Stabilization of nonlinear systems in non-simply connected domains

Victoria Grushkovska

Institute of Mathematics, Julius Maximilian University of Würzburg, Germany

In this talk, we present a novel class of control algorithms for nonlinear systems whose vector fields satisfy higher order controllability conditions. The proposed control design approach is based on the approximation of the gradient flow of a proper potential function. It is shown that the obtained controllers are applicable for various stabilization and motion planning tasks. In particular, we demonstrate a constructive approach for motion planning of nonlinear systems in domains with obstacles. Besides, we propose constructive stability conditions in order to ensure convergence properties. This is a joint work with Prof. Alexander Zuyev.