RESEARCH INTERESTS

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I am interested in large cardinals and combinatorial set theory. Past work has included the following topics:

(1) Several papers on Boolean algebras. These focus on complete embeddings of the Cohen algebra into possible candidates for a counterexample to von Neumann's problem in ZFC; and games related to generalized distributive laws), co-stationarity of the ground model (investigating when it is possible for the $\mathcal{P}_\kappa\lambda$ of the ground model to be co-stationary in a forcing extension). (One of these papers is joint with James Cummings.)

(2) Co-stationarity of the ground model. These papers focus on the question of when is it possible, or necessary, that adding a new set of some kind (for instance, a new subset of $\aleph_1$) will make the $\mathcal{P}_\kappa\lambda$ of the extension model so much larger than the $\mathcal{P}_\kappa\lambda$ of the ground model that the collection of new sets in $\mathcal{P}_\kappa\lambda$ in the extension model is stationary. (Two out of three of these papers are joint with Sy-David Friedman.)

(3) The tree property. Last year we proved that the tree property at the double successor of a measurable is equiconsistent with a weakly compact hypermeasurable cardinal. I am interested in related questions about the tree property at the double successor of other large cardinals, or simlutaneously for class many cardinals, etc. (This paper is joint with Sy-David Friedman.)

(4) Some work in recursion theory with Steve Simpson on recursion theoretic versions of the set theoretic properties of measure algebras.

In addition to these topics, I am currently interested in any problems involving partial orderings, trees (particularly Aronszajn or Suslin trees), Boolean algebras, and set-theoretic topology in general.