

# Vibration Suppression of Inertia Damper using MR Fluid

Time:  
11:00am - 11:40pm

19  
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Wednesday



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## Venue:

Room ZS970, Block Z,  
The Hong Kong Polytechnic  
University

## Registration:

Online registration at  
<http://goo.gl/HGKwPH> or by  
scanning the QR code.

This seminar is free of  
charge. The attendance  
certificate will be provided  
upon request.

For more information, please  
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## Abstract

We developed a unique type damper using MR fluid in order to obtain a series inertia effect for vibration suppression. The damper consists of a cylinder, a piston, and a long by-pass pipe. Series inertia effect is caused by quickly movement of the fluid in the by-pass pipe, and proportional to a length, density, and a ratio of cross sectional areas of it. It is obvious that not only a resonance frequency can be shifted toward low frequency, but also vibration can be cut off at an anti-resonance frequency by series inertia effect. The test damper is manufactured, and dynamic properties are investigated. Seismic vibration tests using 3-story benchmark structure with the damper installed are carried out. The effect of vibration suppression is evaluated, and the validity of the inertia effect is confirmed experimentally.

## Speaker's Biography

Dr. Matsuoka is currently an Associate Professor of Department of Mechanical Engineering Informatics, School of Science and Technology, Meiji University. He completed his PhD degree in 2004, M.Eng degree in 2001 and B.Eng in 1999 from Meiji University, Tokyo, Japan. He works with Akita University as Assistant Professor during 2005 to 2010. He is appointed as Assistant Professor at Meiji University from 2010 to 2015 and since 2015, he serves as Associate Professor at the School of Science and Technology, Meiji University. He is a visiting scholar at University of Illinois at Urbana-Champaign (UIUC) during 2017 to 2018. Dr. Matsuoka's research interests include developing new vibration control devices involving Magnetorheological (MR) fluid, inertance and negative stiffness. He received ASME PVP Division Award and Certificates for Seismic Engineering Outstanding Technical Paper for PVP 2006.