



# 學術報告

## Quickest Change Detection with Observation Acquiring Constraints



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**Biography:** Xiaoqiang Ren received the B.E. degree in the Department of Control Science and Engineering from Zhejiang University, in 2012 and the Ph.D. degree in the Department of Electronic and Computer Engineering from HKUST, in 2016. He is currently a postdoctoral research associate in the Department of Electronic and Computer Engineering at HKUST. From January 2015 to June 2015, he was a visiting student in the ACCESS Linnaeus Centre, KTH Royal Institute of Technology, Sweden. From August 2015 to January 2016, he was a visiting student in NeSC group, Zhejiang University. His research interests include sequential detection, security of cyber-physical system and networked control and estimation.

The quickest change detection problem is to detect an abrupt change event as quickly as possible subject to constraints on false detection. Unlike the classical problem, we pose observation acquiring constraints to the decision maker. The following two types of constraints are considered: 1) the decision maker cannot sample at every time, 2) the decision maker has to choose one of multiple sequences of observations at each time. For both constraints, we present asymptotically optimal joint design of observation acquiring policy and stopping rule such that the detection delay is minimized subject to certain false alarm rate and observation cost. The decentralized case in a multi-channel setting is also studied.