Univerzita Karlova
Matematicko-fyzikální fakulta

Vás zve na devatenáctou

Jarníkovskou přednášku

CSPs and Symmetries

kterou přednese

doc. Mgr. Libor Barto, Ph.D.

(Katedra algebry, MFF UK)

ve středu dne 7. října 2020
ve 14:00 hod.

v posluchárně V. Jarníka (M1),
děkanát MFF UK, 2. patro
Ke Karlovu 3, Praha 2

Abstract: How difficult is to solve a given computational problem? In a large class of computational problems, including the fixed-template Constraint Satisfaction Problems (CSPs), this fundamental question has a simple and beautiful answer: the more symmetrical the problem is, the easier is to solve it. The tight connection between the complexity of a CSP and a certain concept that captures its symmetry has fueled much of the progress in the area in the last 20 years. I will talk about this connection and some of the many tools that have been used to analyze the symmetries. The tools involve rather diverse areas of mathematics including algebra, analysis, combinatorics, logic, probability, and topology.

Libor Barto is an associate professor at the Department of Algebra, Faculty of Mathematics and Physics, Charles University. His scientific interests include universal algebra and computational complexity, in particular, constraint satisfaction problems. He is best known for introducing the absorption theory, which has led to, e.g., the characterization of problems solvable by local methods. His scientific achievements include papers in prestigious journals (e.g., Journal of the ACM, Journal of the EMS) and conferences (e.g., FOCS, STOC), numerous invited talks and tutorials (e.g. at {Symmetry, Logic, Computation} workshop in Berkeley 2016), successful Ph.D. students (J. Bulín, A. Kazda, M. Olšák, J. Opršal), and the ongoing ERC Consolidator grant Symmetry in computational complexity. He obtained his Ph.D. from Charles University in 2006 under the supervision of V. Trnková. From 2010 to 2012 he worked at McMaster University in Canada.