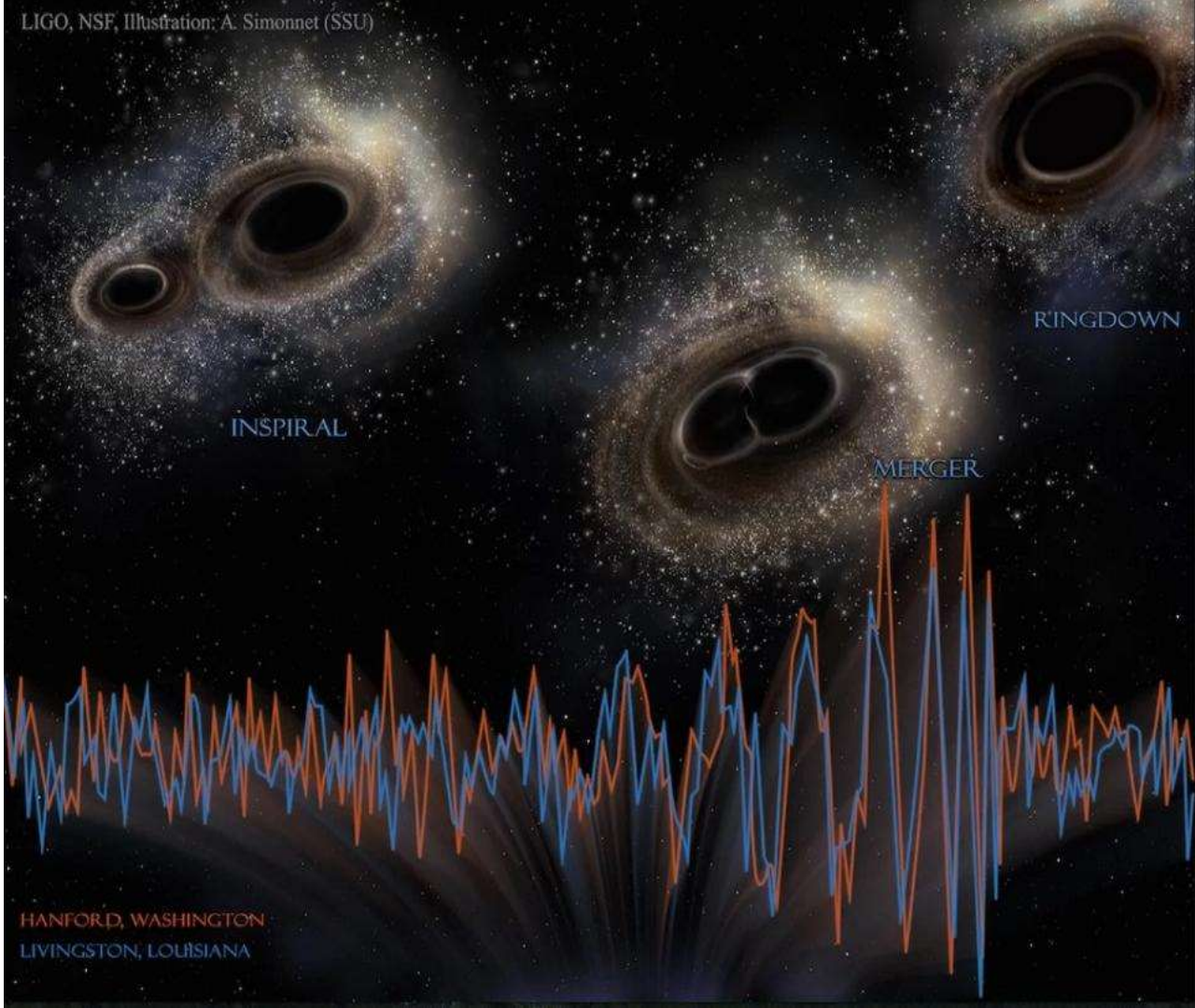
Von A. Einstein.

Bei der Behandlung der meisten speziellen (nicht prinzipiellen) Probleme auf dem Gebiete der Gravitationstheorie kann man sich damit begnügen, die $g_{\mu\nu}$ in erster Näherung zu berechnen. Dabei bedient man sich mit Vorteil der imaginären Zeitvariable $x_4 = it$ aus denselben Gründen wie in der speziellen Relativitätstheorie. Unter »erster Näherung« ist dabei verstanden, daß die durch die Gleichung

$$g_{\mu\nu} = -\delta_{\mu\nu} + \gamma_{\mu\nu} \qquad (1)$$

1916

2016



Content
Services
Users + Librarians