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Teaching Statement

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Assistant professor in particle physics

To whom it may concern:

Being a Ph.D. student, and successively a postdoctoral fellow, most of my teaching experience come from tutoring several undergraduate and graduate students in their academic career. Actually, my first contact with teaching came back in time when I was an undergraduate student. At the time I was still practicing karate at competitive level, and most of the time I was teaching once per week in the kid class. Despite this experience can be seen very distant from teaching in academia, it was at that time that I learned about the importance of decomposing a concept into smaller parts in order to make it easily assimilable. In that exact moment, I realized that the act of decomposing an idea it is not a trivial task at all, and it actually requires to own a deep understanding of the topic.
Effective teaching is thus only possible through deep understanding. Since then, whenever I have to digest complicated concepts, I mentally teach it to an imaginary audience. Being able to communicate my research became a necessity to gain deep understanding of it, helping me to identify the areas which require deeper thinking.

I do believe the goal of each lesson should not be only the assimilation of a set of notions, but rather teaching students how to ask them self the right questions, while stimulating the natural curiosity of the class. Curiosity is indeed the main characteristic of physicists. Physicists want to know how and why things happen; and the classroom is the place where the magic happen. The mark of a good professor can be seen in how well he can turn the learning activity into an active process. I believe that even if students assimilate notions from passive learning, still they would miss one of the most valuable lessons: the ability to reason, to formulate hypothesis, and to formulate the right questions.
Physics requires perseverance and a large amount of time to be spent on books. For most people it is impossible to maintain such level of commitment if the subject has been turned into a series of obstacles to overcome. Only the professor has the power (and the duty) of transforming the study of a subject from a series of obstacle to a interesting walk. Luckily, physics can be extremely entertaining. I do agree with one of the most popular sentences by Walter Lewin: "Teacher who make physics boring are criminals".

Once my goals and expectations in teaching are set, I try to reach them every time I interact with the graduates and undergraduates students I tutor. Because each student is different, it is important to individuate the attributes they need to reinforce, and the skills they own. I noted that most of the students struggle to gain confidence in their abilities. This is probably even more

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accentuated in large collaborations as CMS, where undergraduate students, but often even graduate students, often feel like there is no space for them. Other times what is lacking is the ability to effectively communicate to colleagues or to present their studies; sometimes instead, the biggest challenge is learning to translate a particular problem into a sequence of tasks, becoming independent. Only with a deep analysis of the person we have in front, we can give the student the tools needed in order to improve himself. Sometimes this means simply to give them more trust, or place them close to a more inexperienced student, in order to increase their sense of responsibility; other times this means to increase the number of their public presentations, giving constant feedback during their preparation.

I understand that my teaching experience is limited, but I promise I will confront with this new challenge with the same spirit I carry in the researches activities I lead. I do believe that by learning from people around me, by interpreting correctly the feedback of the students, and by analyzing the outcome of my teaching, it is possible to shape a teaching methodology that will fulfilled my goals and expectations.

Looking forward to hearing from you soon,

Luca Pernié