International Particle Physics Outreach Group

Outreach: Social Aspects of High Energy Physics

Anja Kranjc Horvat, EPFL, IPPOG Co-Chair
On behalf of the IPPOG Collaboration
DIS2026 – Bologna, Italy – 08 May 2026

Everyone has questions…

YouTube CH

dark matter

Filters

CamelPhat - Spektrum (Visualiser) ft. Ali Love
25M views • 4 years ago

CamelPhat

Camelphat - Spektrum (Featuring Ali Love) [Visualiser] Listen to Dark Matter here: https://smarturl.it/DarkMatterCamelPhat ...

When You Give A Noob A FREE DARK MATTER GALAXY FOX 🤔 (Roblox Pet Simulator X)
6.1M views • 3 years ago

3SB Games

#Roblox #PetSimulatorX #3SBGames.

What is Dark Matter and Dark Energy?
12M views • 9 years ago

Kurzgesagt – In a Nutshell

What is dark energy? What is dark matter? Well, if we knew exactly we would have a nobel prize – we know that they exist though.

Half the universe was missing... until now
4.9M views • 4 years ago

Veritasium

Half of the ordinary baryonic matter has been tough to find but Fast Radio Bursts made it possible to detect the WHIM. Thanks to ...

4K Subtitles

| The Warm Hot Intergalactic Medium | First Fast..

(almost) everyone has answers!

Dark Matter — Official Trailer | Apple TV+
11M views • 1 year ago

Apple TV

Dark Matter is a sci-fi thriller series based on the blockbuster book by acclaimed, bestselling author Blake Crouch.

Subtitles

DARK MATTER CAMO! (Call of Duty: Black Ops 3 Dark Matter Camo)
4.1M views • 9 years ago

M3RKMUS1C

I FINALLY unlocked dark matter camo in Black Ops 3, and I wanted to show you guys dark matter camo, my reactions to unlocking ...

The Absurd Search For Dark Matter
9.8M views • 2 years ago

Veritasium

... Special thanks to Patreon supporters: Inconcision, Kelly Snook, TTST, Ross McCawley, Balkrishna Heroor, Chris LaClair, ...

4K Subtitles

3 moments Dunkle Materie | Dark Matter | Cosmic Microwave Background

Is this a Dark Matter Star?
4M views • 1 year ago

AstroKobi

0:13 ... type of star completely made out of Dark Matter dark matter is this invisible form of matter that makes up most of the matter inside ...

Deep inelastic scattering is when physicists violently yeet electrons at protons to see what emotional damage is inside.

At low speed:

boop

the proton acts normal.

At VERY stupid speed:

AAAAAAAAAAAAAAAA

the electron punches straight through the proton and the proton explodes into “quantum confetti.”

Scientists then collect the confetti and say:

- “this confetti is called a parton”

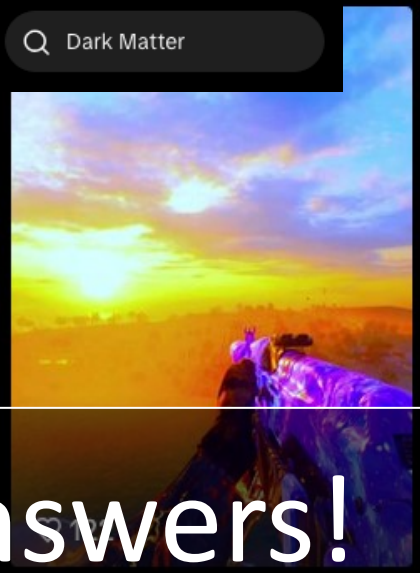
Ask anything Instant

ChatGPT can make mistakes. Check important info. See Cookie Preferences.

(almost) everyone has answers!

TikTok Videos LIVE

Dark Matter

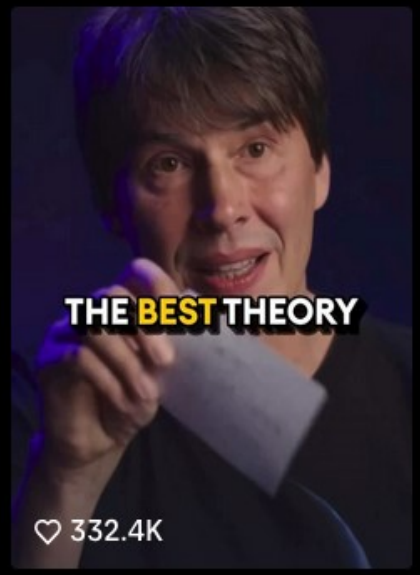


Black Ops 6 Bo6 Ak Darkmat...

lobster..balls 2024-11-21

bring them back 😞 ...

ririoneil 1d



Join renowned astrophysicis...

I NEED TO WAÏCH IT AGAIN

Truth?

"We found that falsehood diffuses significantly farther, faster, deeper, and more broadly than the truth, in all categories of information, and in many cases by an order of magnitude," says.

- Prof Sinan Aral
MIT Sloan School of Management

"Whereas false stories inspired fear, disgust, and surprise in replies, true stories inspired anticipation, sadness, joy, and trust. Contrary to conventional wisdom, robots accelerated the spread of true and false news at the same rate, implying that false news spreads more than the truth because humans, not robots, are more likely to spread it."

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Science is difficult to understand,
political/social consequences are more accessible.

→ **Full public understanding of science is unfeasible.**

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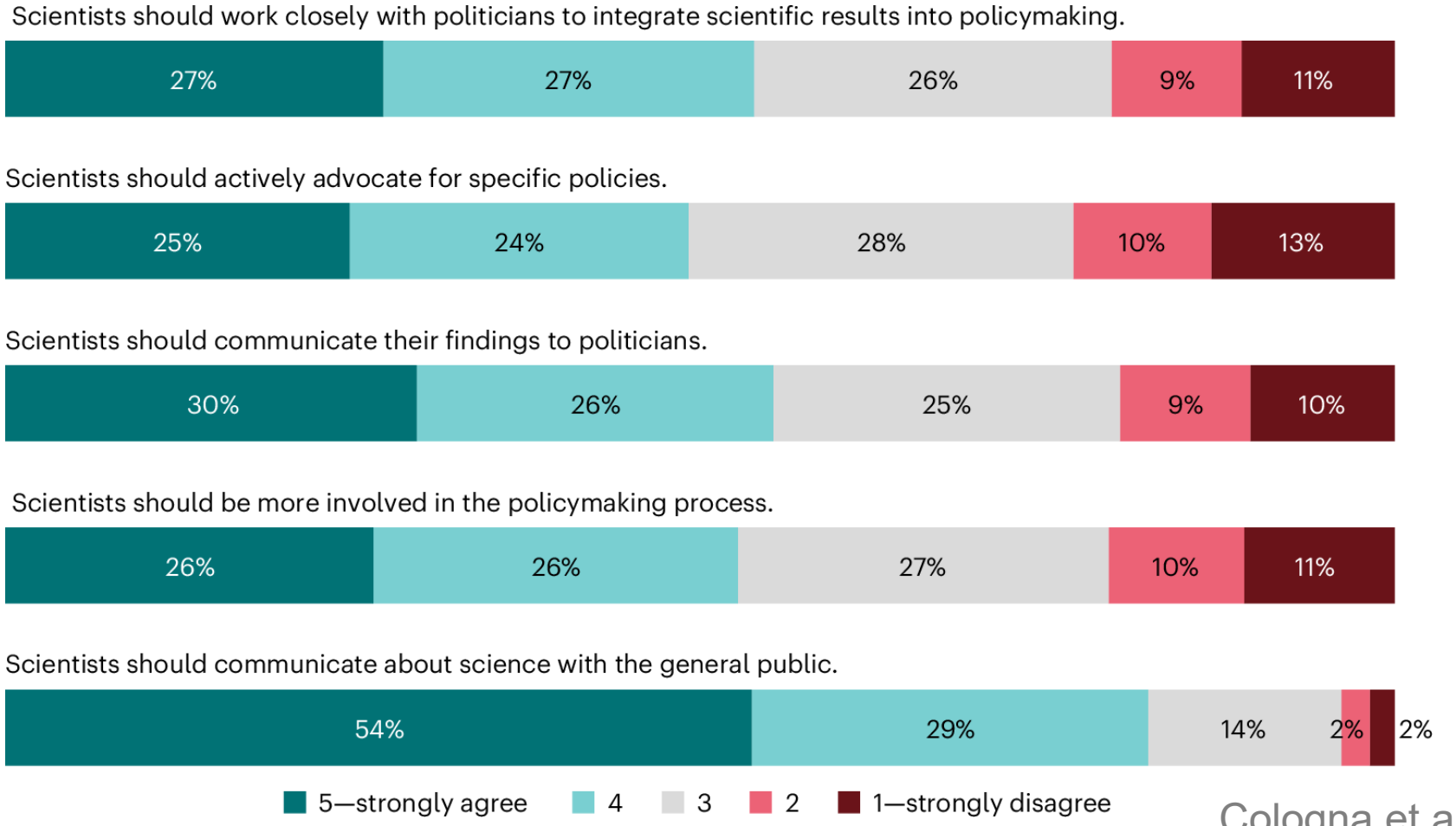
Building trust

The public will trust advice and information from scientific experts if the individual, group, or the institutions the scientists represent are perceived as:

1. **epistemically competent**, they can/should know,
2. **morally reliable**, i.e. they want to tell the truth, *and*
3. **they work in the public interest**.
   (Goldenberg, 2022)

University scientists are perceived as qualified to give scientific explanations by 66% or people (more than any other group). (Eurobarometer, 2024)
→ **Scientists should communicate science to increase public trust.**

Building trust



Cologna et al., 2025

Building trust

A significant share **disagree that scientists spend sufficient time meeting lay citizens to explain their work**

21% Strongly disagree

27% Tend to disagree

3% Don't know

6% Strongly agree

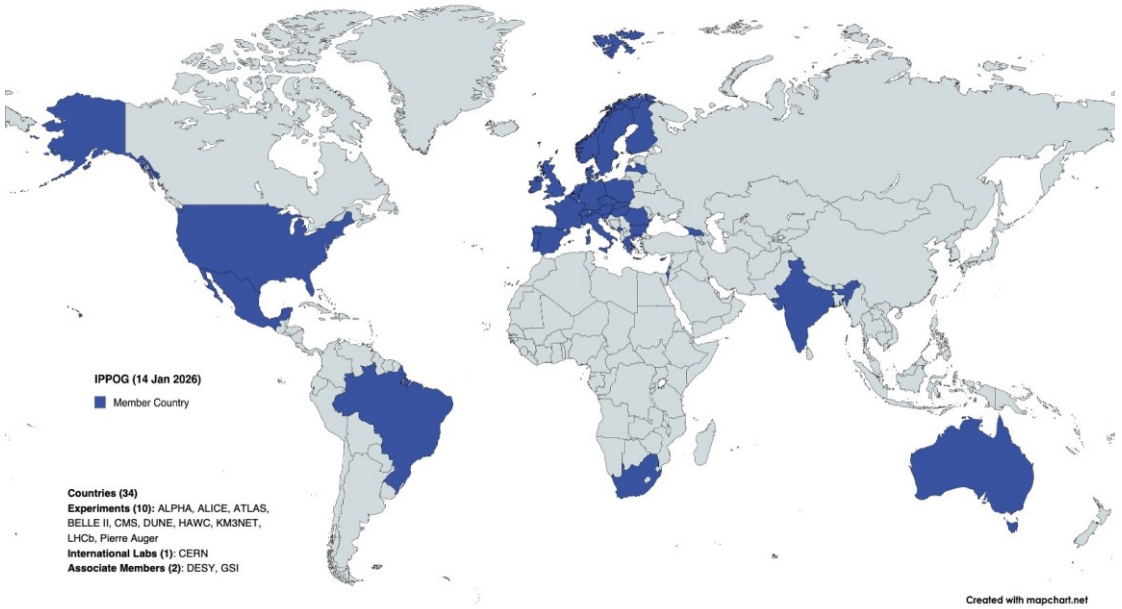
21% Tend to agree

22% Neither agree nor disagree

Source: Eurobarometer, 2024

About IPPOG

- **Global network**
  - active researchers with experience in outreach & education
  - experts in communication & education



- Organizing **global outreach activities**
  - International Particle Physics Masterclasses
  - Global Cosmics and International Cosmic Day
  - World-Wide Data Day

- Supporting **local outreach activities**
  - Sharing of expertise, best practices, material database
  - Resources to support events, kick-start activities

International Particle Physics Masterclasses

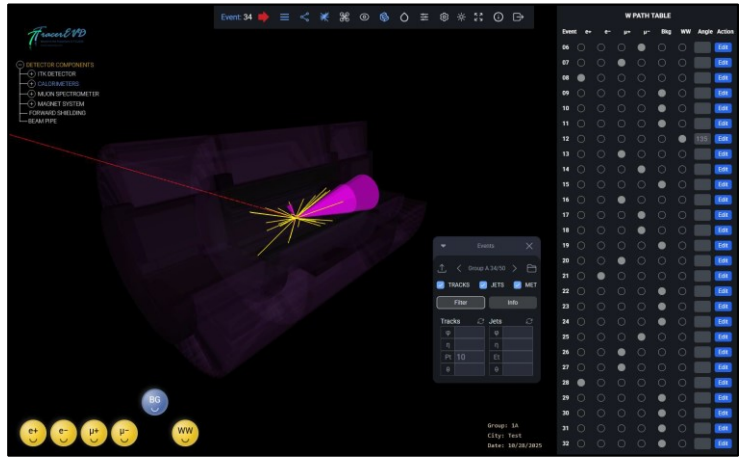
High-school students = scientists for a day!

- Lectures
- Hands-on workshop: analysing real data
- Worldwide conferences
  - Other student groups
  - Connected labs
    (CERN, KEK, FNAL, GSI, Pierre Auger)

13 000 students,
60 countries,
225 hosts

International Particle Physics Masterclasses

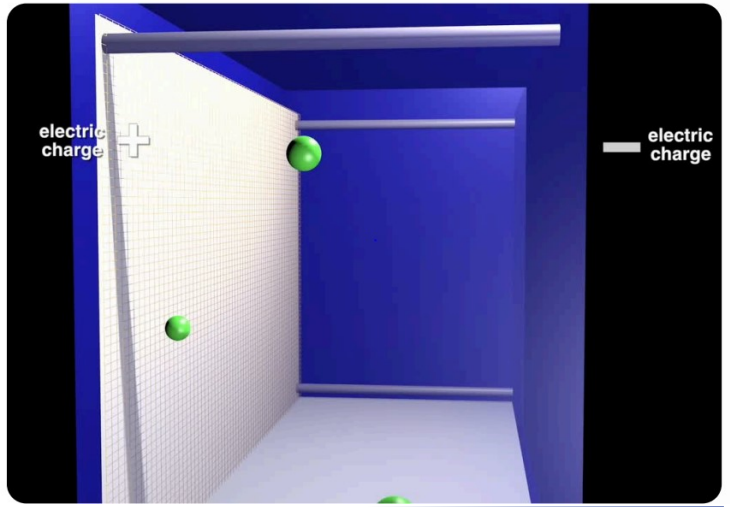
High-school students = scientists for a day!



- Different types of masterclasses:
  - **LHC**: ATLAS, CMS, LHCb, ALICE
  - **KEK**: Belle II
  - **Fermilab** (neutrinos): MINERvA, NOvA
  - **Cosmology**: Pierre Auger
  - **GSI**: Particle Therapy

  - **In discussion/development**: quantum computing, DUNE

DIS could be next!

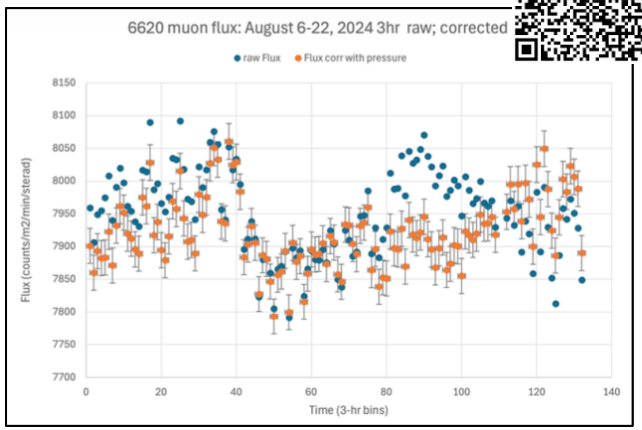


Global Cosmics

High-school students exploring cosmic rays
using real data and actual particle detectors

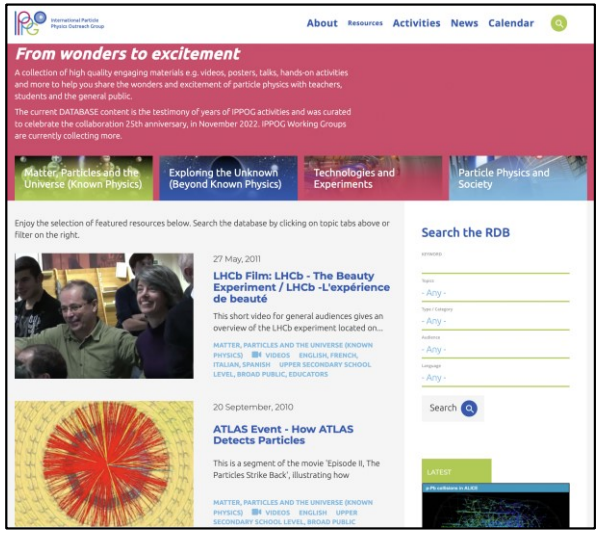
Student projects and annual events:

- **International Cosmic Day**
  (4000+ students, 28 countries, 111 groups)
- **International Muon Week**
  Worldwide Cosmic Ray Flux and ToF Study



Outreach Resources

- Members and Partners Resources
  https://ippog.org/resource-websites
- IPPOG **Resource Database**
  https://ippog.org/ippog-resource-database
- Particle Physics **Tapas** (Stories from IPPOG members)
  https://ippog.org/particle_physics_tapas
- Particle Physics **Resources Portal** (PP outreach projects)
  https://ippog-resources-portal.web.cern.ch
- **Publications**
  https://ippog.org/publications



Public Events & Festivals

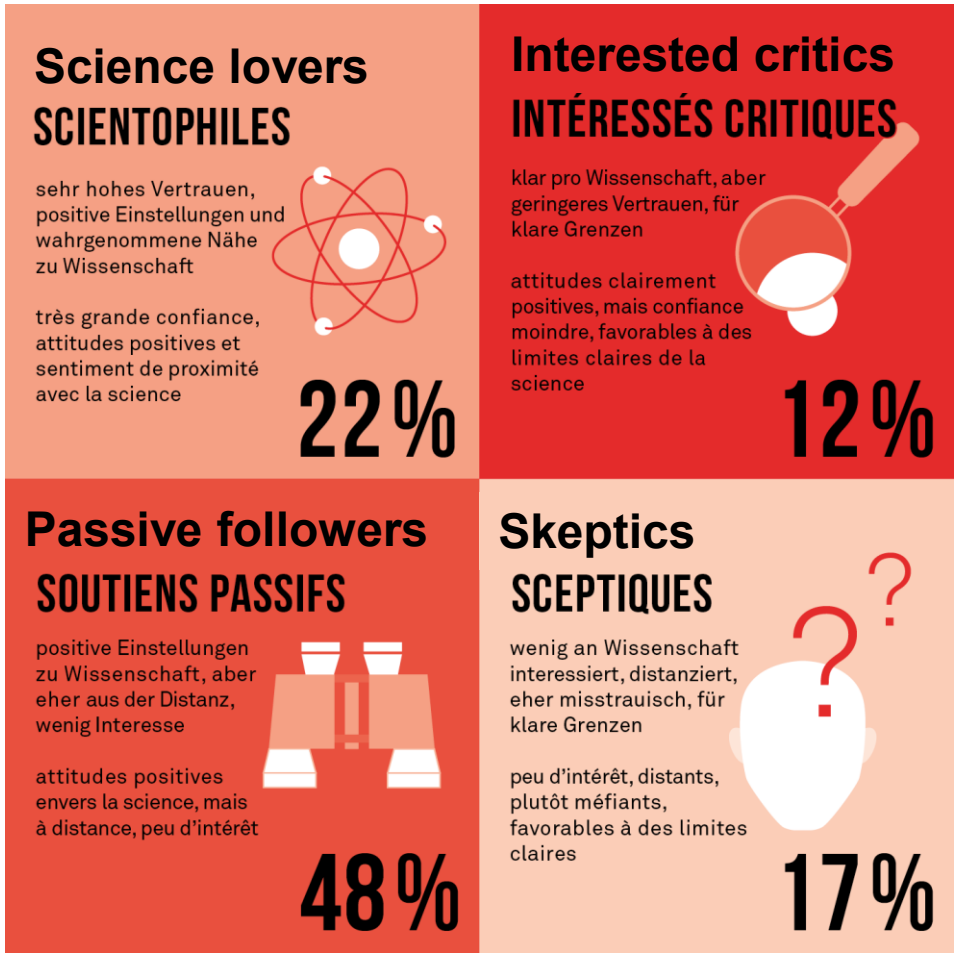
Colours of Ostrava
Czech Rep, 2019-2025

http://universalscience.web.cern.ch
Sofia, Adelaide, Lisbon, Online 2018-2022

Pohoda Festival
Slovakia, 2019

Music of Physics
Montreux, U.K., Sofia, Nepal, Czechia, 2018-2024

Why bother?



Source: Swiss Science barometer, 2024

- **35% actively seek out science content** (going down on a European level)
- 100% eligible to vote

- "I got the feeling that I did something which physicists do every day in their experiments, and I felt involved."
  - Masterclass testimonial by **participant**

- "It is very satisfying, because we do many video conferences and rarely do people cheer on the other side if you say something. Here they do!"
  - Masterclass testimonial by **moderator**

THANK YOU!

Sign up for our **newsletter** →
Learn more about **IPPOG**: ippog.org
Reach out: anja.horvat@cern.ch