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My mathematical interests focus on the Set Theory. In particular its descriptive part, method of forcing and their applications to the survey of the real line lie in the center of my studies.

My first area of interest are Definable Equvalence Relations. I am interested in Borel equivalence relations and its reducibility properties. Recently, analyzing E_1 ER I obtained a simpler proof of a theorem on illfounded Sacks iteration. I also work on Real Ordinal Definable relations in the Solovay's model. In particular I study a so-called ROD-diagram in which me and prof. Kanovei have recently found some nice new properties. In particular quite sophisticated methods, as a selection theorem by Solovay, are used to prove these properties. As a byproduct we learn how to live in the Solovay model which recently becomes a nice tool to study iterated forcing.

Second area of my research concentrates on a geometric language which can be used to describe a family of forcing models. The models are produced by forcing with posets containg positive Borel sets, where positive means outside of a well-descriptive-definable (e.g. Π^1_1 on Σ^1_1) sigma ideal. In particular using a descriptive and geometric analysis of forcing conditions in standard Cohen generic extensions me and J. Pawlikowski showed how to extend Baire Property by uncountably-many sets obtaining a category counterpart of Carlson research.

While working with classical forcing iterations I am also interested in an illfounded Sacks' iteration, studied by Kanovei. It turned out that methods of so-called iterated perfects, which are directly connected with the geometrical properties of the abovementioned forcing conditions, can be used here as well. Using them I obtained a simpler proof of one of the Kanovei theorem I have written above.

The last field of my interest I mention here is a version of the Covering Property Axiom (by Ciesielski and Pawlikowski) for Miller and Laver forcings. The original version of this axiom encaptures a majority of properties which hold in the iteration of the Sacks forcing of length ω_2. I hope to obtain a similar version of the axiom for the two iterations I mentioned above.