WALTER WHITELEY, York University, Toronto, Ontario
Some applications of rigidity to control of formations

Recent work on control of formations of robots has used a number of results from rigidity theory, while adding some new questions about directed graphs (which of the end vertex agents is responsible for maintaining the length of the edge?). In addition to graphs which can be rigidly maintained, there are problems of 'control'—will noise disrupt the convergence of the formation to the desired path?

We will present some key results drawn from rigidity theory and as well as currrent unsolved problems for formations of agents in the plane, with distance constraints.

This is part of joint work with groups of Steven Morse (Electrical Engineering, Yale), Richard Yang (Computer Science, Yale) and Peter Belhumeur and Tolga Eren (Computer Science, Columbia).