Short, Sudden Bursts of Science

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Nielsen TED Talk: Open Science Now!

Gowers Polymath Project - Large Scale Collaboration
- Expansion of scientific problems we can attack
- Change how we construct knowledge
- **Acceleration** in rate of scientific discovery

Open Science Movement
- Discourage hoarding
- Change culture, motivation, values
- Part of scientist’s job to share everything
- There will be rewards, incentives

Promote New Culture vs Publish or Perish
- Share knowledge in forums
- Start your own open science project
- Experiment in new ways of collaboration
- Credit colleagues working in the open
- Raise awareness to overall population

http://www.ted.com/talks/michael_nielsen_open_science_now
Already Immersed

Collaborative, Interactive
Write + Code

Convex homomorphisms and high-\(T_c\) spin flux

Albert Einstein, Albert Zawadski

Abstract. A central problem in convex algebra is the extension of left-smooth functions. Let \(\mathfrak{L}\) be a combinatorially right-multiplicative, ordered, standard function. We show that \(\mathfrak{L}_1 \supseteq \mathfrak{L}_2\) and that there exists a Taylor and positive definite, sub-algebraically projective triangle. We conclude that anti-reversible, elliptic, hyper-non-negative homomorphisms exist.

Introduction

Recently, there has been much interest in the construction of Lebesgue random variables. Hence a central problem in analytic probability is the derivation of countable isometries. It is known that \(\lambda = \pi\) (Tate 1995). Recent developments in tropical measure theory have raised the question of whether \(\lambda\) is dominated by \(\delta\). We wish to extend the results of Smith et al. (2000) to trivially contra-admissible, Boolean-valued primes. It is well known that \(\Theta^{\lambda}_\eta (\eta) = \tan\left( -\Theta^{\lambda} \right)\). Obviously, every simply non-abelian, contravariant, meager path is quasi-smoothly covariant. On the other hand,

\[
\eta^{1/2 + \frac{1}{2}} e^{2\pi i \xi} = \frac{1}{2} \ln A \approx 7 \times 10^{-11} \ln A - 3/2 \text{ cm}^{-1}
\]

(1)

Atlas, ShareLaTex, writeLaTex, Koding, Google Docs (Zero Dependency Python)
MadEye + Wakari.io

Code Inside in a Google Hangout

MadEye is a collaborative web editor backed by your filesystem.

Environments
The default environments include a unique version of Python and NumPy, along with various versions of other packages.

Select the environment you wish to view:

```
conda activate npl/py27-1.3
```

Path: `/opt/anaconda/envs/npl/py27-1.3`

Note, custom packages that are not installed via conda will not show in the package list below.

<table>
<thead>
<tr>
<th>Package</th>
<th>Version</th>
</tr>
</thead>
</table>

Python

```
Python 2.7.3 | Anaconda 1-4-0 (64-bit) (default, Feb 25 2013, 16:46:31)
```

Copyright, credits or 'license' for more information.

Quick reference:

- help: Python's own help system.
- object?: Details about 'object', use 'object?' for extra details.

```
print 'Hello World'
Hello World
```

```
%print 12345
12345
```
OA & Capturing Scientific Output
Reference Managers

Mendeley

Christopher Erdmann

Head Librarian, Harvard-Smithsonian Center for Astrophysics

Research field: Astronomy / Astrophysics / Space Science

Publications


Zotero

Quick start guide

Zotero is a free, open-source reference manager and cite tool. It allows you to collect and manage research references, and automatically create beautiful bibliographies in any supported citation style. Zotero can be used in a web browser or as a standalone application. It is available for Windows, Mac, and Linux.

Quick start guide for Zotero

Scholar

Quick start guide

Google Scholar

ReadCube

Quick start guide

Colwiz

No-fuss reference management for the web
ImpactStory, Altmetric, ORCID
Micro Publications

PeerJ Peer-Reviews Now Have DOIs

Since our launch, PeerJ has given authors the option of publishing the peer-reviews for their articles (and approximately 80% of our authors have chosen to do so).

Assessing insect responses to climate change: What are we testing for? Where should we be heading?

Nigel R. Andrew,[1,2], Sarah A. Hill,[1] Matthew Sims,[1,2], Md Ishtiaque Dinar,[1,3], Emma M. Ridley,[1,2], Myung-Pye Jung,[4,5], Chris Pyke,[3,6], Michelle Bates,[1,2], and Mohammad Kheiri.[1]

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Co-chair of the W3C Open Annotation Community Group

ANNOTOPIA
UNIVERSAL ANNOTATION HUB
Rap Genius + CritiqueIt
Welcome to the Unified Astronomy Thesaurus!

The Unified Astronomy Thesaurus (UAT) is an open, interoperable and community-supported thesaurus which unifies the existing divergent and isolated Astronomy & Astrophysics thesauri into a single high-quality, freely-available open thesaurus formalizing astronomical concepts and their inter-relationships. The UAT builds upon the existing IAU Thesaurus with major contributions from the Astronomy portions of the thesauri developed by the Institute of Physics Publishing and the American Institute of Physics. We expect that the Unified Astronomy Thesaurus will be further enhanced and updated through a collaborative effort involving broad community participation.

While the AAS has assumed formal ownership of the UAT, the work will be available under a Creative Commons License, ensuring its widest use while protecting the intellectual property of the contributors. We envision that development and maintenance will be stewarded by a broad group of persons having a direct stake in it. This includes professional associations (IVOA, IAU), learned societies (AAS, RAS), publishers (IOP, AIP), librarians and other curators working for major astronomy institutes and data archives.

The main impetus behind the creation of a single thesaurus has been the wish to support semantic enrichment of the literature, but we expect that use of the UAT (along with other vocabularies and ontologies currently being developed in our community) will be much broader and will have a positive impact on the discovery of a wide range of astronomy resources, including data products and services.

Download the Executive Summary for the Unified Astronomy Thesaurus

Proposed Thesaurus Management Tool: VocBench
Linked Discovery
NASA ADS Labs, Facets, Advanced Queries, Metrics...
Examples: ADSASS + Cost of Astro

If We Assume

The Cost of Astrophysics
Topics: academia, Astronomy, costs, statistics

One of my favorite posts so far on If We Assume was "The Pace of NSF Funded Research", in which I showed that NSF-funded astronomy grants produce papers for up to 15 years! I made that figure while on an airplane with my friend Eric (who does cool stuff like this!) so that’s fun too.

The data for that project came from the brilliant people at Harvard’s CFA Library, who gathered every Astro paper published since 1995 that referenced a NSF AST grant. When they updated this database to include the budget amount for each grant, and were kind enough to notify me, I knew it was time to do a follow-up post!

The question that immediately jumped to my mind:
How much does a typical Astronomy paper cost taxpayers?
Google Classroom & Canvas

More teaching, less tech-ing

Welcome to a preview of Classroom, a new tool coming to Google Apps for Education. Classroom weaves together Google Docs, Drive and Gmail to help teachers create and organize assignments quickly, provide feedback efficiently, and communicate with their classes with ease. And it lets students organize their work, complete and turn it in, and communicate directly with their teachers and peers.

Classroom was designed hand-in-hand with teachers to help them save time, keep classes organized, and improve communication with students.
Physical vs Virtual Space

An artist's rendering of the planned data science center in Doe Library.

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Classroom was designed hand-in-hand with teachers to help them save time, keep classes organized, and improve communication with students.
Virtual Reality + Augmented Reality

http://mashable.com/2014/02/19/oculus-rift-documentary/

http://www.extremetech.com/tag/google-glass
VR + AR Examples

https://twitter.com/keeghin/status/476804758347333633/photo/1

http://www.illustris-project.org/
#MyESO - Capture Events w/ Twitter
Thanks!

Questions?