

The IPPOG Resource Database: Making particle physics outreach & education available worldwide

Abstract. The International Particle Physics Outreach Group (IPPOG) has been making concerted and systematic efforts to present and popularize particle physics across all audiences and age groups since almost 25 years. One of the main tools IPPOG has been offering to the scientific community, teachers and educators since almost 10 years is the Resource Database (RDB): the collection of high-quality engaging education and outreach materials in particle physics and related sciences. Today a new digital portfolio aiming to greatly broaden the audience type and strengthen the user experience, is being developed including a new RDB: the primary source of particle physics outreach material in the world.

1 Introduction: Challenges of the particle physics community

Threatened financial support for large experimental endeavors, falling interest of young people to engage in studies of STEM, especially physics, and mistrust in science are the main challenges the scientific community is faced with currently. These are based on the misperception of science, especially physics and basic research in society. This attitude towards physics by non-scientific audiences is largely caused by the scarce exposure of society to modern physics, which is in most cases not included in school curricula. Introducing particle physics and related sciences to students and the public, while showing the current state of art of contemporary physics and bringing the understanding of the world we live in and its technologies, is of vital importance.

2 International Particle Physics Outreach Group

The International Particle Physics Outreach Group (IPPOG) [1] has been making concerted and systematic efforts to present and popularise particle physics across all audiences and age groups for more than two decades by developing suitable methods, tools and activities. Today the scientific community has in IPPOG a strategic pillar to aid the fostering of long-term, sustainable support for fundamental research around the world. Current IPPOG activities include the ever-growing and well-established International Masterclasses on Particle Physics programme [2], the outreach Resource Database (see chapter 2) [3], the Global Cosmic Rays experiments at schools platform currently in development [4], support for exhibitions, public events [5,6] and different topical programmes and competitions targeting young and diverse audiences [7, 8, 9, 10, 11]. These diverse activities allow IPPOG to bridge the gap between science education at school and modern scientific research by inspiring, motivating and educating an especially young audience, offering hands-on experience and connecting physics to real life while using cutting edge technologies.

3 IPPOG Resource Database

IPPOG's Resource Database (RDB) is a collection of high quality engaging materials (e.g. videos, posters, talks, hands-on activities, tools, brochures and more) recommended by IPPOG representatives and contributors to help sharing the wonders and excitement of particle physics with teachers, students and the general public. The first version of the IPPOG's RDB was released in 2011 as the "best practice" exchange platform [12]. Almost 400 items have been collected since [13]. They are filtered by physics topics (from particles and their interactions through dark matter, extra-dimensions to detectors and accelerators), item types (e.g. video, poster, lesson plan, etc.), target audiences and language. After almost 10 years, IPPOG has embarked on an ambitious project to improve the user experience across the IPPOG digital portfolio (websites and social media channels) and to strengthen the IPPOG brand online by creating a new website including a new RDB (see Fig. 1). IPPOG wants the new website to become more open to students, teachers and the general public, and for the RDB to become the primary source of particle physics outreach material in the world [2].

4 New IPPOG Resource Database

New RDB has been developed in close collaboration with IPPOG community and its target audiences (especially high school physics teachers) offering more user-friendly way of navigating, search, submissions and feedback, readily understandable and regularly updated information reflecting the latest discoveries in particle physics [14, 15]. New taxonomy contains new tag ‘school topic’, which helps teachers to identify where in their classical physics curriculum they can use the particular resource. Even though most of the resources are in English, thanks to the large international representation of IPPOG, the materials span 24 languages. Learn more details in [15].



Fig 1: New IPPOG Resource Database design. When you hover over one of the main 4 categories (images on the top), green window with corresponding subcategories appears. Search filter on the right is always in view.

References

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