Plan for the remote regime of the course *Quantum Information Theory*
DCC - UFMG - 2020.1

Plan for classes and calendar

During the time we remain at the remote regime for academic activities, classes for this course will be reformatted. We will **no longer** have expository lectures.

Instead, you will be required to read new material on your own, guided by goals and exercises set by me in the beginning of each week. By the end of the week, you will hand in some write-ups related to the goals, and the exercises solved. These will correspond to the assignments that will determine your final grade.

Goals and exercises, with relevant sources, will be posted on the course website on Tuesdays. I will also briefly introduce them through an open video-call on Tuesdays, at 1pm (normal lecture time). Also at this moment, you can ask last minute questions about the previous week assignment, which you must post on Moodle by Tuesday, 11:59pm.

On Thursday I will be available to videochat at 1pm to answer any questions related to the week's assignment. I will also be available to answer questions in writing through Moodle or email.

Below is a tentative schedule of subjects for this course. The first "remote lecture" will be on August 3rd, when I will expect to chat with all students enrolled in the course.

#	Date	Subject	Regime
1	03/03/2020	Course intro and linear algebra review	In person
2	05/03/2020	Linear algebra review	In person
3	10/03/2020	Axioms of quantum mechanics	In person
4	12/03/2020	Quantum channels	In person
5	04/08/2020	Quantum Walks in Graphs	Remote
6	06/08/2020	Quantum Walks in Graphs	Remote
7	11/08/2020	Perfect State Transfer	Remote
8	13/08/2020	Perfect State Transfer	Remote
9	18/08/2020	Spectrum and walks	Remote
10	20/08/2020	Spectrum and walks	Remote
11	25/08/2020	Cospectral vertices	Remote

12	27/08/2020	Cospectral vertices	Remote
13	01/09/2020	Perfect State Transfer	Remote
14	03/09/2020	Perfect State Transfer	Remote
15	08/09/2020	State Transfer in Trees	Remote
16	10/09/2020	State Transfer in Trees	Remote
17	15/09/2020	Orthogonal polynomials	Remote
18	17/09/2020	Orthogonal polynomials	Remote
19	22/09/2020	Paths and weighted paths	Remote
20	24/09/2020	Paths and weighted paths	Remote
21	29/09/2020	Equitable partitions and automorphisms	Remote
22	01/10/2020	Equitable partitions and automorphisms	Remote
23	06/10/2020	Distance-regular graphs	Remote
24	08/10/2020	Distance-regular graphs	Remote
25	13/10/2020	Association schemes	Remote
26	15/10/2020	Association schemes	Remote
27	20/10/2020	Real states and average mixing	Remote
28	22/10/2020	Real states and average mixing	Remote
29	27/10/2020	Cubelike Graphs and uniform mixing	Remote
30	29/10/2020	Cubelike Graphs and uniform mixing	Remote

Communication

1. All written communication will be via moodle. All students must be registered to
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2. Resources will be posted on the course website
   homepages.dcc.ufmg.br/~gabriel/QIT/

3. Video-sessions will be via Microsoft Teams. The links will be posted on Moodle.

Evaluation

Regarding the lectures in March, *Assignment 1* which was already done by the students will be used to evaluate.

For the following weeks, each week will contain one assignment, consisting of some writings and exercises. By the end of the course, the collection of 14 assignments (1 from March, and 13 from the remote regime) will be used to determine the final grade.

Bibliography

Course notes (written by myself and C. Godsil) will be posted on the course website. Any extra material needed for a particular week will be posted along with the instructions. Nielsen and Chuang "Quantum Computation and Quantum Information" remains as the main source to the basics of quantum information needed.

Questions

Anyone willing to discuss the details of how the course will work during the remote regime is encouraged to fire an email to gabriel@dcc.ufmg.br. I will be glad to answer any questions or to schedule a videocall to explain things.