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Simultaneous Control of Ensembles of Dynamical Systems

Abstract.

We address two related questions: i) a possibility to control an ensemble (a parameterized family) of nonlinear control systems by a single parameter-independent (simultaneous) open loop control, and ii) a possibility to control ensembles of points (e.g. curves, surfaces, etc) by virtue of a single system and single control. We adapt the Lie-algebraic approach of geometric control theory to the infinite-dimensional setting in order to establish controllability criteria for these problems.