ABSTRACT FOR THE FIRST CONGRESS OF GREEK MATHEMATICIANS

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Strong compactness and the continuum function

Set theory is the branch of mathematical logic that studies the axiomatic system ZFC and its deductive strength. When ZFC is unable to decide the truth of a certain statement, large cardinals are used to "measure" how much more strength does ZFC need to decide it. Nowadays, the interaction between large cardinals and forcing is one of the main techniques used when establishing consistency or independence results, but not all known large cardinal notions are robust when it comes to forcing. Strongly compact cardinals are a characteristic example, since, for instance, it is still open whether it is possible to control the continuum function and at the same time preserve strong compactness, without relying on stronger properties such as supercompactness. In an ongoing work with A. Apter, we look at special cases of non-supercompact strongly compact cardinals and their preservation in forcing extensions with some control on the continuum function.

Initially, we show that assuming only a partial degree of supercompactness, it is possible to violate GCH at a non-supercompact strongly compact cardinal, while preserving the full extent of its strong compactness. Also, we show that certain Easton functions can be realised while preserving the strong compactness of the least measurable limit of supercompact cardinals. Finally, we show how to force a violation of GCH at all strongly compact cardinals, in models where strong compactness coincides with supercompactness.

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