

Physics needs women as role models!

In 2024, the EPS released a calendar of physicists (see EPN 55-1) aiming at increasing the visibility of women in science and inspiring youngsters to study physics. Here are the editorials by Lucia Di Ciaccio, Lorena Ballesteros Ferraz, Sébastien R. Mouchet, Riccardo Muolo and Gina Gunaratnam.

Editorial by Lucia Di Ciaccio

Physics is one of the pillars of our Society. It generates fundamental knowledge needed for future technological advances and is an important element for the education of young generations. There are several examples showing that physics has largely contributed to change and improve the human activities.

Physics is a collective enterprise in which all contributions build on the previous ones where diversity in nationality, gender, age is a key of success, as proven by the results obtained often at the research centres that welcome many diverse people.

Indeed, behind all the advances that physics has allowed and that we enjoy every day, there are many scientists of different nationalities, gender and age that driven by the strongest forces of the human beings, passion and curiosity, have experienced the intellectual adventure that brought them to discoveries or great achievements.

The purpose of this calendar of the European Physical Society is to acknowledge this effort highlighting the presence of women in physics.

One of the reasons for this gender-bias choice is that despite many efforts and growing awareness in the Society, women are still under-represented in this discipline especially in higher positions.

Just less than a couple of hundred years ago in many European countries, women were not allowed to attend public institutions of higher education, sometimes their contribution to science was hidden or not recognized and they had to rely on their family support because a paid job in science at university was not admitted for a woman. Many women scientists (Lise Meitner, Emmy Noether, Maria Goeppert-Mayer, to name few of them) needed a great deal of determination to pursue their research and overcome stereotypes.

There has indeed been progress since these times with many laws passed guaranteeing equality between men and women in the job attribution, but a gender gap still exists in the more highly skilled and paid professions.

There are several reasons why this gap persists. One of most important is that unfortunately, conscious and especially unconscious gender-biases continue to exist in many, who believe that physics, after all, is rather a man business. Therefore, the aim of this calendar, which presents examples of successful women in physics, is to remind and recognize these many past and present brilliant minds.

Sometimes women have themselves a gender-bias, thinking that they are not good enough to pursue a career in physics. It is

observed that girls have less self-confidence than boys and often “choose” less competitive paths of study, and this affects their future careers and salaries.

While this gender-bias has deep roots in the fact that very young children interiorize gender stereotypes and this must be addressed in the very early stage of life, representing female role models is one of the ways of overcoming this bias. This calendar provides examples of past and present committed female role models.

The talent of everybody is needed to tackle the many challenges of our Society and physics plays a prominent role in that. It is silly to exclude even a tiny fraction of contributions that all diverse human beings can give, at all levels.

Studying physics is an extraordinary adventure, one of the most exciting enterprises for a young person. Through the examples shown in this calendar we hope also to communicate to everybody the passion for science, in particular to the young generations.



Editorial by Lorena Ballesteros Ferraz, Sébastien R. Mouchet, Riccardo Muolo

Physicists have always relied on models to better understand reality. From Newton's theory of gravity and Maxwell's equations to Einstein's relativity, models provide a descriptions of certain phenomena. Without models, there would not be any physics. What we often forget is that physicists themselves are models for younger generations. We learn about their stories, empathize with what they have lived through, and are inspired by their works and their teachings. We know that models have to reflect and describe as much as possible reality. However, the models of physicists, and scientists in general, that we learn at school only reflect a part of reality, due to the phenomenon of epistemicide. This consists in canceling from history all contributions of minority and underrepresented groups, such as women or non-Western researchers. The Matilda effect, for example, coined by historian Margaret Rossiter, describes how

women's contributions to science have been wrongly attributed to men.

The lack of representation of women scientists in science classes is one of the factors keeping girls away from scientific degrees. It is, of course, not the only one and more measures are needed to address the issue. The publication of this calendar featuring women in physics by the European Physical Society is a significant step in the direction of equality and diversity.

Developing reliable models can be time-consuming, as evidenced by the ongoing quest for a unifying model that merges quantum physics and general relativity. By providing materials that can be used in classrooms, EPS is offering valuable inspiration to women and girls seeking to pursue careers in physics. It is crucial to have a diverse range of models available, from oil viscosity to the expansion of the universe. This extends to the need for a diverse representation of women models in physics. We need to showcase the contributions of women in physics, regardless of their cultural background, from Nobel

Prize winners to early career researchers, who, despite the prejudices of society, keep pushing the limits to achieve their dreams.

Editorial by Gina Gunaratnam

In the recent years, women have become more visible in fields where they are a minority. However, there is still a lack of women in STEM (science, technology, engineering, and mathematics). So, there is a big need to attract more youngsters in these fields. Not only to work as researchers but also as technical staff, lab assistants, IT specialists, to name but a few. The panel of professions related to sciences is wide and requires all talents, girls as much as boys.

The aim of this calendar is to present role models of female physicists. Society does not always send the message: Girls need to be encouraged in their choice of studying science by everyone at every stage of their education: families, teachers, media and the governments. When they show interest in sciences, girls should not be diverted from their objectives, but helped and stimulated in every possible way to facilitate their aspirations. ■

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