Obstacle Problems and Optimal Control

Exam information

Dr. Amal Alphonse (amal.alphonse@wias-berlin.de)

Examiners: Dr. Amal Alphonse and Dr. Marcelo Bongarti.

Format: The exam will be in two parts: a short presentation from you, then questions from us.

Presentation: Prepare a 5 to 7 minute blackboard/whiteboard presentation. Pick one of the following areas (these are essentially chapters 2, 3, 4, 6 and 7 from the course):

- Abstract variational inequalities
- The obstacle problem
- Differentiability of solution maps of VIs
- Optimal control
- Quasi-variational inequalities

and in that area, choose something to present, such as a theorem or more generally a result, or an exercise which uses a result from the area, and present it.

Here are a few examples of potential presentations:

- discussion of dual estimates and a sketch of the proof of the Lewy–Stampacchia inequality
- a sketch of the theory of the minimal/maximal solutions of QVIs from Birkhoff–Tartar
- steps to proving polyhedricity of obstacle-type constraint sets.

Questions: After your presentation, we'll ask some questions based on your talk, and then we'll ask questions touching on topics from the entire course (whether or not they are related to your presentation).

Try to relax: the goal is for the exam to be primarily an exchange so that we can get an idea of how much you could grasp the material covered in the course.