Mini-Workshop: Feinstrukturtheorie und Innere Modelle

Organised by
Ronald Jensen, Berlin
Menachem Magidor, Jerusalem
Ralf Schindler, Münster

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Abstract. This workshop presented recent advances in fine structure and inner model theory. There were extended tutorials on hod mice and the Mouse Set Conjecture, suitable extender sequences and their fine structure, and the construction of true $K$ below a Woodin cardinal in ZFC. The remaining talks involved precipitous ideals, stationary set reflection, failure of SCH in ZF, nonthreadable square sequences, reverse mathematics, forcing axioms, covering properties of canonical inner models, and “set theoretic geology.”

Mathematics Subject Classification (2000): 03Exx.

Introduction by the Organisers

This was a successful workshop highlighting recent advances in inner model theory. There were 15 participants, 3 extended tutorials, and 8 shorter (1 to 2 hour) talks, as well as many small discussions.

The three extended tutorials were as follows:

1. Grigor Sargsyan presented some of his work on the theory of hod mice (which are special kinds of hybrid mice; a hybrid mouse has a predicate for iteration strategies in addition to the usual predicate for the extender sequence). He also provided an outline of his proof of the Mouse Set Conjecture under a certain smallness assumption on the universe.

2. Hugh Woodin discussed suitable extender sequences, for extenders which may witness supercompactness and beyond. He also discussed the corresponding fine structure theory of such sequences.

3. John Steel presented the construction of the true core model under the assumption ZFC + “no inner model with a Woodin” (joint work with
Ronald Jensen). This solved a longstanding problem of how to run the construction without the additional assumption of a large cardinal in the universe.

The topics for the shorter talks were quite diverse. Moti Gitik discussed the strength of the existence of precipitous ideals without their normal counterparts (and introduced a nice game construction making use of Mitchell’s Covering Lemma); Sean Cox presented lower bounds for stationary reflection at small cofinalities; and Peter Koepke presented an equiconsistency result for failure of SCH in choiceless models.

Martin Zeman presented a combinatorial result relating nonthreadable square sequences to nonreflecting stationary sets in extender models. Menachem Magidor spoke about the Proper Distributive Forcing Axiom and its relation to $\square_{\kappa,\omega}$ and $\square_{\kappa,\omega_1}$.

Gunter Fuchs discussed mantles and related classes (and whether these can be canonical models of ZF), and William Mitchell asked what possible generalizations of the Covering Lemma might hold for extender models with a Woodin cardinal. Itay Neeman gave an example of a necessary use of strong induction for a reversal, in reverse mathematics.

In addition to the talks, there were many small groups turning coffee into mathematics during the breaks.