

RESEARCH STATEMENT

Miguel Angel Mota, University of Barcelona, motagaytan@hotmail.com.

I am working under the supervision of professors Joan Bagaria and David Aspero (both from the University of Barcelona and ICREA). Our research deals with some topics in combinatorial set theory and specially with Jonsson cardinals.

We say that a cardinal κ is Jonsson if for every algebra of cardinality κ and with a countable number of operations, there exists a proper subalgebra of cardinality κ . The major problem in this area is to know whether it is consistent to assume that \aleph_ω is Jonsson. This question is interesting by itself but it also has deep connections with some model theoretic transfer properties. In fact, it is not difficult to see that the statement “ \aleph_ω is Jonsson” is equivalent to an infinite version of Chang’s conjecture.

In his doctoral thesis M. Foreman gave a first step in this direction by showing that the consistency of $\langle \aleph_{n+3}, \aleph_{n+2}, \aleph_{n+1} \rangle \rightarrow \langle \aleph_{n+2}, \aleph_{n+1}, \aleph_n \rangle$ follows from the existence of a 2 huge cardinal. Our project intends to improve this result and it is actually centered on a possible scenario which would give the consistency of $\langle \aleph_{n+k+1}, \aleph_{n+k}, \dots, \aleph_1 \rangle \rightarrow \langle \aleph_{n+k}, \aleph_{n+k-1}, \dots, \aleph_0 \rangle$, for all finite numbers n and k .

References

- [1] M. Foreman, *Large Cardinals and Strong Model Theoretic Transfer Properties*, Transactions of the American Mathematical Society, Volume 272, Number 2, 1982.
- [2] M. Foreman, *Ideals and Generic Elementary Embeddings*, Handbook of Set Theory, to appear.