Session 3: Identification and Fault Detection
09:00 – 09:40, 15th, July

**Data-driven Fault Diagnosis and Fault-tolerant-control**

*Steven X. Ding, Automatic Control and Complex Systems (AKS), Universität Duisburg-Essen*

Linear control theory is a well-established model-based framework, in which rich methods and tools are available for designing automatic control systems. In recent years, a trend can be observed that some of these design methods have been so modified that they can be directly applied based on process data sets instead of a process model. In this presentation, a data-driven design framework for observer-based fault detection and fault-tolerant control is introduced. It consists of (i) control-theoretical essentials (ii) data-driven forms of kernel and image representations (iii) a fault-tolerant control concept and (iv) realization and optimization techniques and algorithms.