Stabilization with incomplete information

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Timetable: 16 hrs. First lecture on May 8th, 2023, 11:00 (dates already fixed, see Calendar of Activities at https://dottorato.math.unipd.it/calendar), Torre Archimede, Room 2BC30.

Course requirements: Basic knowledge of Ordinary Differential Equations

Examination and grading: Oral examination

SSD: MAT/05

Aim: In the context of control theory, the course provides the basis of observability for nonlinear systems and its application to problems of stabilization.

Course contents:

1. Preliminaries
   - Stability theory, direct and inverse Lyapunov’s theorems
   - Center manifold theory
   - Transversality theorems

2. Nonlinear observability
   - Observability results (generic and singular cases)
   - Nonlinear observers, including deterministic Kalman filter

3. Stabilization with incomplete information
   - Strongly observable situation
   - Singular situation.

Bibliography: