

Reflections on a Masterclass

High-school student **Slávka Marcinová** attended the Hands On Particle Physics Masterclasses 2010 at her local university in the Slovak Republic and was pleasantly surprised. In this essay she describes in English her experience.

It was on an ordinary March day when I did something that was way out of character. A friend of mine, who is admittedly a physics geek, told me about something called a Masterclass and suggestively handed me a leaflet with big, friendly “Hands On Particle Physics” on it. Now, I must say that I am the kind of student who would normally like to get her hands OFF particle physics – but then I noticed something that sparked my interest. “A videoconference”, the leaflet read, “a chance to analyse real experiment results with foreign universities and the CERN scientists”. I said, yes, that sure was something. Then I said that I would come.

My entire preparation consisted of revising what I knew about particle physics (note, that it really wasn't much...) and repeatedly assuring myself that I won't be meeting a roomful of Einstein-like geniuses and therefore look quite stupid; that they will be ordinary high-school students with an interest in physics, looking forward to learning new things... just like me. At least, I hoped so.

We were welcomed at the PJ Šafárik University in Košice early in the morning and made our way to the lecture room just after we had been given some leaflets about things that I didn't quite have an idea of. Yes, “a hadron collider” sounded nice, but I sincerely hoped that the first lecture would provide a somewhat more basic overview of nuclear physics...

And that was precisely what it did.

A (whole) New World

The lecture was not what I would call “Nuclear Physics for Dummies”. However, at the same time it managed to elegantly explain what we needed in order to grasp the basics of what the micro-universe is made of. We were introduced to some new theories while we repeated what we already knew from physics



The 2010 Masterclass under way in Košice. The annual masterclasses introduce high-school students to particle physics and now attract more than 5000 participants. (Courtesy PJ Šafárik University.)

classes and wrote down notes. The second, a lot more technical lecture, offered us a look into modern physics, something that we definitely didn't know from physics classes, something that got me genuinely interested, as did the still unanswered questions of today's physics. We were presented a task in the end, which, I must admit, sounded way too complicated. And with an atmosphere of, “What is this they want from us?”, we moved to the practical part of the Masterclass.

Don't worry, it's a two-jet

A friendly looking nuclear-physics student (yes, there are ones like that) and a PowerPoint presentation was all that it took for us to understand what we were going to do and we spent the next hour observing what Z-bosons can turn into (such as electrons, taus, muons...) and writing the results down with the help of some other kind students. They assured us that nuclear physics can be fun... and you know, it is not as far from the truth as I would have thought. And that speaks for itself.

International dialogue

After lunch it was time for the videoconference to begin. Without any technical problems, we connected with universities in Debrecen, Budapest, London and with the scientists in CERN. We exchanged the results, and what I liked was that we got plenty of space to ask questions. The scientists were eager to help us, the atmosphere was informal and overall enjoyable. A short quiz followed and then we all got certificates of having attended the Masterclass. If one of the quiz's questions were, if I regretted taking part in this project, I would have said a clear “no”.

In my opinion, the purpose of the 2010 Hands On Physics Masterclass was more than fulfilled because, apart from “getting the work done”, the Masterclass got us interested in modern physics, its open questions and challenges – and that is, sadly, something the classes in school often fail to achieve.

Slávka Marcinová, Gymnázium JA Komenského, Košice, Slovak Republic.