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2. Mobility within Physics

Mobility as a crucial factor

"It is a field of action where you cannot work by yourself. You need to collaborate, change ideas and experiments. " (female, senior scientist) In the field of physics, mobility is seen as a core and essential dimension of the discipline itself. Nevertheless there are distinctions within the fields of physics.

"[...] mobility in physics has always been on a very high level. Among my colleagues there is nobody who would not have spent one year, two years or even three years abroad. [...]."(male, senior scientist)

When we look more closely, we notice that there are differences within various disciplines as to whether mobility is necessary or not. Some interviewees said that in theoretical physics mobility is not as important as in other sub disciplines such as in experimental physics. This can also be seen as partially true, because it is important to differ between 'temporary mobility' and some 'long period mobility'. The first is when you go abroad for two weeks, one month for example for an experiment and you repeat this several times in one year (this is especially true for high energy physics , but not for physics of optics, or medical physics). The second is when you have to spend a long period abroad staying in another research institute or university, and this is mandatory (almost) for theoreticians. If you are an experimental physisist you have to work with others but you can do a lot of work in your lab with meetings during the year to exchange experience. In experimental physics it is nearly impossible to do research on your own. That is one of the reasons why working together is more and more common. *"[Mobility] is of great importance in my field, I can speak only about my sub discipline - nuclear physics and hadron physics."* (female, young scientist)

Need for cooperation

Collaboration is often a result of insufficient financial and material resources needed to work on an experiment. This is documented in literature and was often stated in the interviews.[1)]

"Particularly in [the field of physics] you need to travel because we are more and more working in huge international collaborations, as no one country can pay alone for the experiment we are working on. Look at CERN for example: how could Swiss finance alone such a project?" (male, senior scientist)

It is necessary to collaborate with other research organizations, because e.g. "*the infrastructure that we need is available in only a dozen or so locations around the world, so it's a practical aspect that our research can be done in specific centres."* (female, young scientist)

Another point is that *“it is difficult to build a research group with all the necessary competences and skills within a single research centre. So these groups have to be built so that we all meet together.”* (female, young scientist) This means that there is not enough infrastructure but sometimes also a lack of competences or skills of young scientists or research groups. In that way it is possible to find experts from this field if you need to have some information in a specific sub discipline. Therefore it is important to have a good working environment and an entrenched position within physics so that you can use supporting contacts in your network.

“Scientific community has sense only in case when people contact each other.” (female, young scientist) Most scientists mention their benefit from being part of the scientific community and also the imperative nature of mobility in physics, especially in experimental physics. Therefore in the field of physics, mobility can be stated as a crucial factor of being part of the community.

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1)

Sekuła, P. et al., 2018

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