To whom it may concern

I have a deep urge of sharing few words, specially, with the beginning PhD students. As an average student, I understand that a PhD is mainly a training programme, and the field of research should not matter too much. There is no harm in preferring a field/topic of research, but one should always ensure that right environment is available for getting a good training during the PhD. A right training is not merely reflected in our work, it should also be reflected in our attitude towards the teaching and research. Apart from earning bread and butter, a right training is also needed for passing the knowledge and understanding correctly, to the younger generation. This is very much our responsibility and that is how many of us have received the knowledge from our older generation.

As a beginning PhD student, many of us do not decide our first problem and the role of a supervisor is very important. It is always advisable that we attack simpler problems first, which need not be new ones or new ones but not very important ones. This helps a lot in understanding the tools and techniques which we are going to live with. We may come across people with specific liking about a research topic. For example, in high energy particle phenomenology, some people prefer working on projects related to the well established standard model only; which are very hard to pursue these days. This kind of liking may be fine with an established active researcher but not with a beginning PhD student who is about to enter in research and learn something. In this context, one should also note that whether one works with the standard model or any speculative model of new physics, the basic tools and techniques of physics remain the same and that is what matters the most to a graduate student. In my case, the ADD model calculations, described in chapter 4, may not be as important as the SM calculations, described in chapter 3. The ADD model, like many other new physics models, may even turn out far from being a reality. But these ADD model projects are the foundation of this thesis. Without having done these projects, I can not imagine the little knowledge and understanding I have gained, regarding one-loop calculations and the quantum field theory in general. For many of us, PhD career is a great opportunity to reduce the difference between our knowledge and our understanding, and that is an enjoyable experience.

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