



Department of
Mechanical Engineering
The University of Hong Kong



SEMINAR

Set-based fault diagnosis for linear uncertain systems: fundamentals, advances & prospects

Date: 18 April, 2023 (Tuesday)

Time: 11:00 a.m.

Venue: MB-142, Main Building, HKU

Speaker: Mr. MIN Bo (PhD candidate)
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Abstract:

Industrial systems are becoming more and more complex and thus require higher system safety and reliability. As an important methodology to improve the safety and reliability of industrial systems, fault diagnosis is attracting more and more attention. Since actual systems are always affected by uncertainties, including disturbances and noises, a key requirement of fault diagnosis methods is their robustness with respect to uncertainties. Robust fault diagnosis methods are generally divided into two categories: stochastic methods and deterministic methods. The stochastic methods describe system uncertainties using stochastic distributions and the probability theory, while the deterministic methods describe system uncertainties using the set theory. Set-based fault diagnosis methods achieve robustness by bounding all system uncertainties in known sets. Generally, set-based fault diagnosis can be divided into passive and active approaches. The set-based passive fault diagnosis approaches propagate system uncertainties to the output or residual estimation sets and then collect the real-time output information to make consistency detection and fault diagnosis decisions. Differently, the set-based active fault diagnosis approaches actively design auxiliary signals to excite the system and acquire more system information to improve the diagnosis performance. In this seminar, the fundamentals and recent advances of set-based fault diagnosis will be introduced. Besides, the prospects for future research in this field will also be discussed.

ALL INTERESTED ARE WELCOME

For further information, please contact Prof. J. Lam at 3917 2805.