

INITIATIVE ON GENDER AND SCIENCE IN HIGH SCHOOL
COST Action *The String Theory Universe* MP1210
Working Group 5: Gender and Outreach

The COST Action *The string theory Universe* was conceived with an important gender orientation. While everybody, male or female, is granted participation and we are against any gender bias in science, we are also committed to heighten the awareness on the problems that female researchers confront in an overwhelmingly male environment and to contribute to improve the situation.

The number of girls that choose a scientific career has increased, but in subjects as Physics, Mathematics and Engineering there is still a considerable gap. In Physics, the area that we know better, we are not seeing a significant change in the numbers in the last years. It is not our goal to artificially reach numerical equality, but it would be too simplistic to take for granted that women are not inclined towards these areas of science.

One of the motivations that drove us to start the project was realizing that, as women scientists, we all shared similar experiences: we have had to work against a strong 'friction' even from well-intentioned family and friends, but also from professors and other authority figures¹. In many countries, it is still true that physics teachers in high school are mainly male. And even if in other countries the proportion of female, physics, high school teachers to male ones may be more balanced, the proportion of researchers at the University is not so. In some circles, a woman that fancies science is still regarded as bizarre (we do not mean here academic circles, of course). This is in sharp contrast with the excellent performance that many young girls have at school in those subjects.

One of the most delicate moments in our lives is when we choose a career. This happens when we are, perhaps, not mature enough, and the acceptance from parents and friends still weights too heavily on our decisions. The lack of role models and the social pressure can tilt the balance towards a more standard choice.

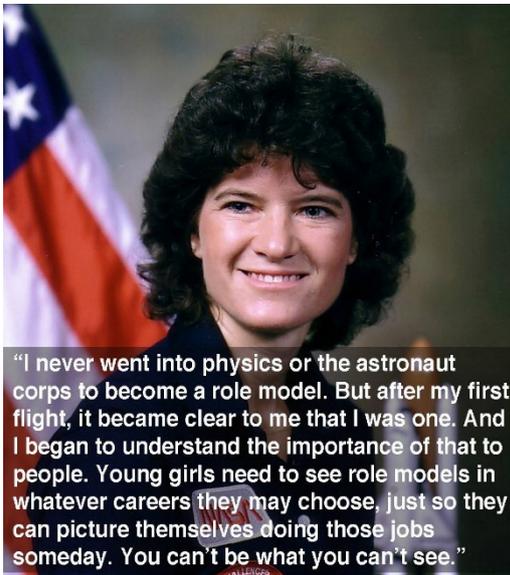
It is not our intention to convince anybody of pursuing a certain career but to counterbalance influences that may make a young girl to give up on her preferences. We think that we have a duty towards the next generation. It is perhaps true that recently things have evolved in the right direction, but certainly not fast enough. A steady effort still seems necessary.

¹ We strongly recommend you to watch this short video where the astrophysicist Neil DeGrasse Tyson is asked about being black and/or woman in science:
<https://www.youtube.com/watch?v=z7ihNLEDiuM>

Our target, then, are those girls that perhaps dream with being physicists but do not dare to make the choice. On one hand, we would like to help them in some way to make fully conscious choices in these important matters. On the other hand, as a society, we cannot afford to lose such an enormous source of talent. One cannot accept criteria other than excellence in the selection of future scientists.

What we are proposing you is to dedicate a few hours of your time to talk with girls in the last two years of high school. I will mention an inspiring example: it is the case of María Ángeles Martín, professor of Aerospace Engineering in the University of Seville (Spain). She prepares a *girl's day* in which she invites female high school students to visit her lab and to meet women engineers. "*We have to give them visibility and role models*", she says. It seems that the percentage of female students in her faculty has increased dramatically. This is the kind of boost that we would like to give to an otherwise natural process.

The series should start as early as the next academic year (2014-2015). The format and frequency of the talks is totally up to you. We



could opt for an interactive format, since it is fundamental to establish a dialogue with them. Perhaps we can let them ask questions and answer with honesty, even if we have to acknowledge that we also had bad moments. It is important to talk a bit about our personal experiences. This is not about painting a perfect world to them. Rather, we have to stress that this avenue is open for them, even when they may encounter some resistance. We have to convey to them the idea that they are not alone, that we all share similar experiences and that they do not need to be scared. It is important to insist on solidarity.

Sally Ride. The first American woman in space.

One possibility is to gather girls after a talk on physics addressed to high school students in the last year(s). Certainly, seeing a woman scientist may have already an impact on them, but we also think that it is important to have a moment were girls could feel free to speak out, without the pressure of their male mates.

It could also be very helpful to make a historical introduction, talking to them about great women that made important contributions to physics and mathematics. The famous physicists and mathematicians that appear in their books are mostly (if not all) male.

We can share material and experiences among us. It is necessary to keep a record of the activities and of the response to our input, so we will be permanently in contact. Of course, we encourage you to involve other colleagues in your Department or University.

We are proposing a WG5 activity by June 2015 in Valencia, Spain, where we can exchange experiences and draw conclusions. Also, we could use the meeting to talk about our own problems as researchers, and even convert it into a brainstorming meeting for future initiatives.