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Special Session on

"Resilient and Networked Control of Complex Cyber-Physical Systems"

Organized by

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Call for Papers

Theme: (100 words)
Cyber physical systems (CPSs) have been widely deployed in industrial applications such as electric power, water, transportation, and other networks. These deployments facilitate real-time monitoring and closed-loop control by exploiting advances in wireless sensor-actuator networks, Internet of Everything, data-driven analytics, and machine-to-machine interfaces. CPS operations depend on the synergy of computational and physical components. Therefore, cooperative control ability of the different physical components is a big mission for exploring the adaptability of distributed network control system, which calls for new techniques to deal with complex tasks. In addition, in many cases, CPSs also interact with human decision makers. Fundamentally, once we admit that CPS operations depend on actions of humans (albeit to different degrees), we also have to admit that malicious entities could take charge of CPS control by exploiting cyber insecurities or physical faults, or their combination. Therefore, to improve CPS resilience, we also need diagnostic tools and distributed control algorithms that ensure survivability in the presence of

both security attacks and random faults and include models of the incentives of human decision makers in the design process.

Topics of interest include, but are not limited to:

- Resilient system design
- Fault tolerant control
- Security attacks and human decision
- Robust and reset control
- Networked control systems
- Model predictive control
- Fractional order control
- Multi-agent cooperative control
- Prognostics and health management
- Distributed fault detection and information fusion
- Fixed/finite-time control