

## RESEARCH STATEMENT

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### AXIOMATIC SET THEORY AND GENERAL LOGIC

**Axiomatic set theory:** determination of consistency strengths of infinitary combinatorial principles, using forcing and core models; characterizations of large cardinal axioms by embeddings of models of set theory.

**Constructibility theory and hyper computations:** new fine structure theories for constructible models of set theory, with applications; generalized machines with tapes of arbitrary ordinal lengths or registers working on ordinal numbers.

**Descriptive set theory and infinitary games:** representation of sets of reals by systems of models of set theory, an alternative proof of the Martin-Steel projective determinacy theorem.

Editor for descriptive set theory in the edition of the collected works of Felix Hausdorff.

**General logic:** a computer-checked formal proof of Gödel's completeness theorem; NAPROCHE - design of a proof checking systems with natural language interfaces, in collaboration with linguistics.