

Open Invited Track for IFAC World Congress 2017

Title: Advances in Nonlinear Observers

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IFAC Technical Committee: TC2.3 Non-Linear Control Systems

Abstract: Observation problems are fundamental for control, diagnosis and systems operation. Despite of important advances in the last 60 years the observability analysis and the design of nonlinear observers for linear or nonlinear systems remain challenging tasks. This open invited track proposal is intended to be an opportunity to share and exchange on the most recent advances in this basic topic.

Web site: none

Full description: Observing a system consists in estimating non measurable variables from the measured ones, using a full or partial mathematical model of the relations between these variables. Observability/detectability properties are related to the possibility of obtaining such an estimation in finite time or asymptotically. For linear (time invariant) systems the characterization of the observability/detectability properties and the design of asymptotically convergent observers have been solved since long. However, for nonlinear systems (or nonlinear observers) these problems are far from being completely solved and there is a strong recent research activity in these topics. This is shown in the many special sessions in international conferences, as e.g. recently in NOLCOS 2016 and special issues in international Journals. This indicates the vitality and the strong interest from the research community in these topics. This open invited track in the IFAC World Congress 2017 is thought to be an opportunity to present and discuss recent advances in the analysis of observability and the design of nonlinear observers for dynamical systems.