Rolf Heuer's vision of particle physics in Europe

Interview with Rolf Heuer, future Director-General of CERN and currently Research Director at DESY.

Do you think that the Large Hadron Collider (LHC) start-up can help promote particle physics and particle collider projects in general?
I think we should benefit from the LHC start-up to communicate the excitement and the importance of research in particle physics. There is a lot of interest in the field, usually underestimated by the scientists. People are fascinated and they want to understand. The launch of the LHC is a unique occasion to promote science, to promote particle physics and physics in general. And, as a by-product, we know that when people see this fascination behind our experiments and what we can learn from them, and maybe also some of the spin-offs, it's easier for them to understand why we work on long-term projects like the LHC or the ILC.


Rolf Heuer giving a personal view of the future at last ILC-ECFA Workshop in Warsaw. Photo:Nobu Toge

Do you think that the general public understands why the LHC has not even started running and yet we are already thinking of the next machine?
They usually have problems understanding that. We have to explain to people what long time scales mean, we have to make clear that the experiments we make are not like the ones we made years ago when we were in school. Our experiment consists of hundreds of experiments. This is why we need such a long time. Once you explain, people understand.

During your talk you expressed your wish to see partnership between the different particle physics labs, what did you mean by that?
Today, large particle accelerators are truly global projects and need the support of the world-wide particle physics community. Therefore, many national labs are part of the 'big experiment' rather than running their own, smaller ones and we need to maintain the expertise we have in all regions. CERN has a lot of expertise, especially in accelerators and detectors, not only for particle physics but also for other science projects. Look at what a success story accelerators have been up to now. There are some 10,000 accelerators over the world, mainly for medicine. If you lose the accelerator knowledge, it will have consequences in many science fields. A laboratory like CERN, which has the great advantage to host the LHC, also has a certain task to fulfil, to keep the accelerator knowledge in other laboratories and institutes. And to achieve that, we have to work together in a network.

How will CERN help the other labs?
CERN has to further develop its strategy on how to work with other institutes. A good starting point is the way CERN is working, for example with Fermilab and KEK for the LHC accelerator. I think CERN can play a leading role because it is a stable place and very successful in bringing nations and labs together. In fact I think CERN has a unique *opportunity* to play this active role, which doesn't mean that CERN has to dominate. And I think the other laboratories are waiting for CERN to start building this network.

Do you think it was not done before because CERN was so focused by the LHC start-up?
Not only that. I think laboratories were focused on their own projects. Some experiments are now shut down or nearing completion and we need to keep the excitement for particle physics at the highest level. If CERN doesn't develop a strategy for this, the expertise will start fading away and then the users will fade away too. That means it's also in CERN's interest to keep the community's good momentum.

How do you see the involvement of CERN in the ILC and in linear collider projects in general evolving?
I firmly support the idea of cooperation between CLIC and the ILC. CERN should participate in both of these projects as much as possible, ideally in strategic and key areas where CERN expertise can make a difference.

How do you see the common ILC-CLIC task group? How much do you think the two projects can overlap?
On the detector side, CLIC can clearly profit a lot from the ILC. CERN on the other hand can help in the engineering support. On the accelerator side, CERN has a lot of experience, so there are probably many areas where the two projects can exchange expertise and ideas, for example in polarisation or beam monitoring.

What is your final message?
I would like to convince my colleagues that we are really at a turning point. These long-term global projects need sustained efforts from all partners to make them a success. I would also like to encourage young people to join us and not be afraid to engage themselves in long-term projects. These are so versatile that besides analysis you can work either on accelerator technologies or on detector development or in high-level computing. Science is everywhere. One may not see the end of the project, but you cannot lose. From R&D and construction to analyses, all stages are important and interesting. You also learn a lot when moving from one stage to the next. That's also an important aspect industry has to understand. Our young researchers develop tremendous flexibility and skills, and although this is not often well-known

outside our field, our students succeed very well.

-- Perrine Royole-Degieux