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Abstract

Symmetries in the Set-Theoretic Universe and the Higher Infinite †

Joan Bagaria

Department of Mathematics and Computer Science, ICREA & Universitat de Barcelona, 08010 Barcelona, Spain; joan.bagaria@icrea.cat

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The set-theoretic universe, as described by the standard Zermelo-Fraenkel axioms of set theory plus the Axiom of Choice (ZFC), provides the standard ontology for mathematics. However, the ZFC axioms are insufficient for answering many fundamental mathematical questions involving infinite sets, such as the Continuum Hypothesis, Lebesgue's measure extension problem, regularity properties for projective sets of real numbers, etc. We will argue that additional axioms of set theory asserting the existence of very large infinite cardinal numbers, known as large cardinal axioms, may be regarded as imposing strong symmetry conditions on the set-theoretic universe, which yield a solution to many of the ZFC-independent questions.



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