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Vortragsankündigung

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Fault tolerant clock synchronization over unreliable channels in wireless sensor networks

In this talk, we discuss the problem of clock synchronization in wireless sensor networks based on a distributed approach by employing consensus-type algorithms.
The sensor nodes face two types of uncertainties. One is that some of the nodes in the network can be faulty and transmit arbitrary signals by not following the given protocol; similar effects may be caused by false data injection by an external malicious attacker. The other is that the communication is unreliable and the packets exchanged may become lost. To deal with these uncertainties, we propose a resilient consensus-type algorithm based on the so-called mean subsequence reduced (MSR) technique where each non-faulty, normal node ignores the outliers in the clock data collected from its neighbors and also makes updates using data from the past if new data has not arrived yet. We characterize the network connectivity conditions in terms of the notion of graph robustness for the MSR algorithm to attain resilient properties.