Thursday 2 March 2017
14h00 – 15h30
IRIT, Salle 175

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The (Parameterized) Complexity of (Positional) Games

Abstract: Classical Computational Complexity is a popular tool from Theoretical Computer Science used to characterize the difficulty of solving decision problems. I will present how a couple intuitive criteria allow one to guess the most likely complexity class of games of various sort. We'll then move to Parameterized Complexity which addresses some of the practical shortcomings of classical computational complexity and has seen increased adoption for studying graph-theoretic problems. I will describe ongoing work on building a better understanding of the Parameterized Complexity of Games. As an application, we'll show that Short Generalized Hex is W[1]-complete parameterized by the number of moves. This disproves a conjecture from Downey and Fellows' influential list of open problems from 1999.