Quantum Error Correction

As I was choosing my courses for the summer semester 2020, I was intrigued by one of them being offered in collaboration with TU Delft, Netherlands. After researching a bit, I found out that this course, Quantum Error Correction (Q.E.C), was going to be given by one of the most prominent and important people in the field, Prof. B. Terhal. So I proceeded to register for it. The registration was not problematic, everything was dealt as if it was just another course given at RWTH Aachen.

The course consisted of video recordings of lectures, that Prof. Terhal gave some days ago in Delft. We watched these video recordings via Zoom together with 2 tutors, one a postdoc in Prof. Terhal's group, and the other a Ph.D. student of Prof. DiVincenzo, where, at times, we had quick polls about the topic of the lecture. I liked this method since the tutors also gave extra insights into the topic of the lecture. The tutorials took place after the lectures, with a 15 minutes break in between, where one of the tutors discussed the exercise sheet from the week before. Regarding the lectures, I really liked that the mathematical bases were explained in a really formal way, while also providing a physical intuition to it.

The grading of this course was divided between exercise sheets and a paper presentation at the end of the semester, which could be solved with a partner. We were also provided access to a Slack Channel, in which we could discuss anything about the lectures and exercise sheets with the tutors. This was really helpful in clarifying concepts and landing main ideas. The solutions of the exercise sheets were to be uploaded to RWTH Moodle, and although Moodle has an upload limit of 10 MB we were asked to limit our uploads to only 5 MB. This was troublesome for some exercise sheets that were really long, dealt with images, plots, and numerical simulations.

At the end of the semester, we were given several papers to choose from for the final presentation. These papers dealt with a wide range of topics within Q.E.C., from Neural Networks to experimental realizations of Q.E.C. codes. So it didn't matter if your focus was more theory or experiment orientated. Prof. Terhal was present during the presentations, and gave extra insight regarding the papers, which was really interesting.

Overall this course was tough but really good. The slack channel and the tutors helped a lot, as well as the possibility to watch/ re-watch the lectures at one's own pace. (en)

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