

Busche, Daniel; Schindler, Ralf

The strength of choiceless patterns of singular and weakly compact cardinals. (English)

Zbl 1178.03066

Ann. Pure Appl. Logic 159, No. 1-2, 198-248 (2009).

The authors start with models of ZF and want to show that the axiom of determinacy is consistent relative to the hypothesis “each uncountable successor cardinal is weakly compact and each uncountable limit cardinal is singular” and “each uncountable cardinal is singular”, respectively.

They show that each one of the following two hypotheses individually implies that AD holds in the $L(\mathbb{R})$ of a generic extension of HOD: (a) ZF + every uncountable cardinal is singular and (b) ZF + every infinite successor cardinal is weakly compact and every uncountable limit cardinal is singular.

The authors use the so-called core model induction, which was originally developed by W. Hugh Woodin and John R. Steel. They introduce two special kinds of premice and define a mouse closure operation.

Reviewer: [Martin Weese \(Potsdam\)](#)

MSC:

03E35 Consistency and independence results

03E45 Inner models, including constructibility, ordinal definability, and core models

03E55 Large cardinals

03E60 Determinacy principles

Cited in **6** Documents

Keywords:

[large cardinals](#); [determinacy](#); [inner models](#); [premise](#); [core models](#); [core model induction](#)

Full Text: [DOI](#)

References:

- [1] Apter, Arthur^{W.}, Some results on consecutive large cardinals II: applications of radin forcing, Israel J. math., 52, 4, 273-292, (1985) · [Zbl 0603.03016](#)
- [2] Apter, Arthur^{W.}, AD and patterns of singular cardinals below \aleph_θ , J. symbolic logic, 61, 1, 225-235, (1996) · [Zbl 0855.03029](#)
- [3] Devlin, Keith^{J.}, Constructibility, (), xi+425 · [Zbl 1365.03005](#)
- [4] Devlin, Keith^{J.}; Jensen, Ronald^{B.}, Marginalia to a theorem of silver, (), 115-142
- [5] Foreman, Matthew; Magidor, Menachem; Schindler, Ralf, The consistency strength of successive cardinals with the tree property, J. symbolic logic, 66, 4, 1837-1847, (2001) · [Zbl 0994.03042](#)
- [6] Gunter Fuchs, Combined maximality principles up to large cardinals, J. Symbolic Logic (in press) · [Zbl 1182.03078](#)
- [7] Gitik, Moti, All uncountable cardinals can be singular, Israel J. math., 35, 1-2, 61-88, (1980) · [Zbl 0439.03036](#)
- [8] Gitik, Moti, Regular cardinals in models of ZF , Trans. amer. math. soc., 290, 1, 41-68, (1985) · [Zbl 0589.03033](#)
- [9] Jech, Thomas, Set theory, (), xiv+769, The third millennium edition, revised and expanded · [Zbl 1007.03002](#)
- [10] Jensen, Ronald^{B.}; Jensen, Ronald^{B.}, The fine structure of the constructible hierarchy, Ann. math. logic, Ann. math. logic, 4, 443-308, (1972), (erratum). With a section by Jack Silver
- [11] Martin, Donald^{A.}; Steel, John^{R.}, A proof of projective determinacy, J. amer. math. soc., 2, 1, 71-125, (1989) · [Zbl 0668.03021](#)
- [12] Mitchell, William^{J.}; Schimmerling, Ernest; Steel, John^{R.}, The covering lemma up to a Woodin cardinal, Ann. pure appl. logic, 84, 2, 219-255, (1997) · [Zbl 0868.03021](#)
- [13] Mitchell, William^{J.}; Steel, John^{R.}, (), iv+130
- [14] Schimmerling, Ernest; Woodin, W.^{Hugh}, The Jensen covering property, J. symbolic logic, 66, 4, 1505-1523, (2001) · [Zbl 1011.03039](#)
- [15] Schindler, Ralf, Successive weakly compact or singular cardinals, J. symbolic logic, 64, 1, 139-146, (1999) · [Zbl 0926.03069](#)

- [16] Schindler, Ralf, Proper forcing and remarkable cardinals. II, J. symbolic logic, 66, 3, 1481-1492, (2001) · [Zbl 0985.03042](#)
- [17] Ralf Schindler, John R. Steel, The Core Model Induction, unpublished book · [Zbl 1178.03067](#)
- [18] Ralf Schindler, John R. Steel, The self-iterability of $\mathbb{L}[E]$, J. Symbolic Logic (in press) · [Zbl 1178.03067](#)
- [19] Ralf Schindler, John R. Steel, The strength of AD, Preprint · [Zbl 1178.03067](#)
- [20] Schindler, Ralf; Steel, John R.; Zeman, Martin, Deconstructing inner model theory, J. symbolic logic, 67, 2, 721-736, (2002) · [Zbl 1017.03030](#)
- [21] Schindler, Ralf; Zeman, Martin, Fine structure theory, () · [Zbl 1198.03069](#)
- [22] John R. Steel, The derived model theorem, unpublished notes
- [23] Steel, John R., An outline of inner model theory, () · [Zbl 1198.03070](#)
- [24] Steel, John R., Scales in \mathbb{K} , (), 176-208 · [Zbl 1167.03032](#)
- [25] John R. Steel, Woodin's analysis of $\text{HOD}^{\mathbb{L}}$, unpublished notes
- [26] Steel, John R., Scales in \mathbb{L} , (), 107-156
- [27] Steel, John R., Inner models with many Woodin cardinals, Ann. pure appl. logic, 65, 2, 185-209, (1993) · [Zbl 0805.03043](#)
- [28] Steel, John R., Projectively well-ordered inner models, Ann. pure appl. logic, 74, 1, 77-104, (1995) · [Zbl 0821.03023](#)
- [29] Steel, John R., The core model iterability problem, (), iv+112 · [Zbl 0864.03035](#)
- [30] Steel, John R., Core models with more Woodin cardinals, J. symbolic logic, 67, 3, 1197-1226, (2002) · [Zbl 1012.03055](#)
- [31] Steel, John R., PFA implies $\text{AD}^{\mathbb{L}}$, J. symbolic logic, 70, 4, 1255-1296, (2005) · [Zbl 1103.03047](#)
- [32] Zeman, Martin, Inner models and large cardinals, (), xii+369 · [Zbl 0987.03002](#)

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.