Title: Constraint satisfaction problems and compactness

Abstract: The Constraint Satisfaction Problem, or CSP for short, over a relational structure $\mathfrak{B}$ is the decision problem where the input is a finite structure $\mathfrak{A}$ with the same signature as $\mathfrak{B}$ and we need to decide whether there exists a homomorphism from $\mathfrak{A}$ to $\mathfrak{B}$. According to the famous result of Bulatov and Zhuk we know that CSPs over finite structures exhibit a complexity dichotomy: they are all in **P** or **NP**-complete.

In the past few years some interesting connections have been discovered between CSPs and compactness principles in choiceless set theory. For a structure $\mathfrak{B}$ we write $K_{\mathfrak{B}}$ for the following statement: for every structure $\mathfrak{I}$ with the same signature as $\mathfrak{B}$, if all finite substructures of $\mathfrak{I}$ homomorphically map to $\mathfrak{B}$ then so does $\mathfrak{I}$. The general observation is that the harder the CSP over some structure $\mathfrak{B}$ is the stronger the compactness principle $K_{\mathfrak{B}}$ is (over ZF). In my talk I will talk about some recent results supporting this observation including a gentle introduction to the theory of CSPs.