

# Synchronization and stability in networked systems via structured-trigger, and event-trigger and self-trigger principles<sup>1</sup>

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## Joint works with

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- Mr. Xinlei Yi (KTH, Sweden)
- Dr. Yujuan Han (MUS)
- Mr. Ren Zheng (Fudan, UTSA/USA)
- Prof. Bo Liu (Xi'Dian)

## Outlines

Introduction

Multi-agent system networks: Methods

Some results

Conclusion

Outlooks

## Event-triggered Control

- A promising method for controlling networked agent systems.
- Better performance than periodic controllers (Åström & Bernhardsson, IEEE CDC 2002).
- Similar performance as continuous controllers but less computation and communication loads (Wang & Lemmon IEEE TAC 2011).
- Implemented by smart control strategies.

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## Related concepts

$$\dot{x} = f(x, u)$$

- Discretization:  $x(k) = x(t_k)$  and  $x(k + 1) = x(k) + \delta_k f(x(k), u(k))$ .
- Sampled data control system:  $\{y(t_k)\}$ .
- Event-trigger:  $u(t) = u(t_k), t \in [t_k, t_{k+1})$  with  $t_{k+1} = \max\{H(x(t), t_k) \leq 0\}$ . It can be regarded as an subjective discretization/data sampling strategy.

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## Centralized Event-triggered Control

$$\dot{x} = f(x, t, u)$$

Piece-wise constant control strategies

$$\dot{x} = f(x, t, u(t_k)), t \in [t_k, t_{k+1}).$$

Choose  $t_k$  by a criterion:

$$t_k = \{t : H(x_t) = 0\}.$$

Iteration.

以上内容仅为本文档的试下载部分，为可阅读页数的一半内容。如要下载或阅读全文，请访问：<https://d.book118.com/125232200141011040>