Topics in Set Theory (M24)

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This course is a relatively self-contained introduction to independence results in modern set theory and their repercussions in contemporary mathematics. It focuses on the ideas and techniques in the proofs, using forcing, that the Continuum Hypothesis \(2^{\aleph_0} = \aleph_1\) and combinatorial assertions relating to infinite trees can be neither proved nor refuted from the principles of ordinary set theory. Applications in algebra, analysis and topology will be illustrated. We shall treat several of the following topics.


**Large cardinals.** Introduction to large cardinals. Ultrapowers. Scott’s theorem. Embeddings of \(V\).


**Pre-requisites**

The Part II course *Logic and Set Theory* or its equivalent is essential. It will also suffice to have studied enough of the material in the preliminary reading.

**Preliminary Reading**


**Literature**

*Basic material*


**Advanced topics**


**Additional support**

Four examples sheets will be provided and four associated examples classes will be given. Individual consultations will be offered. There will be a two-hour revision class in the Easter Term.