

MATHEMATISCHES FORSCHUNGSINSTITUT OBERWOLFACH

Fine Structure and Inner Models

25.02 – 03.03 2001

Report Number 10/2001

The organisers were Sy Friedman and Ronald Jensen. “Fine structure” is a method that has long been used to investigate the properties of nice inner models of set theory, such as Goedel’s model L . The main focus of this meeting was the construction of inner models in which “strong axioms of infinity” such as large cardinal axioms could be realised. In recent times such constructions have also proven useful in proving absolute consequences of these axioms. This was the second focus of the meeting. The format of the Mini-Workshop was ideal for our purposes. The proofs in this field are often exceedingly complex, and this format permitted us to alternate a few lectures in depth (lasting as long as seven hours) with shorter talks. There were a total of seventeen mathematicians from Austria, China, Germany, Israel and the United States. Fourteen speakers gave at least one talk each:

Ralf Schindler gave a series of lectures on his construction of the core model for almost linear iterations. He also gave a further talk on the problem of constructing universal extender models in first order set theory.

Martin Zeman spoke on certain aspects of his famous analysis, with Ernest Schimmerling, of the extent to which Square holds in extender models.

Ernest Schimmerling spoke about a conjecture concerning the place where a related principle fails.

Oliver Deiser, Dieter Donder and Philip Welch spoke about the combinatorial properties of small core models, such as the model of measures of order zero.

Thoralf Raesch used iterated Namba forcing to establish new facts about the frequent extension of embeddings lemma over L .

Ronald Jensen showed that appropriate indexings of extenders could be used to construct KC-type models which realise larger cardinals.

In a related talk, Gunter Fuchs showed that the Jensen and Steel indexings of extenders are essentially equivalent.

Itay Neeman showed that one can obtain an extender model for the stronger assumption of a Woodin limit of Woodin cardinals, using the “fully backgrounded” technique.

John Steel and Richard Ketchersid gave talks on the core model induction. Steel used this technique to draw consequences from two strong axioms of infinity – Martin’s Maximum and the failure of the Unique Branches Hypothesis.

Sy Friedman characterised the extent to which the coding method can be applied in the large cardinal context. He applied this to construct reals which are class-generic but not set-generic over extender models.

Peter Koepke presented a very promising approach to developing a simplified fine structure theory.

Sy Friedman and Ronald Jensen

Participants

Dr. Oliver Deiser
deiser@rz.mathematik.uni-
muenchen.de
Mathematisches Institut
Universität München
Theresienstr. 39
80333 München

Prof. Dr. Hans-Dieter Donder
donder@rz-mathematik.uni-
muenchen.de
Mathematisches Institut
Universität München
Theresienstr. 39
80333 München

Prof. Dr. Qi Feng
feng@logic.math.ac.cn
Institute of Mathematics
Academia Sinica
Beijing 100080
CHINA

Prof. Dr. Sy D. Friedman
sdf@math.mit.edu
sdf@logic.univie.ac.at
Institut für Formale Logik
Universität Wien
Währingerstr. 25
A-1090 Wien

Gunter Fuchs
fuchs@mathematik.hu-berlin.de
Institut für Mathematik
Humboldt-Universität
10099 Berlin

Prof. Dr. Moti Gitik
gitik@post.tau.ac.il
Department of Mathematics
School of Mathematical Sciences
Tel Aviv University
Ramat Aviv, P.O. Box 39040
Tel Aviv 69978
ISRAEL

Prof. Dr. Ronald B. Jensen
jensen@mathematik.hu-berlin.de
Institut für Mathematik
Humboldt-Universität
10099 Berlin

Prof. Dr. Richard Ketchersid
ketchers@math.ucla.edu
Dept. of Mathematics
University of California
405 Hilgard Avenue
Los Angeles , CA 90095-1555
USA

Prof. Dr. Peter Koepke
koepke@math.uni-bonn.de
Mathematisches Institut
Universität Bonn
Berlingstr. 4
53115 Bonn

Prof. Dr. William J. Mitchell
mitchell@math.ufl.edu
Dept. of Mathematics
University of Florida
201, Walker Hall
Gainesville , FL 32611-2082
USA

Dr. Itay Neeman
ineeman@math.ucla.edu
UCLA
Department of Mathematics
405 Hilgard Av.
Los Angeles , CA 90095-1555
USA

Thoralf Räsch
raesch@math.uni-potsdam.de
Institut für Mathematik
Universität Potsdam
Am Neuen Palais 10
14469 Potsdam

Prof. Dr. Ernest Schimmerling
eschimme@andrew.cmu.edu
Department of Mathematical Sciences
Carnegie Mellon University
Pittsburgh , PA 15213-3890
USA

Prof. Dr. Ralf-Dieter Schindler
rds@logic.univie.ac.at
Institut für Logik
Universität Wien
Währingerstr. 25
A-1010 Wien

Prof. Dr. John R. Steel
steel@math.berkeley.edu
Department of Mathematics
University of California
at Berkeley
Berkeley , CA 94720-3840
USA

Prof. Dr. Philip D. Welch
p.welch@bristol.ac.uk
welch@logic.univie.ac.at
Department of Mathematics
University of Bristol
University Walk
GB-Bristol , BS8 1TW

Dr. Martin Zeman
zeman@logic.univie.ac.at
Institut für Logik
Universität Wien
Währingerstr. 25
A-1010 Wien