X Workshop on Dynamical Systems
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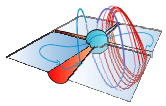

Open problems in sliding mode control systems with two switching boundaries

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Abstract: Piecewise smooth dynamical systems with discontinuous right-hand side (Filippov systems) play an important role in the modeling of many physical, biological, mechanical and engineering applications and present interesting and complex mathematical questions.
In particular, the well-established Filippov convexification method provides a powerful and useful tool to establish what to do when trajectories reach a codimension 1 manifold of discontinuity. However, it is still not fully understood what happens when trajectories have to move on the intersection of two smooth manifolds (co-dimension 2 switching boundary).
In this talk, we discuss some open problems in sliding mode control (SMC) systems related to sliding motion on a switching boundary Σ of co-dimension 2. Some case studies from real applications allow us to illustrate the methodology developed to analyze this kind of systems.