



IPPOG website evaluated  
and  
IPPOG resources database curated  
by  
HST 2017 teachers





# New IPPOG chairs

During the 12<sup>th</sup> IPPOG meeting at CERN, the elections of new IPPOG chairs took place. From 4 candidates, IPPOG members' representatives elected a team of 2 co-chairs: Hans Peter Beck and Steve Goldfarb for the terms of office for the next 3 years from 1 January 2017 to 31 December 2019. Congratulations and many thanks to Marge for her great work and contribution to IPPOG in the role of co-chair for the past 4 years.

*enjoyed my tenure as an IPPOG co-chair. It was a pleasure to work with Hans Peter and Barbora guiding IPPOG into the MoU era and helping organize fruitful meetings for everyone. I look forward to greater times with my IPPOG colleagues."*

Bardeen

*Let us refocus our efforts and turn our focus now towards using more formal communication frameworks to build a strong IPPOG and platforms that will allow us to work together more effectively as a community and move forward to the next phase of Hans Peter, Barbora and all of IPPOG, in the pursuit of our common goal of particle physics research and discovery, everywhere."*

Steve Goldfarb

*"Setting up IPPOG into its new Collaborative status was a major achievement that is now behind us. Without Marge's wise advice and viewpoints from the US and Barbora's working long hours on formal documents, and without the support from CERN, CERN Council, ECFA, and all in IPPOG, we would not be where we are today. It is now to fully profit and exploit our Collaborative status, which, with the help of Steve and Barbora, has great potential for IPPOG to grow further in scope and in reaching out globally all aspects of particle physics research and*

# Teachers working for IPPOG

## IPPOG resource database and website revisited by high school teachers

During the 3 weeks [CERN HST 2017 programme](#) 43 high school physics teachers from many different countries spent several afternoons in working groups on different themes. IPPOG also proposed a working group this year and 4 teachers from Estonia, Iran, UK and US have been working on curation of [IPPOG resources database](#). The fruitful collaboration of mutual benefits and appreciation turned out to be extremely efficient exercise and contribution for IPPOG. There are more than 340 resources in IPPOG database. Firstly, teachers validated the new proposed curated categorisation for the upcoming new IPPOG website and resources database and then they curated big part of the resources (within their language limitations) and tagged them with new categories. Furthermore, they have proposed a user-friendly structure for the new IPPOG website and also a valuable communication strategy with the physics teachers around the world. They have identified the physics teachers associations in many countries actively seeking the collaboration with other teachers in HST program. The 'cherry on the cake' is the creation of "IPPOG friends" list / e-group, which includes today HST 2017 teachers and is expected to grow organically as IPPOG friends are spreading the word further...

Thank you for your valuable input which brought IPPOG further again!

*"Thank you for such a memorable experience, it was truly great to work together and give something back to IPPOG and CERN. The workgroup activity has been a highlight of the HST."*

- Robert Nickson, HST teacher, UK



# Global cosmic rays studies

## IPPOG NEWSLETTER

JULY 2017

Number 4



IN THIS ISSUE

- ★ IPPOG worldwide
- ★ IPPOG internal affairs
- ★ IPPOG activities

### A word from the coordination team



Dear IPPOG members,  
We are pleased to have you all in our newsletter. The IPPOG team is currently working on the new website and the new resource database. We are also working on the new IPPOG logo and the new IPPOG internal affairs. We are also working on the new IPPOG activities. We are also working on the new IPPOG worldwide. We are also working on the new IPPOG internal affairs. We are also working on the new IPPOG activities. We are also working on the new IPPOG worldwide.

### IPPOG at March for Science



IPPOG members participated in the March for Science event. The event was held in Washington, DC. IPPOG members were joined by other scientists and activists. The event was a success and IPPOG members were proud to represent the community. The event was a success and IPPOG members were proud to represent the community. The event was a success and IPPOG members were proud to represent the community.

Barbora Gulejova



NICE SUCCESS STORY



“The workgroup activity with IPPOG has been a highlight of HST”

# HST 2017 Working Group G7



wiseGEEK

Database



Webpage

TEAM	
HST	IPPOG
Soleiman	Barbora
Katrin	Steve
Robert	
Rob	



Communication

<https://indico.cern.ch/event/572852/timetable/>

# Teachers will tell you more...

HST 2017 - IPPOG DB Curation

Fail Muuda Kuva Sisesta Vorming Andmed Tõriistad Pistikprogrammid Abi Kõik muudatused on Drive'i salvestatud

tenakova.katrin@gmail.com

particules, quarks, bosons interactions

	A	B	C	D	E	F	G	H
1	Item	Topic	Subtopic	Item Types	Audiences	Rating (	Keywords	Comments
65	CERN lesson plan, Background material, units					5		as above
66	Cloud chamber diy manual	Technologies and Experim	Detectors	classroom materials	educators, upper second	5	detectors, cosmic rays, particles	
67	Solving the enigma of the universe,	Matter, particles and unive	particles and interactions,	presentation	broad public, educators, (	4	particles, cosmology, quarks, energy	
68	A question of survival							repeat link, different title, se
69	International cosmic day 2015							poster for this event, out of
70	Alice, a voyage inside the core of n	Technologies and experim	Detectors	video	broad public	3	detectors, alice, quark gluon plasma	
71	ALICE videos for open days 2013	Technologies and experim	Detectors	video	broad public	3		badly named file, sounds di
72	A new particle is discovered, a Hig	Matter, particles and unive	Higgs Boson	video	broad public, educators	4	higgs, boson	change name to The Discov
73	The Higgs Boson	Matter, particles and unive	Higgs Boson	poster	educators	5	higgs, boson	
74	A salad bowl accelerator	Technologies and experim	Accelerators	project	educators	5	accelerator model	
75	Build a cloud chamber							web version of line 66
76	The basics of the Higgs boson	Matter, particles and unive	particles and interactions	lesson plan	educators			needs log in
77	A la rencontre des aceleratures des particules							cannot comment, in french
78	Beamline for schools competition							2013, out of date, remove
79	Le mysteries des rayon cosmique							in french, cannot comment
80	CMS HEP tutorial	Particle physics and sociel	why fundamental research	simulation	educators, upper second	5	data analysis, boson, discovery	
81	Quark poker							in french, cannot comment
82	Particle masses, what if they had been different							Dual language, english link

Sheet1 Avastamine



<https://cds.cern.ch/record/2275522>

<https://mediastream.cern.ch/MediaArchive/Video/Public/Conferences/2017/572852c67/572852c67-2000-kbps-1280x720-30-fps-audio-96-kbps-44-kHz-stereo.mp4>

## LEARNING TOPICS (44)

# IPPOG DB TODAY

## ITEM TYPES/ CATEGORIES (41)

### 1) PHYSICS

Conservation Laws  
Cosmic Microwave Background  
Cosmology  
Dark Energy  
Dark Matter  
Extra / Multi Dimensions  
Forces  
Higgs Boson  
W' Z' Bosons  
Mass  
Matter / Antimatter  
Micro Black Holes  
Neutrinos  
New Physics  
Particles  
Quark Gluon Plasma  
Standard Model  
SUSY  
Symmetry

### 3) INTERNATIONAL COLLABORATIONS

History  
Life as a Physicist  
(Maps) Who does What?  
Process of Discovery  
Working with Industry

### 4) BROADER IMPACT

Cancer Treatment  
Culture  
Education  
Medical Applications  
Medical Screening  
Technology Transfer  
WWW

### 1) Activities

Cart Demonstration  
Classroom Activity  
Facilitated Activity  
Presentation  
Game  
Display

### 2) Programs & Events

Science Fair / Science Festival  
Science Camp  
Science Shows & Performances  
Symposium / Conference  
Classroom Outreach Program  
Multi-Media Contest

### 3) Media

Audio / Podcast  
Film / Video  
Animation - real event  
Animation - simulated event  
Images  
Photos  
Illustrations  
Event Displays (static)  
Plots  
Computer game  
Non-game Inter-actives / Virtual Tours  
Website  
Print Media  
Fact Sheet  
Brochure / Flyer / Leaflet  
Article / Journal  
Poster  
Banner / Print Pannel  
Book

### 4) Professional Development & Coaching

### 5) Exhibits

Permanent Exhibitions  
Portable Exhibitions  
Exhibits

### 6) Souvenir / Novelty Item

## FILTERING/ SEARCH BY:

### 1) Learning Topic (44 topics!)

### 3) Audience

- 6 to 9 years
- 9 to 12 years
- 12 to 15 years
- 15 to 18 years
- 18 to 25 years
- 25 years+
- Science Educator / Science Explainer

### 2) Item Type (41!)

### 4) Availability

- Build yourself
- Download
- Have for free (but not download)
- Rent
- Borrow
- Buy

### 5) Language

- Arabic Catalan Chinese
- Czech Danish Dutch
- English Finnish French
- German Greek Hungarian
- Italian Japanese Norwegian
- Polish Portuguese Romanian
- Russian Serbian Slovak
- Slovenian Spanish Swedish
- Turkish

### 6) Duration

- 0-5 mins
- 6-15 mins
- 16-30 minutes
- 31-45 minutes
- 46-60 minutes
- 61+
- Half day
- 1 day
- 2-3 days
- 4-6 days
- 1 week or more

# CURATED CATEGORIES

(Proposed by Barbora, H-P and Rolf in 2015)

## TOPICS:

**From 44 to 16**

### 1) MATTER, PARTICLES AND UNIVERS (KNOWN PHYSICS)

- PARTICLES AND THEIR INTERACTIONS
- COSMOLOGY
- HIGGS
- ANTIMATTER
- QUARK-GLUON PLASMA
- NEUTRINOS

### 2) EXPLORING THE UNKNOWN (BEYOND KNOWN PHYSICS)

- SUPERSYMMETRY
- DARK MATTER
- DARK ENERGY
- EXTRA DIMENSIONS

### 3) TECHNOLOGIES and EXPERIMENTS

- ACCELERATORS
- DETECTORS

### 4) PARTICLE PHYSICS AND SOCIETY

- WHY FUNDAMENTAL RESEARCH
- INTERNATIONAL COLLABORATION
- APPLICATIONS & SPIN-OFFS
- PEOPLE BEHIND THE SCIENCE

VALIDATED BY  
TEACHERS

## ITEM TYPES / CATEGORIES:

**From 41 to 10**

- Photos/ Posters/ Charts
- Videos
- Animations / Simulations
- Presentations (ppt,pdf)
- Games
- Classroom materials / Tutorials / Lesson plans / Text books
- Books
- Projects / Competitions
- Exhibition items
- Souvenirs (*could go also to separate item on the website*)

## FILTERING / SEARCH BY:

**From 6 to 4**

### 1) **Topic** (see above = 17)

### 2) **Type / Category** (see above =9)

### 3) **Language**

- |                                 |                                  |
|---------------------------------|----------------------------------|
| <input type="radio"/> Arabic    | <input type="radio"/> Italian    |
| <input type="radio"/> Catalan   | <input type="radio"/> Japanese   |
| <input type="radio"/> Chinese   | <input type="radio"/> Norwegian  |
| <input type="radio"/> Czech     | <input type="radio"/> Polish     |
| <input type="radio"/> Danish    | <input type="radio"/> Portuguese |
| <input type="radio"/> Dutch     | <input type="radio"/> Romanian   |
| <input type="radio"/> English   | <input type="radio"/> Russian    |
| <input type="radio"/> Finnish   | <input type="radio"/> Serbian    |
| <input type="radio"/> French    | <input type="radio"/> Slovak     |
| <input type="radio"/> German    | <input type="radio"/> Slovenian  |
| <input type="radio"/> Greek     | <input type="radio"/> Spanish    |
| <input type="radio"/> Hungarian | <input type="radio"/> Swedish    |
|                                 | <input type="radio"/> Turkish    |

### 4) **Audience**

- Primary school level
- Lower secondary school level
- Upper secondary school level
- Broad public
- Educators

### 5) **Keyword**

Additional tag will be added to all items in database to sort out and show the resources by their **quality** (IPPOG recommended, good, old but still ok)

# Proposed search in database...

(Barbora and H-P in 2015)





## PARTICLE PHYSICS RESOURCES DATABASE

From wonders to excitement....

A collection of high quality engaging materials, e.g. videos, posters, talks, hands-on activities and more to help you share the wonders and excitement of particle physics with teachers, students and the general public.

Filter:

Topic ▼

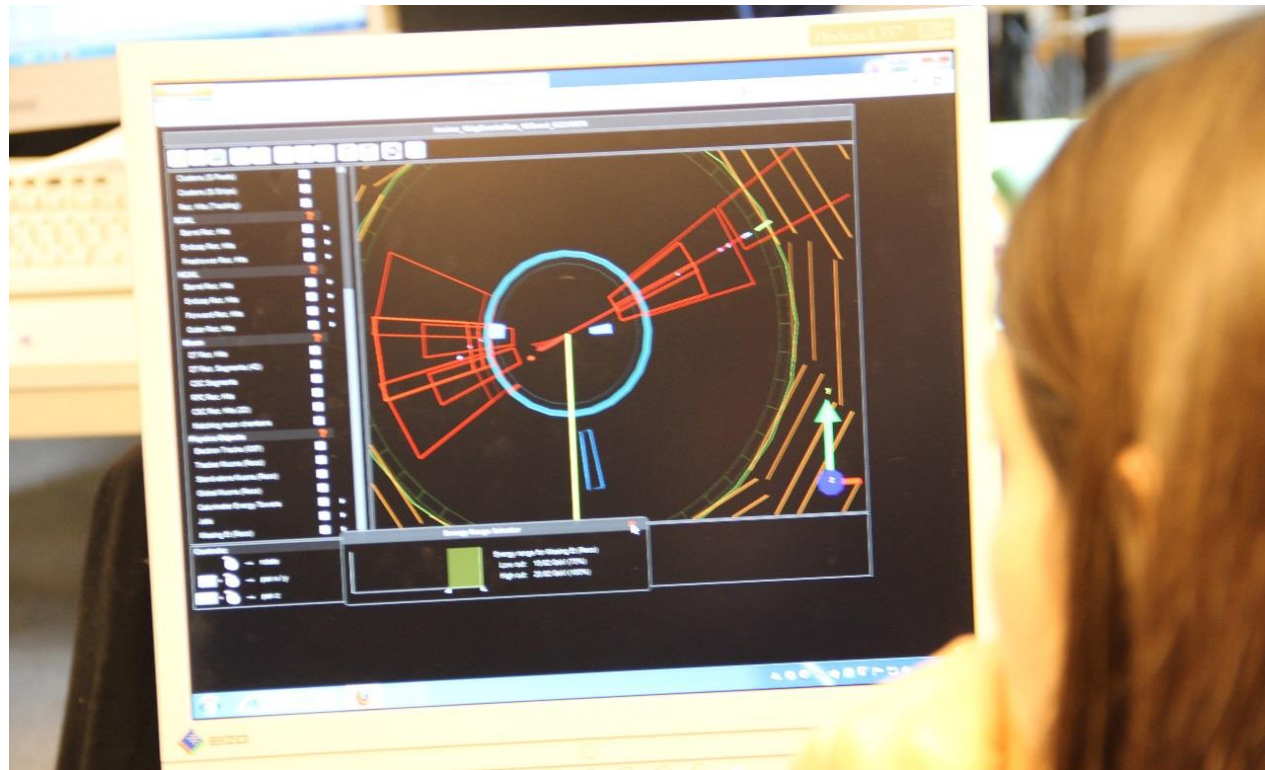
Item type ▼

Language ▼

Audience ▼

Free text search

[IPPOG DB FAQs](#)



Latest

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Scroll down



Events calendar

 Search

## PARTICLE PHYSICS RESOURCES DATABASE

Idea is that one can search by the filter on the left, but also use the quick search by topics in the middle, while at every moment there is a possibility to refine the search by the filter on the left, which will always appear there.

A collection  
wonders and

Filter:

Topic ▼

Item type ▼

Language ▼

Audience ▼

Free text search

### Particle Physics Learning Topics

<p><b>Matter, Particles, and the Universe</b></p>	<p><b>Exploring the unknown</b></p>
<p><b>Technologies &amp; Experiments</b></p>	<p><b>Particle Physics and Society</b></p>

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Now you click on  
Matter, Particles and Universe



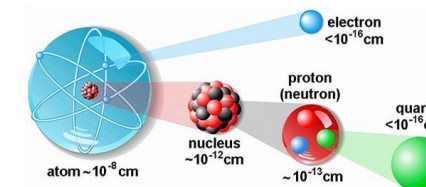
# International Particle Physics Outreach Group

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## PARTICLE PHYSICS RESOURCES DATABASE

### Matter, Particles, and the Universe

Intro Text of what **Matter, Particles, and the Universe** is all about. The picture here on the right appears so that one knows that he/she is in Matter, Particles and Universe section.



Filter:

Topic ▼

Item type ▼

Language ▼

Audience ▼

Free text search

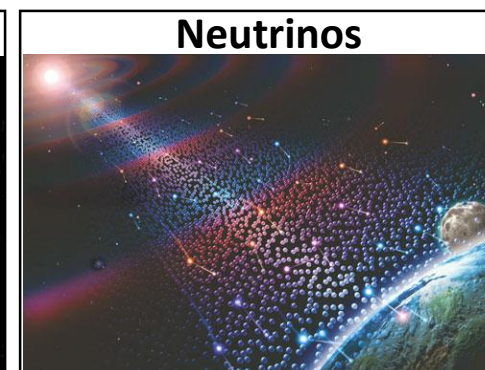
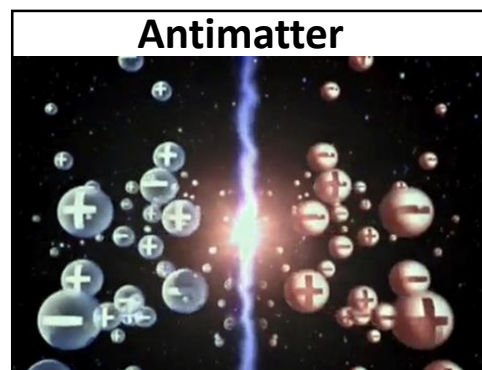
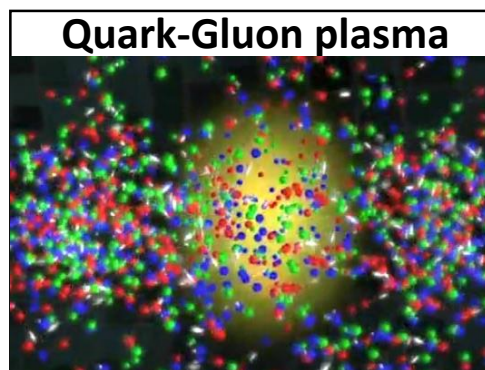
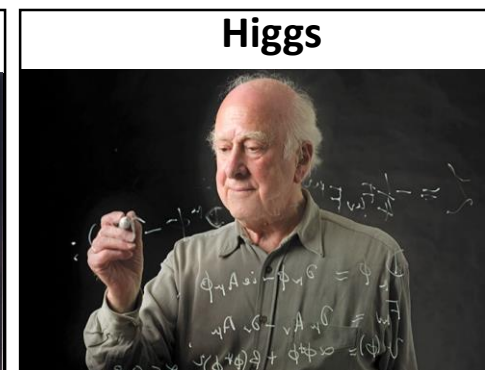
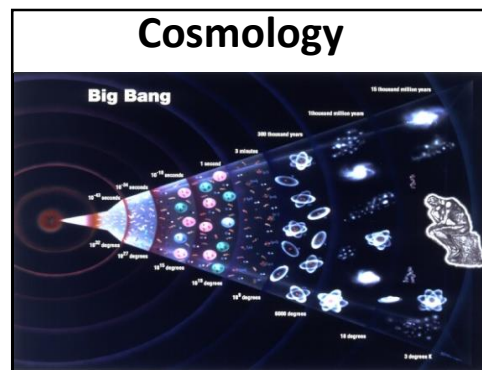


IPPOG DB FAQs

### Particles and their interactions

THE STANDARD MODEL

	matter particles			gauge particles
	1st gen.	2nd gen.	3rd gen.	
QUARK	$u$ up	$c$ charm	$t$ top	Strong Force $g$ Gluon
	$d$ down	$s$ strange	$b$ bottom	Electro-Magnetic Force $\gamma$ photon
LEPTON	$\nu_e$ $e$ neutrino electron	$\nu_\mu$ $\mu$ neutrino muon	$\nu_\tau$ $\tau$ neutrino tau	Weak Force $W$ bosons $Z$ boson
	scalar particle(s) $H$ Higgs			



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# You click on Particles and their interactions



# International Particle Physics Outreach Group

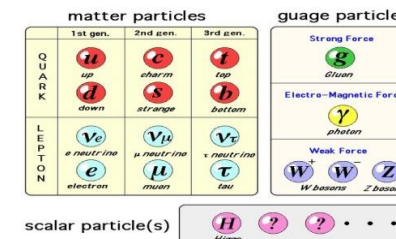
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## PARTICLE PHYSICS RESOURCES DATABASE

### Particles and their interactions

Intro Text of what Partcles and their interactions is all about.

(Here could be eventually also the full resume of all choice options, which have been done so far in the filter on the left, so that one knows where in DB is he at the moment.)



#### Filter:

Topic ▼

Item type ▼

Language ▼

Audience ▼

Free text search



IPPOG DB FAQs

#### RESULTS

- CASCADE OUTREACH COMPETITIONS FOR SCHOOLS - AN EFFICIENT WAY TO INTRODUCE PARTICLE PHYSICS**  
 pmw@hep.ph.bham.ac.uk  
 The Particle Physics group at the University of Birmingham has tried many different forms over recent years. We have found that a Cascade competition is a very efficient way to introduce concepts and experiments to a wide range of students...
- MULTILINGUAL POSTER ABOUT THE ELEMENTARY CONSTITUENTS OF MATTER**  
 afficheComposantsElementaires@in2p3.fr  
 The original version of this poster was created in France in 2014. It is the update of a poster in French. Since then, it has been translated to other languages. Additional language versions are available.
- L'ÉNIGME DE LA MATIÈRE SOMBRE - LA FACE CACHÉE DE L'UNIVERS**  
 PaulineGagnon00@gmail.com  
 This presentation explains what is dark matter, reviews several proofs of its existence and discusses the latest results from the Large Hadron Collider.
- HIGGS "GOD PARTICLE" BOSON**  
 tmhong@hep.upenn.edu  
 This public talk was given shortly after the announcement of the discovery of the Higgs boson. The audience was a room full of physicists at Thomas Jefferson University.

See also

#### Topics

Matter, Particles & Universe  
Exploring unknown  
Technologies and experiments  
Particle Physics and Society

#### Audience

Lower secondary  
Upper secondary

#### Language

English  
Slovak  
French  
Arabic  
German  
...

#### Type

Competition

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Information about all overlapping categories in the view of selected items

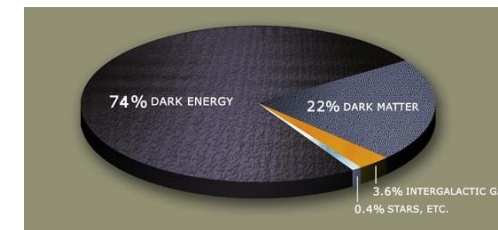
If after the first slide you clicked on  
Exploring the unknown

 Search

## PARTICLE PHYSICS RESOURCES DATABASE

### Exploring the unknown

Intro Text of what **Exploring the unknown** is all about. The picture here on the right appears so that one knows that he/she is in Exploring the unknown section.



Filter:

Topic ▼

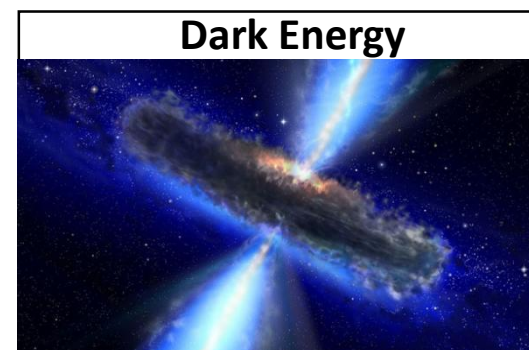
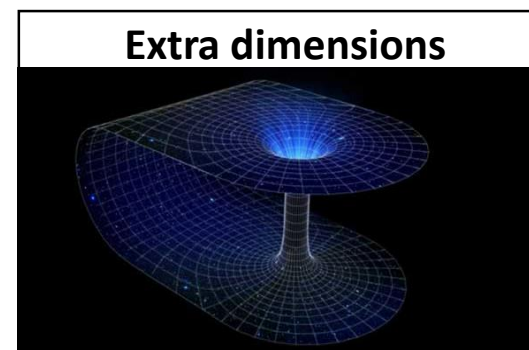
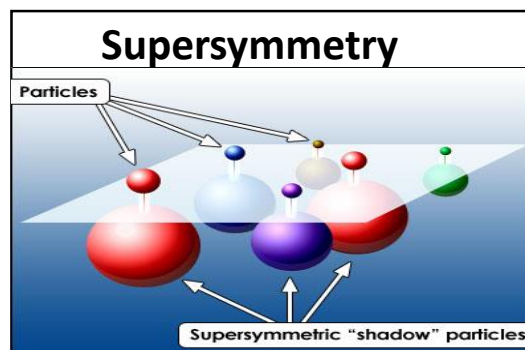
Item type ▼

Language ▼

Audience ▼

Free text search

IPPOG DB FAQs



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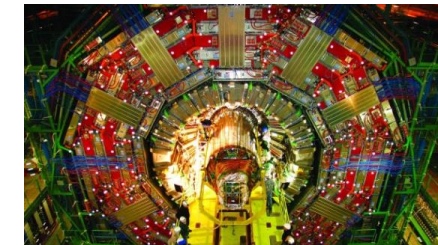
If after the first slide you clicked on  
Technologies and Experiments

## PARTICLE PHYSICS RESOURCES DATABASE

### Technologies and experiments

Intro Text of what **Technologies and Experiments** is all about. The picture here on the right appears so that one knows that he/she is in Technologies and Experiments section.



#### Filter:

Topic ▼

Item type ▼

Language ▼

Audience ▼

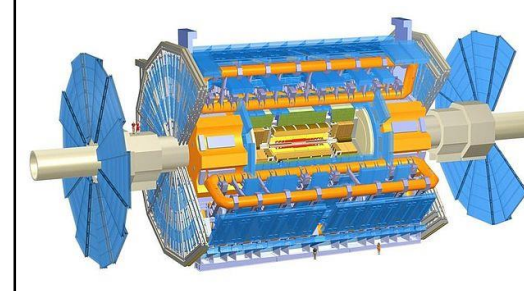
Free text search

[IPPOG DB FAQs](#)

Accelerators



Detectors



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If after the first slide you clicked on  
Particle physics and Society

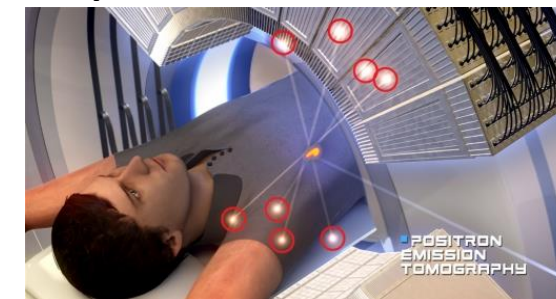
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## PARTICLE PHYSICS RESOURCES DATABASE

### Particle physics and society

Intro Text of what **Particle Physics and Society** is all about. The picture here on the right appears so that one knows that he/she is in Particle Physics and Society.



Filter:

Topic ▼

Item type ▼

Language ▼

Audience ▼

Free text search

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#### Why fundamental research



#### International collaboration



#### Applications and spin-offs



#### People behind the science

Stories and anecdotes of persons who have been former researchers in PP and are now active in other areas in society and made a difference; and also good stories of active particle physicists

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...this concept was validated by teachers



# IPPOG database curated by teachers



wiseGEEK

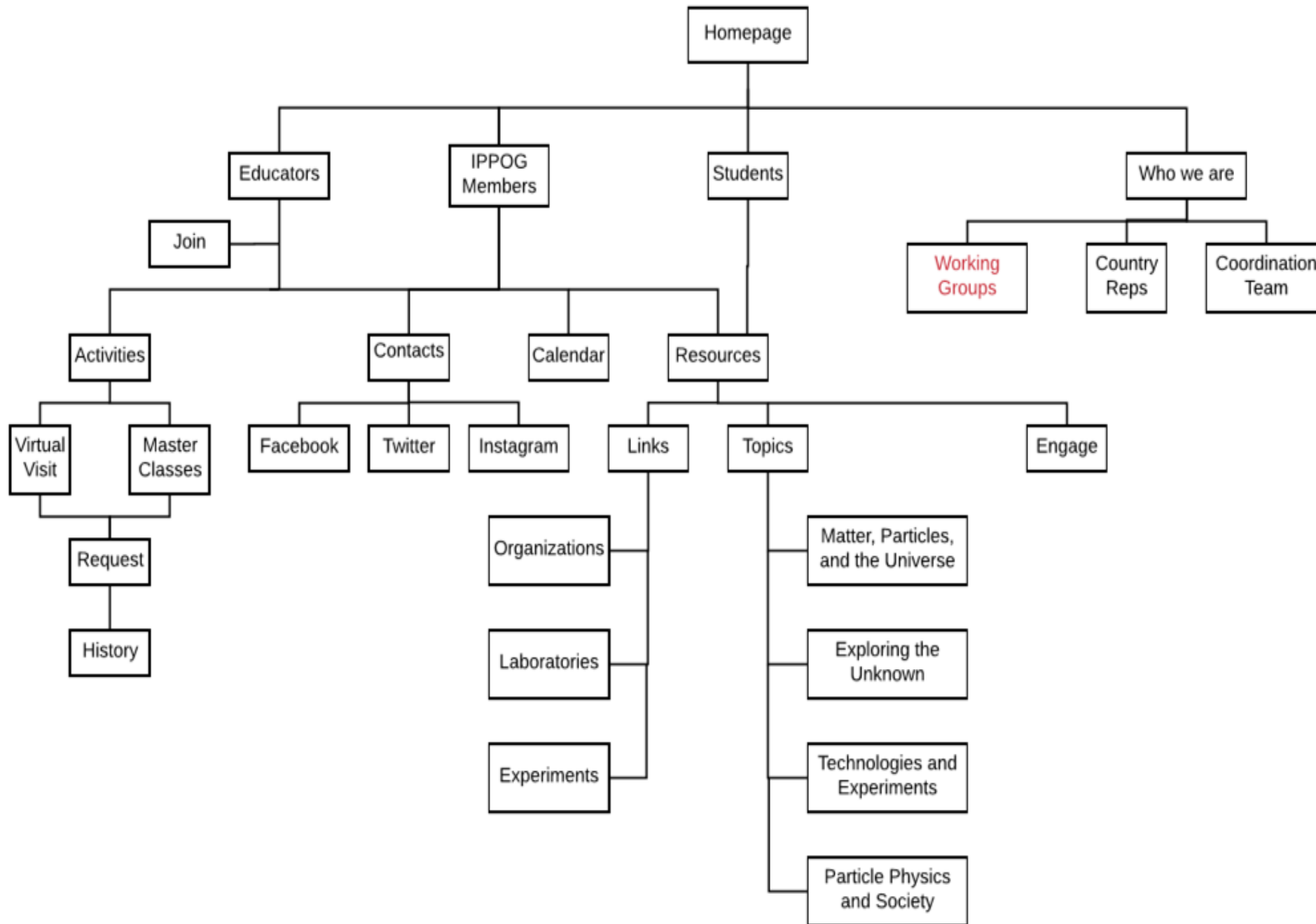
particles, quarks, bosons interactions

	A	B	C	D	E	F	G	H
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67	Solving the enigma of the universe,	Matter, particles and unive	particles and interactions, c	presentation	broad public, educators, u	4	particles, cosmology, quarks, energy	
68	A question of survival							repeat link, different title, se
69	International cosmic day 2015							poster for this event, out of
70	Alice, a voyage inside the core of n	Technologies and experim	Detectors	video	broad public	3	detectors, alice, quark gluon plasma	
71	ALICE videos for open days 2013	Technologies and experim	Detectors	video	broad public	3		badly named file, sounds d
72	A new particle is discovered, a Higg	Matter, particles and unive	Higgs Boson	video	broad public, educators	4	higgs, boson	change name to The Disco
73	The Higgs Boson	Matter, particles and unive	Higgs Boson	poster	educators	5	higgs, boson	
74	A salad bowl accelerator	Technologies and experim	Accelerators	project	educators	5	accelerator model	
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81	Quark poker							in french, cannot comment
82	Particle masses, what if they had been different							Dual language, english link

# Webpage structure proposed by teachers







# Communication strategy proposed by teachers



## Association of physics teachers as friends of IPPOG:

International Group of Physics Teaching: <https://girep.org>

USA - American Assoc. Of Physics Teachers, [aapt.org](http://aapt.org)

UK - Physics Teacher Network, [stimulatingphysics.org](http://stimulatingphysics.org)

Cyprus - <https://sites.google.com/site/physicistsofcyprus/home>

Ontario - Canada, Ontario assoc. of Physics teachers - [oapt.ca](http://oapt.ca)

Bulgaria - <http://www.phys.uni-sofia.bg/upb/coming/index.html>

Macedonia - <http://dfrm.org>

Italy - <http://www.aif.it>

Thailand - <http://www.thps.org>

India - <http://www.indapt.org>

Denmark - [astra.dk](http://astra.dk)

Brazil - <http://www.sbfisica.org.br/v1/>

Finland - <http://www.maol.fi>

Iran - <https://www.uipteachers.ir>

Estonia - <http://www.fyysika.ee/efs/opetajad.html>

... More can be found....

# International Group of Physics Teaching GIREP

Participants of the GIREP annual conference

<https://girep.org/partners.html>

Long list of 257 participants with email contacts!



# IPPOG FRIENDS

43 HST 2017 teachers

GOOD START



# SUMMARY

- Proposed curated categories validated
- Proposed DB search structure validated
- Large part of DB curated! – limits in language!
- Website structure proposed
- New communication channels identified!

## TO DO

- Get the rest if DB curated (French, German, Italian...) – maybe HST 2018!
- Facebook group to discuss about IPPOG
- IPPOG presentation guidelines – if some IPPOG friend wants to spread a word about IPPOG...

## VIDEO

Start: **1:15** –Jeff, Robert and Katrin

At **6:14** stop and show slides with curated categories...

Remove **8:42 – 9:00** – Rob

Remove **9:30-9:50**

At 10:00 Show slide on the flowchart...

Remove **12:06-12:23** - Soleiman

Remove **15:14-18:12**

Show the list of Associations...

Remove **20:08-20:38**

Stop: **20:47**