



INTERNATIONAL PARTICLE PHYSICS OUTREACH GROUP

## Creating tools showcasing particle physics presence in every-day lives

Proposal to Call for new EPS activity projects 2017

### Introduction / Motivation

International Particle Physics Outreach Group (IPPOG) [1] is a global network of scientists, researchers, science educators, explainers and communication specialists active across the globe in outreach for particle physics. They come from 34 IPPOG Members - prominent national or international professional physics centres, societies and laboratories engaged in particle physics research, and from major particle physics experiments. IPPOG's principle aim is to maximise the impact of education and outreach efforts related to particle physics, to bring new discoveries in all areas of particle physics research to young people and to convey to the public that the beauty of nature is indeed becoming understandable from the interactions of its most fundamental parts - the elementary particles.

IPPOG aims to contribute to the global efforts in strengthening cultural awareness in the understanding and support of particle physics and related sciences, in raising scientific literacy of a better-informed society, and in developing the next generation of researchers. This is being done by:

- Strengthening the sustainability, reproduction and growth of outreach activities in particle physics and related disciplines through the provision of reliable and regular discussion forums and information exchange for science institutions and laboratories as well as for individual scientists engaged in science outreach and informal science education world-wide;
- Raising standards for outreach and informal science education initiatives by proposing and implementing strategies designed to share lessons learned and best practices for outreach in particle physics and related fields;
- Providing explanatory materials for helping disseminate results from particle physics and related subjects.

Today it becomes more and more apparent how important an open and transparent dialogue of science with society is; and that tools and methods used to start and maintain such a dialogue must be revised and developed. Indeed, many outreach activities at research centres, universities, museums often attract only those people who are already interested in the topic and already understand the basic and fundamental relevance of science. New paths of reaching out must though be explored, without compromising the established ways [2]. Finding ways to reach out further involves engaging with young and very young pupils and students and of course, teachers, who have a great potential to act as active multipliers reaching out to hundreds of other students. Fostering programs engaging them in the methods and tools used in fundamental science and raising their curiosity and interest in science is a well deserving investment in the future. Regardless that few of these young students become one day scientist themselves, all of them will find their place in society, and all can be our ambassadors when it is about discussing the scientific approach to acquire knowledge and basing decisions upon careful reflections involving knowledge over beliefs. Paving ways to reach out further can be done through engaging with artists, musicians, celebrities, and through looking for the synergies and common points for science and these other aspects of the society. Opening the door to the 'unconverted', non-traditional audience has the potential of creating high impact of the image of science in the society.

---

[1] <http://ippog.web.cern.ch/>

[2] Viewpoint article by Hans Peter Beck in CERN Courier 03/17  
<http://cerncourier.com/cws/article/cern/67712>

*“Art is based on very clear, mathematical principles like proportion and harmony. At the same time, physicists need to be inventive, to have ideas, to have some fantasy.”* Fabiola Gianotti, DG CERN

## Project/Activity

From experiences within the IPPOG community we know, that offering an engaging, interactive, challenging, enriching and creative activity, which is of mutual interest to all stakeholders (organiser, participants and even broader audience), leads to interest and success. Great example of such an activity is a **competition**. Taken into account that hands-on activities are more and more popular and demanded by teachers and students, this is an important aspect we want to include as well. Moreover, as mentioned above we aim to reach further from STEM students/teachers by opening the door to different disciplines, such as **Arts, Music, Architecture, Graphics** and others.

Thus, we propose to launch a competition for students and teachers to create educational/teaching tools about particle physics showcasing how science is present in their lives. This could be an **object - prototype**, a **lesson plan**, an **activity (e.g. game)**, an **experiment**, or even a **piece of art**. Indeed, any **creative activity involving science and arts (music, video, drama)** will be of high interest – we are open to the creativity of the participants, as long as the educational aspect is there. There would be two categories, one for students and one for teachers. It should not be limited only to physics (or STEM) students and teachers, but open to broader disciplines, as long as the chosen topic relates to particle physics. Work in teams would be allowed.

There would be several winners and prizes. These could be a visit to CERN (few days); an offered place at summer schools organised by IPPOG members, such as CERN or partners like Creations [3] and others who organise such events for students and teachers [4] (e.g. Inspiring Science, Discover the Cosmos, Go-Lab); books; T-shirts; etc. Winning teachers would participate to the Inspiring Science Education International Summer Academy 2018, part of the ongoing effort to establish a **European Science Education Academy** supported by the **EPS**.

## Expected outcome

- The educational/outreach materials, which would be placed and used in the schools around the world to multiply the impact. The best results of their work would be published on the IPPOG website (including the IPPOG resources database). The contest website will be created as part of IPPOG website [1] (existing infrastructure of Inspiring Science for uploading the results can be used)
- Raising of interest of broader audience, reaching further from the students and teachers already interested in physics/science – building new community.
- Collecting the feedback from the participants about their view of science and the ways which could change the public opinion – create a dialogue with representatives of broader public.

## Partners and their roles

IPPOG members, IPPOG coordination team (Chairpersons: Hans Peter Beck, Steven Goldfarb; Scientific Secretary: Barbora Bruant Gulejova); other partners as mentioned above (Creations, etc.)

## Target audience

Students and teachers from diverse fields beyond STEM, like Arts, Music, Architecture, Graphics, etc.

## Budget use

5000 euros would be used mostly for the prizes, the working time at the organisation of the competition including creating competition website.

---

[3] <http://creations-project.eu/creations-summer-school/>

[4] <http://ise.ea.gr/>