

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

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Abstract. Over a decade the International Particle Physics Outreach Group (IPPOG) has been offering to the scientific community, to teachers and educators an online platform containing a collection of high-quality engaging education and outreach materials in particle physics (PP) and related sciences, the Resource Database (RDB). After a major revamp and importance curation process in the past few years, a brand new RDB has been published as part of the newly developed IPPOG website, more open to students, teachers, and the general public. The new RDB aims to offer a primary source of PP outreach material, which would help to bring PP closer to society. Important part “Talking to Society” offers materials providing the bridge between science and society and its challenges.

Introduction / Motivation

Threatened financial support for large experimental endeavours, 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, largely caused by the scarce exposure to modern physics, which is in most cases not included in school curricula. Introducing PP 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 to bridge the gap from science education at schools and foster appreciation of science by the public.

Framework – International Particle Physics Outreach Group

IPPOG [1] has been making concerted and systematic efforts to present and popularise PP across all audiences and age groups for 25 years 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. The IPPOG’s principal aim is to maximise the impact of education and outreach efforts related to PP, raise scientific literacy in society, educate the public on the values of basic research and develop and train the next generation of researchers, scientists and engineers by offering hands-on experience and connecting physics to real life while using cutting edge technologies.

Current IPPOG activities include the ever-growing and well-established International Masterclasses in Particle Physics programme [2], the outreach Resource Database [3], the Global

Cosmic Rays experiments at schools platform currently in development [4], different programmes, competitions [5, 6, 7, 8, 9] and events [10,11].

Project description – IPPOG Resource Database

The richness of IPPOG’s expertise, given the diversity of its members in terms of cultural and educational backgrounds, provides a perfect ground for sharing, developing and improving the explanatory and teaching materials, strategies, methods, activities and tools to reach broader audiences, based on the best practices in outreach and education of particle physics and related sciences. Since 13 years an online platform has been built to facilitate the exchange of PP education and outreach resources across the globe. 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 PP with teachers, students and the general public. In 2022, a brand new IPPOG website [1] was published, including new RDB. The new design greatly broadens the audience and use of pages and resources. New RDB aims to offer a primary source of PP outreach materials [2]. It has been developed in close collaboration with the IPPOG community and its target audiences (scientists active in outreach and especially high school physics teachers) and offers a more user-friendly way of navigating, search, submissions and feedback, improved functionality, up-to-date content and full range of relevant physics topics [12, 13]. Since 2020, nearly 400 resources collected over the last 10 years have been reviewed by a group of experts. New taxonomy has been developed, including a new tag ‘school topic’, which helps teachers to identify where in their classical physics curriculum they can use the particular resource. Many new items are being collected at the same time in order to provide the most comprehensive and up-to-date collection of outreach and educational materials in PP and related sciences worldwide. New content is being prepared, with the aim to provide a powerful tool for the scientific community to shape the attitude and perception of physics and fundamental research by decision makers, funding bodies and the public, and to motivate young people to undertake physics studies [3]. The “Particle Physics and Society” category of RDB and the new resources platform “Talking to society” include relevant and powerful materials to justify the importance of fundamental research and to showcase its positive impact and benefit for society and its global challenges in form of success stories of applications from PP and related sciences.

References

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