

# International Particle Physics Outreach Group (IPPOG) Report



- **Brief history: started as a network called the European Particle Physics Outreach Group (EPPOG) in 1997.**
  - Sweden represented in the network through Fysikersamfundet.
  - Tightly connected to CERN in the beginning, changed name to IPPOG a couple of years ago to reach out worldwide.
  - Has expanded to cover much more than accelerator physics, in particular strong activities in cosmic ray (astroparticle) physics outreach.
- **Transformed from a network into a formal collaboration four years ago, with membership fees.**
  - Members can be countries, laboratories or experiments.
  - Fees are low (1 kEuro/year), **medium (3k)** or large (5k), depending on the GDP and the size of the community.
  - This allows to go from ideas to action, to have the means to produce material and pay for critical organisational support.
- **Meet twice a year for 2.5 day long, intense, meetings.**
  - Had a virtual meeting in the Spring, and our fall meeting just last week (Wed-Fri), which was a hybrid meeting at CERN and online.



- We got the pleasure to choose between 4 different logos commissioned for use during outreach events next year.

- For the second time, IPPOG has put together an annual report which can be shown to stakeholders (CERN council).
  - After a couple of general reports on activities, there is one page per member state on local activities.
  - Thanks a lot to those that provided input earlier this year.
  - We are going to be asked to provide input every year, so continue to organise outreach events and *document them and take pictures!*



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CERN och jakten på materians minsta byggstenar

Jonas Strandberg, KTH  
Sara Strandberg, SU

UTSTÄLLNINGEN UNGA FORSKARE

A lecture about CERN was recorded for participants in the annual physics competition for high school students.

LUND UNIVERSITY LINXS big science sweden

PARTNER EVENT

5 NOVEMBER 2020

**BIGSCIENCE@LU**

Lund university researchers engage with industry through the Big Science Sweden initiative, for example presenting contributions about real-time analysis and the LHC computing grid at the yearly meeting.

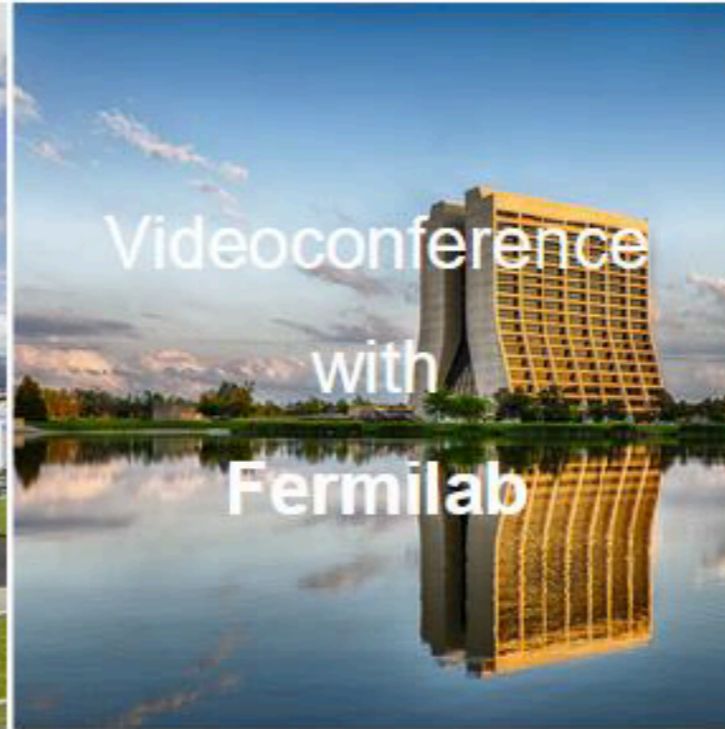
Sweden has been a member of the IPPOG collaboration since its early days as EP(P)OG. The current IPPOG representative for Sweden is Jonas Strandberg, associate professor at KTH, who has served since 2014. Each year researchers and educators in Sweden commit their time and efforts to hosting and convening particle physics masterclasses around the country, reaching out to students in high schools. They also make the effort to reach out to policy makers, media and the public at large with public talks and hosted events and exhibitions. These activities not only foster public support of the Swedish research program, but help to prepare the next generation of scientists and experts to collaborate and compete in an international environment, whether in particle physics, other STEM-related fields, or simply as well-informed citizens contributing to the national well-being. The specific activities and projects in 2020 including masterclasses for high school students at Lund and Uppsala universities were cancelled due to the Covid-19 pandemic.

At the SciFest in Uppsala a 2D description of the universe was presented, where the visitors could test how stellar objects of different masses affect the space-time curvature; and could "see" the gravitational waves produced by two black holes merging.

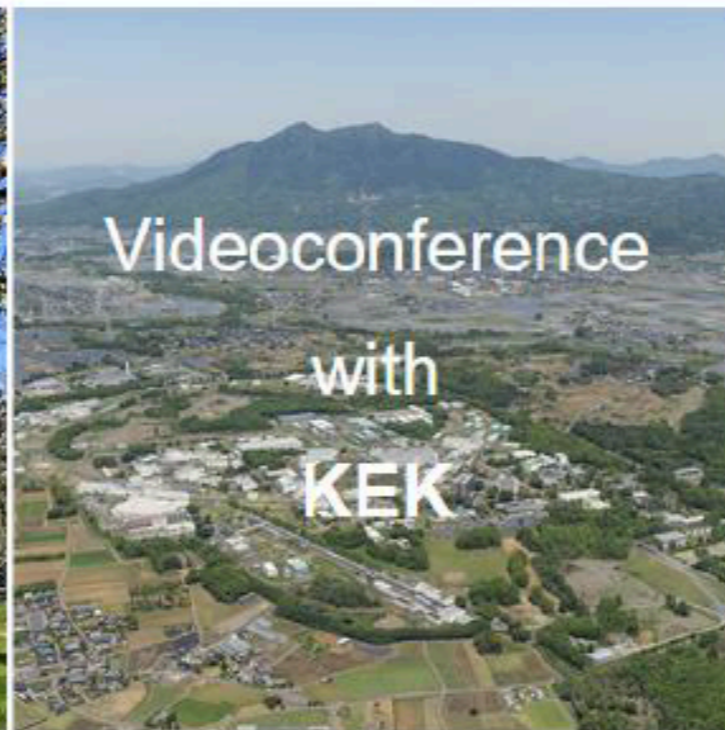
Rebeca Gonzalez Suarez (Uppsala university) has been elected as co-convenor of the ATLAS outreach group.



© CERN



© Fermilab



## LHC Masterclasses

136 MCs with CERN VC (275)

- 57 ATLAS (128)
- 35 CMS (66)
- 22 LHCb (43)
- 22 ALICE (38)

38 MCs with Fermilab VC (50)

- 23 CMS (35)
- 5 ATLAS (15)

5 MCs with TRIUMF VC (3)

## MINERvA Masterclasses

11 MCs (18),  
7 VCs (7)

## Belle II Masterclasses

10 MCs (14),  
3 VCs (3)

## Hadron Therapy Masterclasses

33 MCs (24),  
6 VCs (5)

5192 unique viewers  
(from Zoom reports)

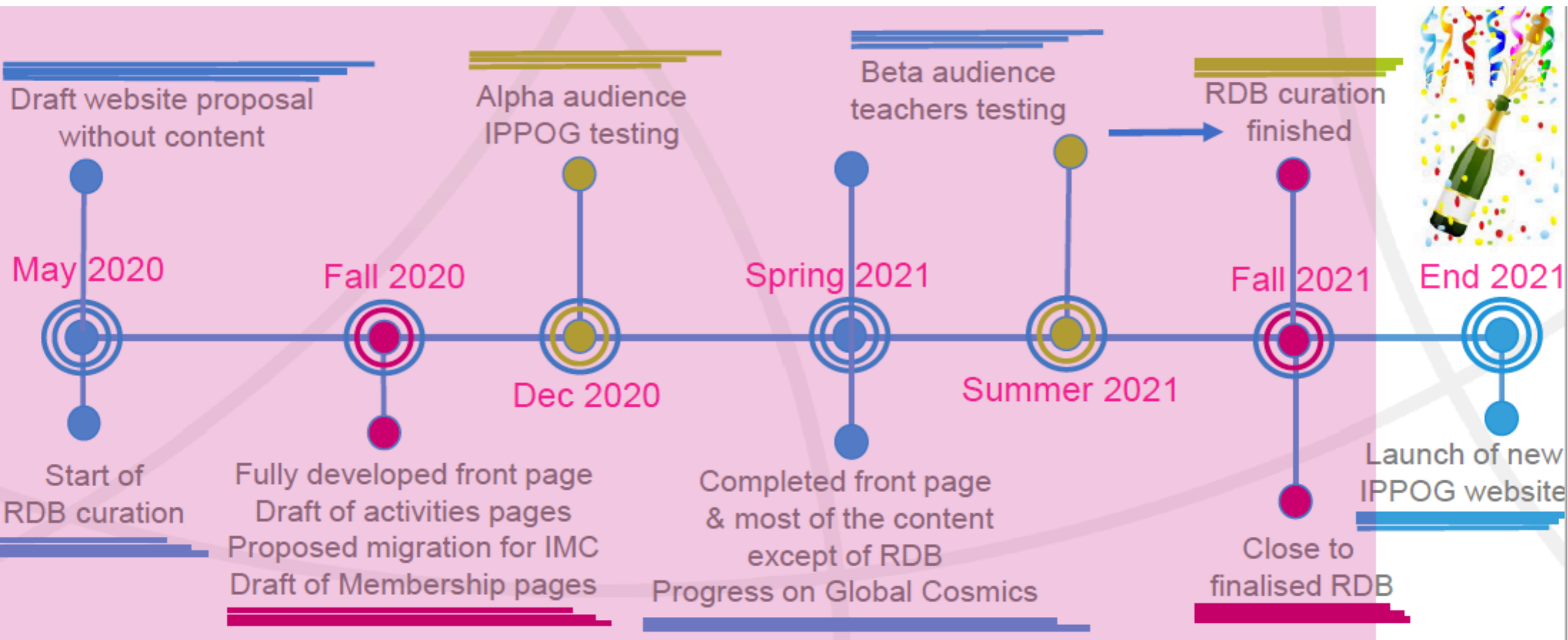
240  
students

- All masterclasses had to be completely virtual in 2021.
  - Attendance about 70% of the peak years before the pandemic.

	ATLAS Z	ATLAS W	CMS	LCHb	ALICE S.P.	ALICE R_AA	ATLAS Z	CMS WZH	MINERVA
	CERN						Fermilab		
VC slots offered	120	35	60	45	25	5	many	many	many
registrations	79	16	53	20	19	4	5	5	2

- Three settings:
  - (1) Masterclasses at universities or labs (high school students allowed on campus)
  - (2) Remote Masterclasses with students in classrooms
  - (3) Remote Masterclasses with individual students, connecting from home (or elsewhere)
- Still time to sign up if you want to arrange MC next year. [Link to Z path.](#)





- The major project in IPPOG the last years have been the complete re-write of the RDB.
  - More than 50 people involved in curation of old and new material (plus the code development).



## IPPOG Resource Database

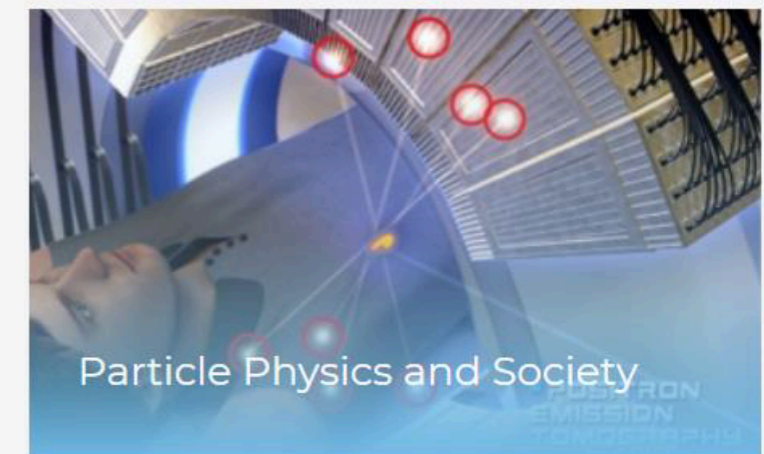
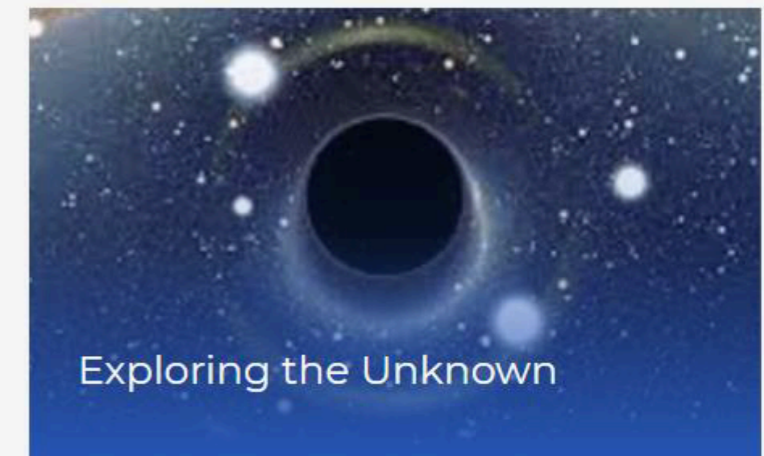
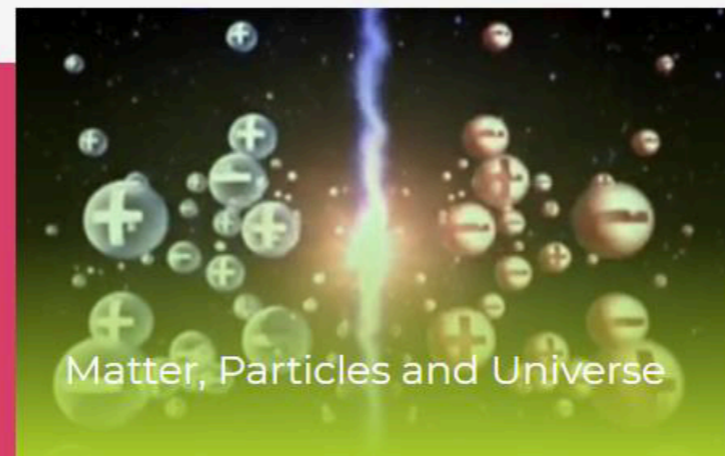
### From wonders to excitement

Preliminary text:

IPPOG Resource Database is an online platform to facilitate the exchange of education and outreach resources in particle physics and related sciences across the globe.

You will find high-quality engaging materials recommended by experts for teachers, students and the general public, which are readily understandable and regularly updated to reflect the latest discoveries in the field.

[Search for more](#)



- RDB close to going public, has been communicated in a lot of conferences throughout this year.
  - Here you see a screenshot of what it will look like.

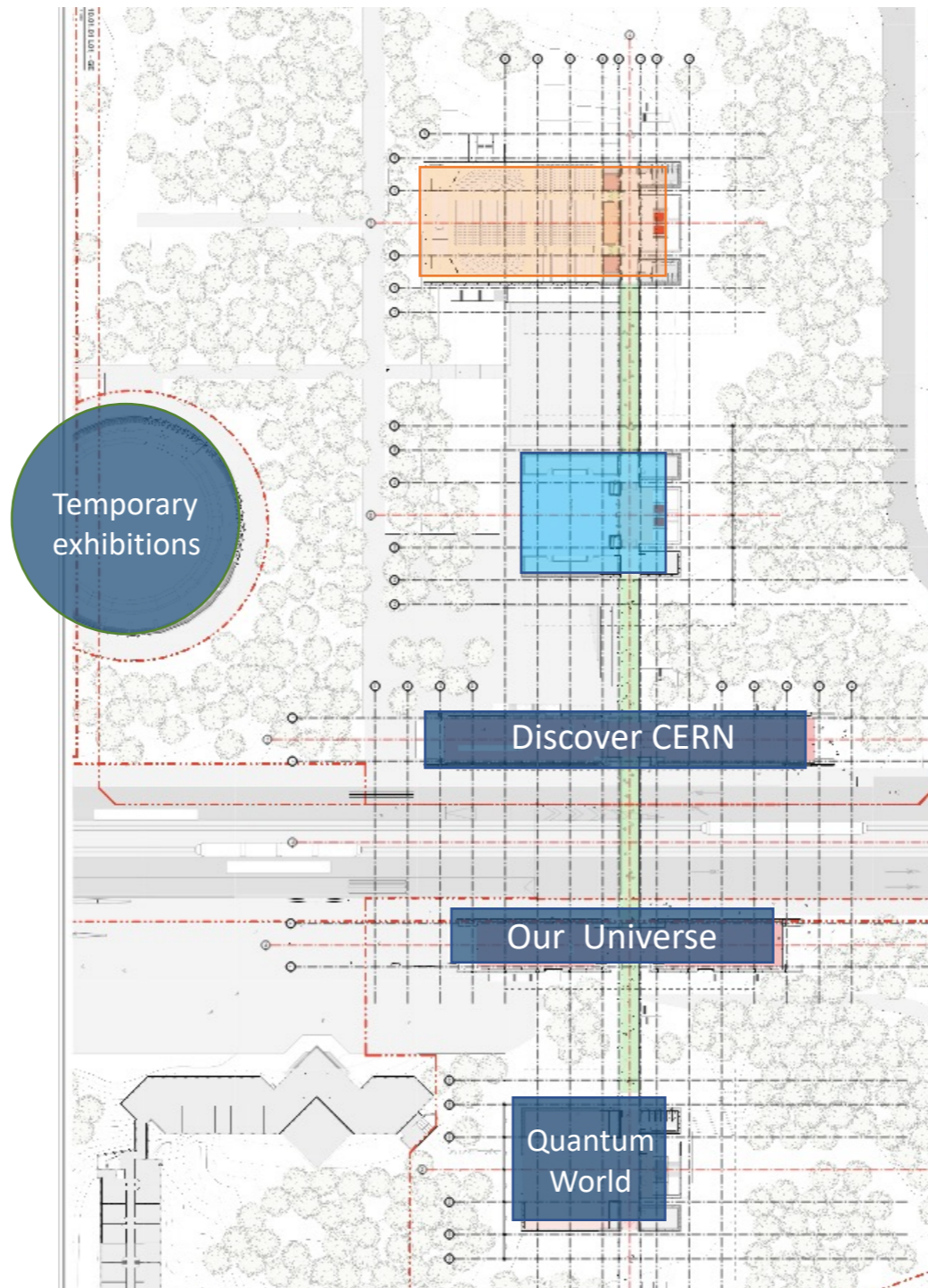


- Construction of the Science Gateway is underway, scheduled to open to the public in 2023.
  - Tourist attraction for all visiting the Geneva area.
  - Sharing of content across the Member States, and also with content from the dismantling of the Microcosm.

## CERN Science Gateway

### The Globe

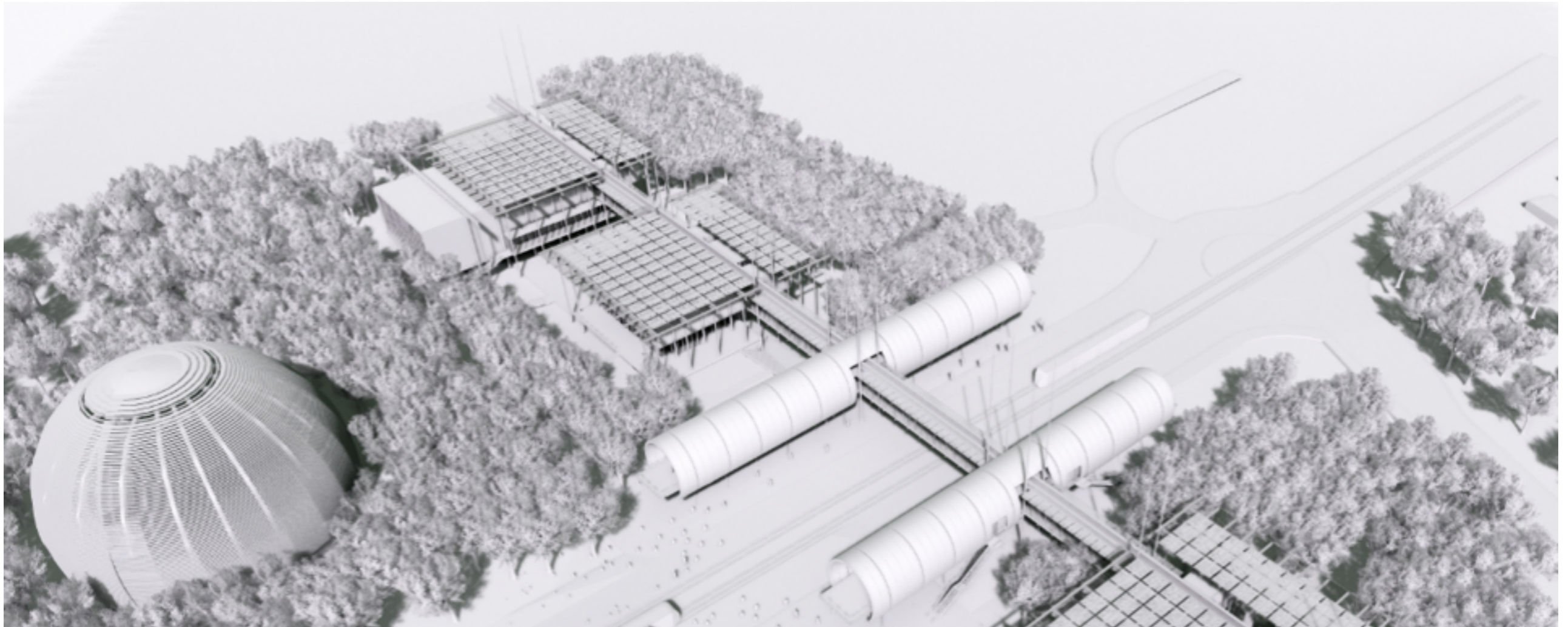
Temporary exhibitions reflecting lab news, particular themes important for strategic reasons, or in relation to our international partners



Auditorium

Laboratories

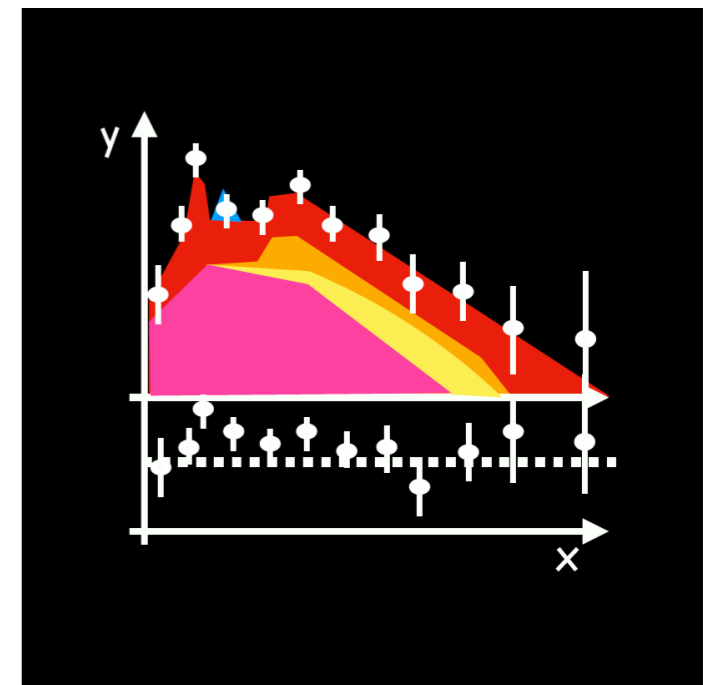
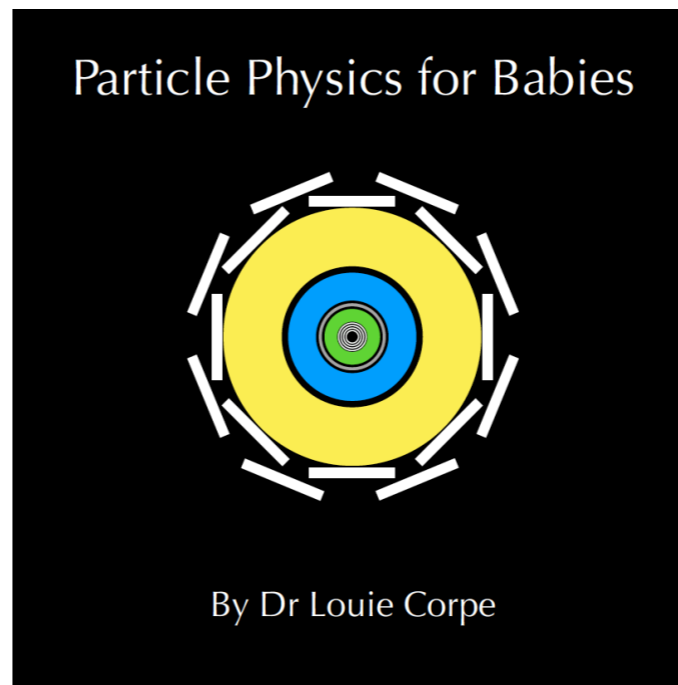
3 exhibition buildings covering 1300m<sup>2</sup>



We will take visitors on a **unique journey** drawing on:

- **Proximity to CERN**, its accelerators, detectors and facilities
- **Authenticity** – CERN objects; CERN people; Research in the making
- **Immersive scenography** that will recreate the CERN environment
- **Enquiry-based learning and open exploration**

- We always get several presentations on outreach projects. For example:
  - Two presentations about different decks of playing cards.
  - But the Particle Physics for babies drew my attention!



- The membership fees are used to ensure that we get help with all the administration, so that focus can be on education and outreach.
  - The last couple of years the big expenditure have been on professional help with the RDB.
- For the future, the majority of the budget should be spent on a half-time scientific secretary.
  - Complicated discussions about finding a host institute.
  - We were close to a deal with Melbourne, now it looks like Notre Dame may be the host.
- Another important item in the budget is support for the Masterclasses, which is still the core IPPOG activity.

## Income

Source	Description	Income (k€)
Contributing Members	Monetary Contribution	104
CERN	Administrative Support (0.15)	In-Kind
CERN	Fellow Support (0.2)	In-Kind
CERN	Masterclass Coordination	In-Kind
USA	Masterclass Coordination	In-Kind
DESY	Global Cosmics Coordination	In-Kind
<b>Total</b>		<b>104</b>

## Expenses

Category	Subcategory	Cost (k€)
Personnel	Scientific Secretary & Communication Officer	60
	Strategic Development and Comms (4 mo)	12
	Administrative Student	36
Infrastructure	Web and Database Development	10
Activity Support	Masterclass Support	2
	Global Cosmics Support	1
	Exhibitions Support	1
	Public Outreach at Conferences	1
	Public Outreach at Festivals	2
	Other Projects	1
	Communication	Printing and Translation
General Support	Travel & Fees	8
	IPPOG Meeting Expenses	1
	Office Expenses	1
Contingency		4
<b>Total</b>		<b>143</b>

**Backup**



- While the membership fee is very small, it is a problem that the section for elementary particle- and astroparticle physics does not have any funds (nor possibilities to apply for funds).
  - Also all support for outreach and “third mission” has been stripped from the LHCK grant.
  - So far, has had to come up with ad hoc solutions every year to find the money for the membership fee. Problem is solved for the next few years, but a steady source of funding needed.
  - Continue to raise this issue in communication with VR. It is not natural to depend on the universities to fund outreach and societal exchange related to national and international research infrastructures.
- Would it be useful to create an informal network for outreach in Sweden (similar to other countries), which could then coordinate both outreach activities and policy work? [coffee break discussion?]
  - Personally find it very important that funding for outreach and interaction with society (and our research infrastructures) is reinstated and it receives higher importance in evaluating our work.