



Engaging in Science Communication

Camilla Compton & Maggie Jensen

ccompton@caltech.edu mjensen2@caltech.edu

LIGO Hanford Observatory

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DCC: LIGO-G2500089

What do you think Science Communication includes?



Go to www.menti.com and use the code:

4935 4235



<https://www.mentimeter.com/app/presentation/alkr9gfo7hdu8h2a23izc4hhww2dgimc/edit?source=share-modal>
From Parallel Session Attendees at CUWiP 2025



ABOUT US



STRATEGIES



UP-GOER FIVE



AUDIENCES



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STRATEGIES



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AUDIENCES

About Us



Camilla Compton & Maggie Jensen LIGO Hanford Observatory



STORY BY DENNIS UGOLINI



ANTIMATTERWEBCOMICS.COM

LIGO – Laser Interferometer Gravitational-Wave Observatory



Camilla Compton: Detector Engineer



ABOUT ME

Name: Camilla Compton
Age: 31
Hobbies: Running, Climbing, Skiing
Major: Physics MSci
Job: Detector Engineer
Internships: 3



The LIGO Control Room

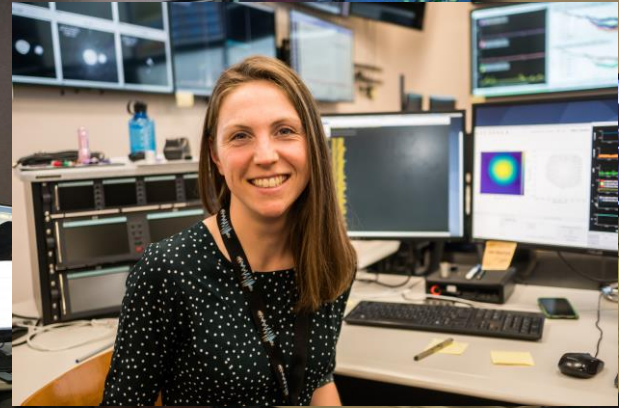


2 PHASES



Observing
Getting data

Commissioning
Making improvements



Everything must be clean to retain vacuum



Maggie Jensen – Science Educator



BS in Physics

Undergraduate Astrophysics Research
LAB TA, Tutor, Supplemental Lecturer, Instructor
Public Observing Nights & Science Unwrapped

“What do I have to do to talk about space every day?”



MS in Science Education

Physics Education Research
Saturday Morning Astrophysics
Studied Curriculum Development
& Informal Science Education

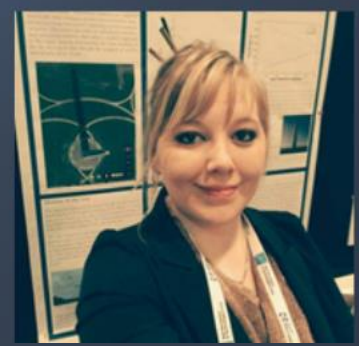


Science Unwrapped at USU
Feb 1, 2013 ·

[Science Unwrapped: "Explore to Conserve: A Russian Kayaking Adventure," featured speaker Jeff Hazboun, Utah State ... See more



Science Unwrapped at USU
[Science Unwrapped: "Kepler and the Exoplanet Revolution," Astrophysicist Lucianne Walkowicz, Utah State University, 24 Jan 2014] – with Maggie Jensen at Utah State University.
JAN 24, 2014



Teacher - 8 Years

Physics
Chemistry
Astronomy and
Aerospace Engineering

Maggie Jensen – Science Educator



LIGO Hanford Observatory
Aug 14 · 🌐

Happy GW170814 Anniversary: The First ~TRIPLE~ Detection!
👉 ... See more



Science and Art Showcase

LIGO
mid-columbia
ballet

MAY 16th, 2024, 5-8PM
AT THE LIGO HANFORD OBSERVATORY
127124 N Route 10, Richland, WA 99354

To Register:
<https://tinyurl.com/LIGOArtScience24>



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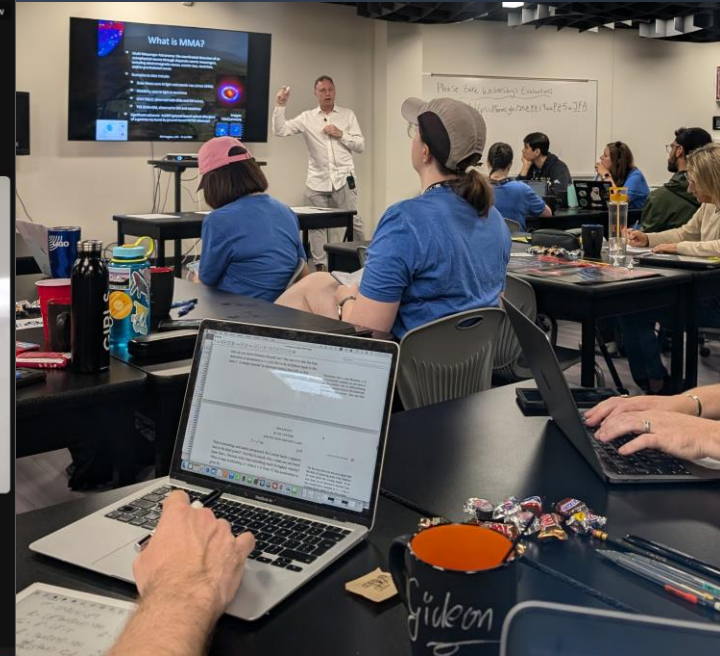
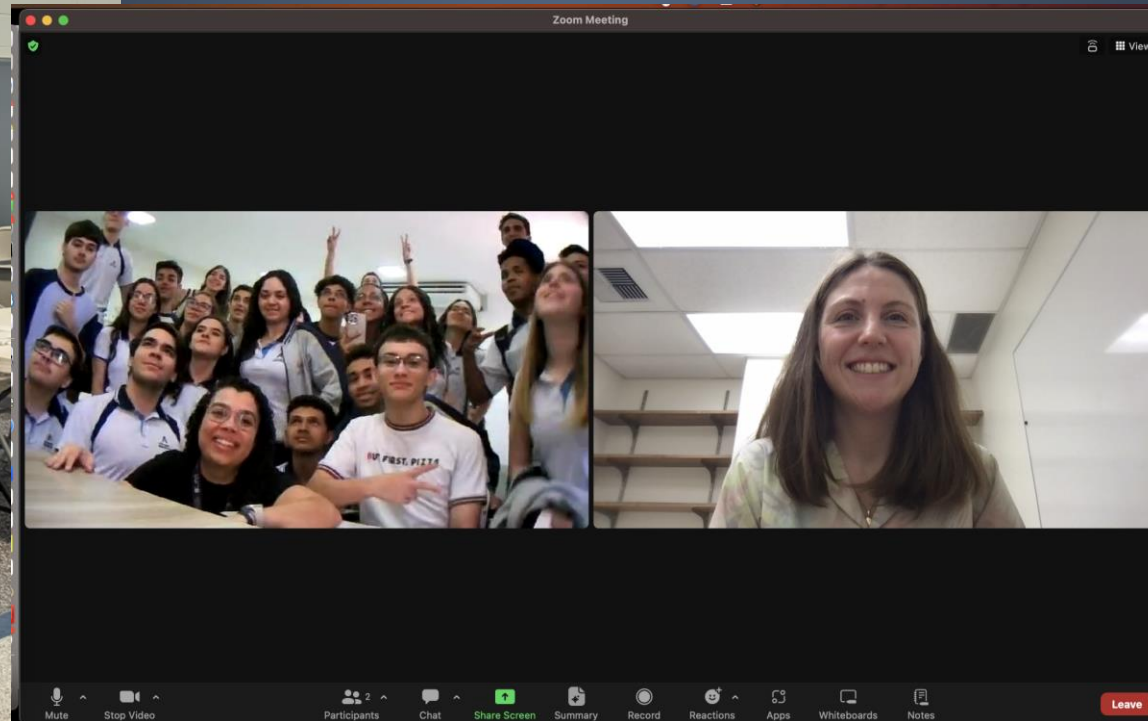


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Who Is Doing Science Communication and Outreach?



Physicists engage with the public to varying degrees at different stages of their careers.

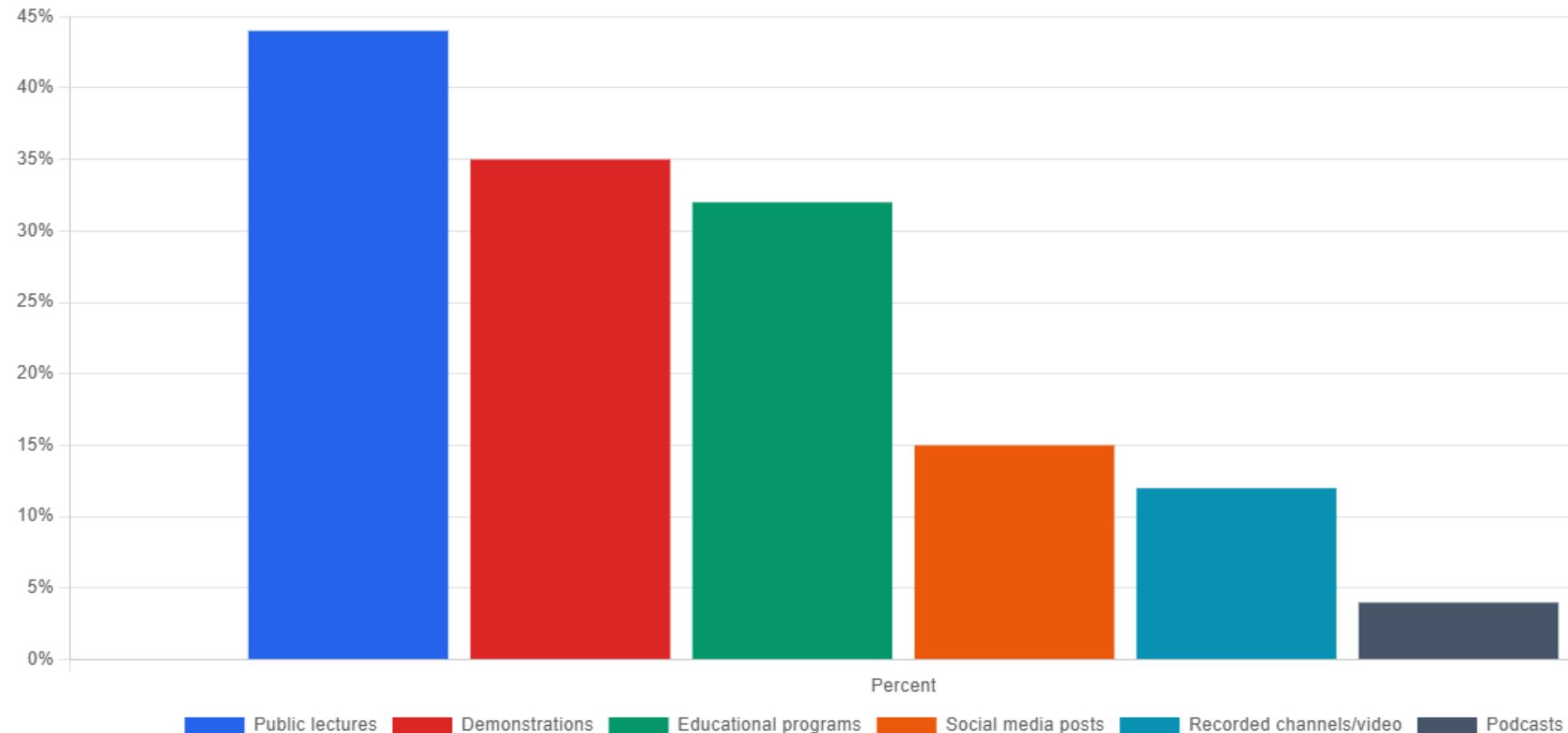


2022 APS Public Engagement Survey – 2,208 respondents from all career ranges



Participation in public engagement

Over 68% of APS members report engaging with the public and use a variety of formats to do so.



Why Should Scientists Engage In Science Communication And Outreach?

- Inspire Curiosity, Create that Spark!
- Networking
- Funding
- Promote Good Physics, and Combat Misinformation
- Challenge Stereotypes
- Renew Your Passion!
- Become A Better Expert By Communicating At Different Levels

- What is your “Why”?

Things to consider when doing Outreach

- Create A Goal: -What do you want to be the outcome?
 - ▶ Type Of Interaction? -Lecture? Activity? Social Media Post?
 - ▶ Audience? –Experts? Novices?
- 3 Key Take Aways - You Can't Explain Every Aspect Of A Topic. Pick 3 Things You Want Them To Walk Away With.
- Jargon?

Jargon- Major Categories



- **Technical Terms**
 - These are not well known or universal
- **Words with Multiple Definitions**
 - Words that mean different things in the field vs everyday
- **Words That Are Bigger Than Necessary**
 - These create barriers



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Jargon Activity



(PLANS COURTESY NASA-MFC 10M.04574 VIA UP-SHIP.COM)

US SPACE TEAM'S UP GOER FIVE

THE ONLY FLYING SPACE CAR THAT'S
TAKEN ANYONE TO ANOTHER WORLD

(EXPLAINED USING ONLY THE TEN HUNDRED
WORDS PEOPLE USE THE MOST OFTEN)

THING TO HELP PEOPLE ESCAPE REALLY FAST
IF THERE'S A PROBLEM AND EVERYTHING IS ON
FIRE SO THEY DECIDE NOT TO GO TO SPACE

STUFF TO BURN TO MAKE THE BOX WITH
THE PEOPLE IN IT ESCAPE REALLY FAST



THING TO CONTROL WHICH DIRECTION
THE ESCAPING PEOPLE GO

PLACE WHERE FIRE COMES
OUT TO HELP THEM ESCAPE

<https://splasho.com/upgoer5/>

Think of your favorite physics phenomenon, or your own research topic.

[HINTS](#) [TOP](#) [LATEST](#) [LIBRARY](#) [RANDOM](#)



THE UP-GOER FIVE TEXT EDITOR

CAN YOU EXPLAIN A HARD IDEA USING ONLY THE [TEN HUNDRED](#) MOST USED WORDS? IT'S NOT VERY EASY. TYPE IN THE BOX TO TRY IT OUT.



<https://splasho.com/upgoer5/>



LIGO-

“We look for waves made by big black stars joining in space. We use a light and mirrors to find changes in how long space-time is. We can find changes as short as one in a hundred hundred hundred hundred hundred hundred hundreds.”



Jargon



- Noise
- Destructive Interference
- Space-time
- Gravitational Waves
- Interferometer
- Mega-Parsec



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Audiences



Audiences Scientists Speak With On A Day-to-day Basis

- - Scientific colleagues
 - - Scientists in other disciplines
 - - Students
 - - Administrative staff
 - - Family and friends
 - - Visitors to a science center
 - - People in line at the grocery store or in the next seat on a plane
-
- Speaking To Multiple Audiences Requires Flexibility In Word Choice

How do I get involved?



Ask your mentors, colleagues, collaborators



Look for programs sponsored by your department or institution



Connect with programs already working in your community



Seek out a partner: schools, kids' museums, libraries, educational organizations



Use the web to find activities – don't reinvent the wheel

Social Media, Podcasts, Magazines, Books



Instagram profile for **girl_in_a_physics_world**. The profile shows 937 posts, 7,365 followers, and 2,092 accounts being followed. The bio identifies the user as **meriame**, a physicist (she/her/hers), a 3rd year Plasma Physics PhD student, a laser lover, and a member of #MinoritySquared. The bio also mentions MRes Photonics | BSc Physics... and provides a link to [lnkd.in/eCWpQXCP](https://www.linkedin.com/company/cwpxcp). The profile is followed by **fam_239**, **gavinseeg**, and 18 others. A post is visible showing a woman standing next to a poster titled "Focusing Betatron Radiation For XANES Measurements of Warm Dense Matter".

Twitter feed for **LIGO**, showing 7,691 tweets. The feed displays a grid of tweet thumbnails with engagement metrics (retweets and replies). A prominent tweet features the LIGO logo and the text "GRAVITATIONAL WAVE MERGER DETECTIONS SINCE 2015".

Cover of **LIGO Magazine**, Issue 21. The cover features the LIGO Scientific Collaboration logo and the title "10 Years of LIGO MAGAZINE". The main image shows a close-up of a LIGO detector component. A red banner at the bottom reads "04 Commissioning Going from 0 to 100%". Other text on the cover includes "21 issues of the LIGO Magazine already?" and "Quantum Squeezing in O4".

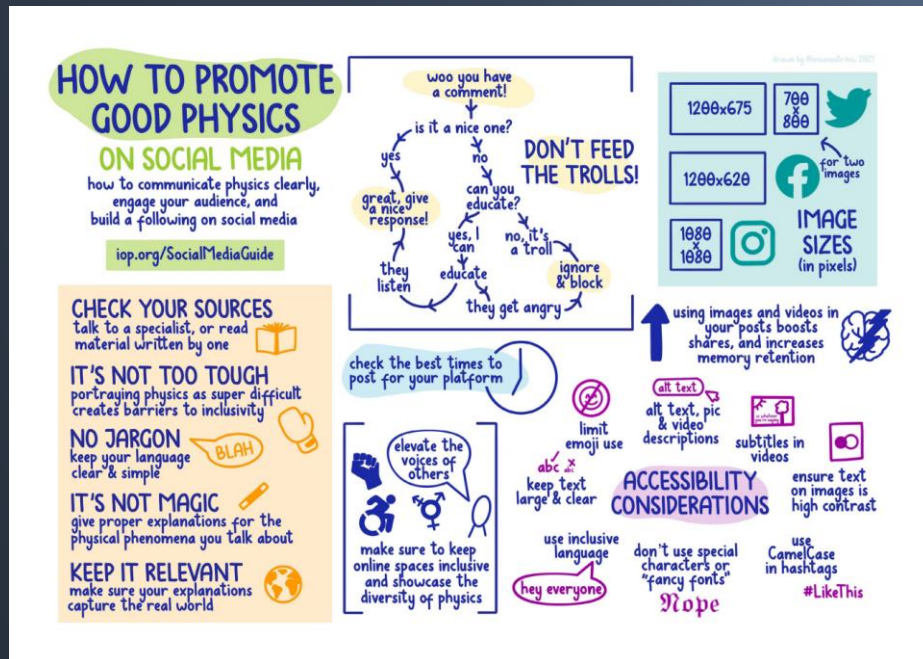
NPR Short Wave podcast player for the episode "Corey Gray Is Picking Up Cosmic Vibrations". The episode was published on November 14, 2022, at 12:10 AM ET. The host is **REGINA G. BARBER** and the guest is **DEVAN SCHWARTZ**. The player shows a "14-Minute Listen" button and options for "PLAYLIST", "Download", and "Share".

Resources For Improving Science Communication

Portal to the Public – Implementation Manual -Practice

IOP.org – Limit-Less Resources (Especially Social Media)

AAS Astronomy Ambassadors – Resources



HOW TO PROMOTE GOOD PHYSICS ON SOCIAL MEDIA
how to communicate physics clearly, engage your audience, and build a following on social media
iop.org/SocialMediaGuide

CHECK YOUR SOURCES
talk to a specialist, or read material written by one

IT'S NOT TOO TOUGH
portraying physics as super difficult creates barriers to inclusivity

NO JARGON
keep your language clear & simple

IT'S NOT MAGIC
give proper explanations for the physical phenomena you talk about

KEEP IT RELEVANT
make sure your explanations capture the real world

DON'T FEED THE TROLLS!
Flowchart: "woo you have a comment?" → "is it a nice one?" → "yes" → "great, give a nice response!" → "they listen"; "no" → "can you educate?" → "yes, I can educate" → "they get angry"; "no, it's a troll" → "ignore & block".

IMAGE SIZES (in pixels)
Twitter: 1200x675 (700x800)
Facebook: 1200x620 (for two images)
Instagram: 1080x1080

ACCESSIBILITY CONSIDERATIONS
using images and videos in your posts boosts shares, and increases memory retention
all text, pic & video descriptions
subtitles in videos
ensure text on images is high contrast
limit emoji use
elevator the voices of others
make sure to keep online spaces inclusive and showcase the diversity of physics
use inclusive language
hey everyone
don't use special characters or "fancy fonts"
Nope
use CamelCase in hashtags
#LikeThis

I. C. GENERAL PRESENTATION TECHNIQUES FOR OUTREACH

- **Better Conference Talks** (an excellent web page by Emily Lakdawalla of the Planetary Society)
- **Communicating Science: Tools for Scientists and Engineers** (a basic tutorial website from the AAAS)
- **Communicating Science: Giving Talks** (a booklet full of practical tips on public speaking to a variety of audiences, from the Burroughs Wellcome Fund)
- **Eight Attributes of Highly Successful Postdocs**, C. Holden, *Science*, 3 Sep. 1999, p. 1527
- **How to Write a Boring Scientific Paper** (hints by a biologist that apply to all scientific writing and presentations)
- **Talking Science with Journalists**, J. Bardi & C. Meyers, *Physics Today*, May 2015, p. 66
- **Understanding Science** (a nice site about explaining the scientific method to the public by the University of California Museum of Paleontology — but applicable to all science outreach)
- **What Makes an Astronomy Story Newsworthy** (concise, useful list by Rick Fienberg)

Attending Events and Volunteering



Science Bowl

Give tours

Physics and Astronomy Clubs

After graduation: Skype a Scientist Sessions

Get involved with local Youth Groups like Girl Scouts

Science Fair Judging

Give talks or have booths at the local Library

National STEM foundation- STEM Like Me!

Attend and get involved with Astronomy on tap

FIRST –Robotics Competition Judges and research assistants

HOME SIGN UP EVENTS MEET US DONATE INICIO GET INVOLVED CART (0)

SKYPE A SCIENTIST

WANT TO TALK TO A SCIENTIST? YOU'VE COME TO THE RIGHT PLACE.

SC Home Organization Contact Stay Connected DOE Home

U.S. DEPARTMENT OF ENERGY Office of Science

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Programs

Home | Programs | Workforce Development for Teachers and Scientists (WDTs) | National Science Bowl® (NSB)

About

Regional Competitions and Deadlines

2022 National Finals

Volunteers

National Science Bowl® (NSB)

Why are Activities Important?



Students generally retain **26%** of what **they hear** compared to **90%** of what they **say and do**

[2] Richard M. Felder, (1988), 'Learning and Teaching Styles In Engineering Education,' North Carolina State University, Engineering Education, Vol 78 (7), pages 676-680.





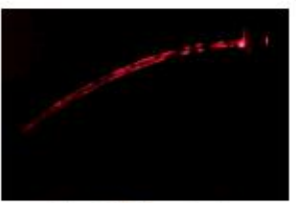

[3] James Stice, (1987), 'Using Kolb's Learning Cycle to Improve Student Learning,' Engineering Education, vol. 77 (5), pages 291-296.


Resources For Physics Activities

[Society of Physics Students](#) – Demos and Activities

[Exploratorium.edu](#) - Science Snacks, Teaching Support

[Pacific Science Center](#) – Activities





 Pinhole Projector	 Fabric of the Universe	 Hair Diffraction
 Eclipses: Earth-Moon-Sun Model	 Light Fountain	 Density Column



Amp It Up

Discover what kinds of common objects can amplify sound by carrying vibrations further.

Activities

 Outdoor Shadows Trace your shadow, then make it change.	 See Inside a Seed Examine the baby plants inside the seeds we eat.
 Make Your Own Rainstick Listen to the sound of rain falling –anytime, anywhere.	 Shell Shifts See why ocean acidification is giving some marine organisms shell shock.

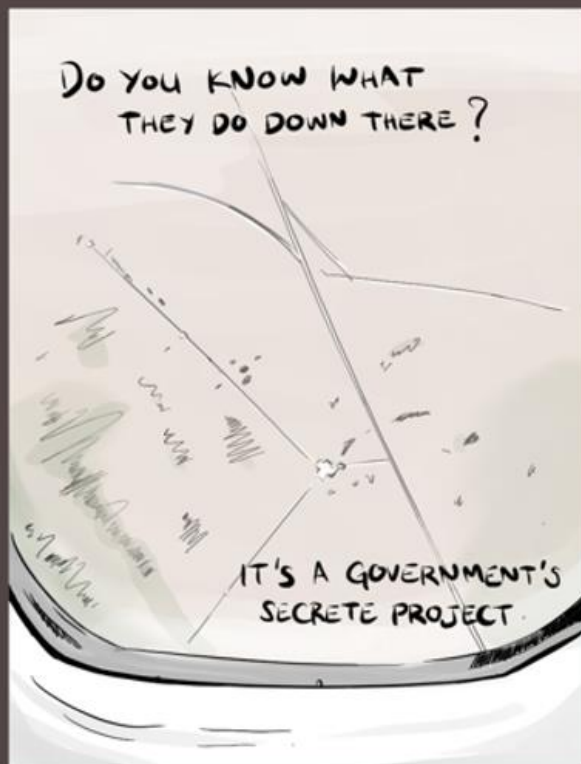
Thank you!



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STORY BY DENNIS UGOLINI



ANTIMATTERWEBCOMICS.COM

LIGO Scientific Collaboration



~1600 members, ~139 institutions, 22 countries

