Král received his PhD from Charles University in Prague in 2004. He was awarded Philip Leverhulme Prize in Mathematics and Statistics 2014 a European Prize in Combinatorics 2011.

Currently he is a professor in the Mathematics Institute and Department of Computer Science at the University of Warwick. He is a holder of an ERC Starting grant and he has recently been awarded an ERC Consolidator grant.

Most of Král’s current research is related to combinatorial limits. The theory of combinatorial limits provides analytic views on large discrete structures and it responds to challenges from computer science where structures such as the graph of internet connections and graphs of social networks (e.g. Facebook, LinkedIn) are enormous. The theory opened new links between analysis, combinatorics, ergodic theory, group theory and probability theory. For example, one of the major problems on sparse graph limits, the conjecture of Aldous and Lyons, is essentially equivalent to Gromov’s question whether all countable discrete groups are sofic. His work includes applications of analytic methods in extremal combinatorics and it also led to new insights in structural properties of graph limits.

The recently emerged theory of combinatorial limits has opened new links between analysis, combinatorics, computer science, group theory and probability theory. Combinatorial limits give an analytic way of representing large discrete objects.

In the talk, we focus on limits of permutations and (dense) graphs, and their applications in extremal combinatorics and theoretical computer science. We will particularly focus on limits that are uniquely determined by finitely many constraints and we will present counterexamples to two conjectures posed by Lovasz and Szegedy on the structure of the topological space of typical points of such limits.

The talk will be self-contained and no previous knowledge of the area is needed.