

**DEPARTMENT OF MECHANICAL ENGINEERING****SEMINAR****Online**

Title: Passive control of thermo-acoustic instability through a side-branch bypass

Speaker: Mr. Zhang Xingyu (PhD candidate)
Department of Mechanical Engineering
The University of Hong Kong
Hong Kong

Date: 5 May, 2021(Wednesday)

Time: 3:00 p.m.

Zoom Link: 1) Link to join the meeting:

<https://hku.zoom.com.cn/j/98496059745?pwd=QWdRUkVtbk1KTjdSbmgYWTF4Mkt3QT09>

2) Meeting ID: 984 9605 9745

3) Password: 538623

Abstract:

Thermo-acoustic instability is a common problem occurring in the combustion chamber and is mainly caused by pressure perturbation and unstable heat release. This study demonstrates a design of a side-branch bypass to improve the thermo-acoustic stability in the simplest Rijke tube configuration by releasing the build-up energy. The bypass interconnects the main tube with the exterior via thin membranes that can release the pressure perturbation to the exterior while preventing flow leakage. The goal is to achieve a broadband performance that keeps efficiency under varying thermoacoustic working conditions. Compared with the conventional Helmholtz resonator arrays with similar dimensional constraints, the device can achieve good sound absorption performance at low frequencies, which means that the low-order modes of thermoacoustic instability can be well suppressed. In this presentation, the parameters studies and model analysis will be briefly introduced, and then some preliminary results of simulations and calculations will be presented.

ALL INTERESTED ARE WELCOME

For further information, please contact Prof. L.X. Huang at 3917 7906.

Research area: Sound and Vibration