Producing Iterable Models with Woodin Cardinals from Optimal Determinacy Hypotheses

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Projective determinacy is the statement that for certain infinite games, where the winning condition is projective, there is always a winning strategy for one of the two players. It has many nice consequences which are not decided by ZFC alone, e.g. that every projective set of reals is Lebesgue measurable. An old so far unpublished result by W. Hugh Woodin is that one can derive the existence of countable iterable models with Woodin cardinals from determinacy for the individual levels of the projective hierarchy. Work by Itay Neeman shows the converse direction, that means projective determinacy is in fact level-by-level equivalent to the existence of such models.

These results connect the areas of inner model theory and descriptive set theory, so we will give an overview of the relevant topics in both fields and, if time allows, sketch a proof of Woodins result.

This is joint work with Ralf Schindler and W. Hugh Woodin