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Asian Journal of Control

"Advances in Active Control of Sound and Vibration"
A Special Issue of *Asian Journal of Control*

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The idea of active control of sound dates back to Paul Lueg in 1934 but it was not until the 1980s that a device, based on analogue componentry, came close to any practical application. Since then the advent of modern digital computing and digital signal processing has vastly advanced the possibility of practical benefits of combating noise and vibration using active techniques. Currently, practical applications include anti-noise earphones, active duct silencers, active control of propeller-driven aircraft cabin noise, active vibration control of vehicle suspensions, active tuned mass dampers, acoustic echo cancellation in telecoms, etc. However, judging by the elegant mathematical promise, the quantity of research effort and the substantial decrease in cost of sensors, actuators and digital controllers, one can expect many more success stories to be told in the future.

At this stage of technological development, it is perhaps time to take stock: there are many questions which affect future directions of research, development and implementation. For example, what are the theoretical limits from the control theory perspective and what recent advances in control theory and algorithm development will advance the frontiers of active control? What is the bottleneck in practical applications? Is it the capabilities of sensors, digital signal processors or actuators, or are robustness and cost the limiting factors?

The main purposes of this Special Issue are to review the state of the art and to highlight advances in the active control of sound and vibration. Common sense tells us that control of the source of sound and vibration is the better option if possible. One such example is the control of instability in air flows that would otherwise lead to exponential growth of velocity and pressure oscillations and ultimate damage to machinery. Active intervention at the first stages of instability can produce major effects. In addition to more conventional applications to active control of sound and vibration, we would therefore also welcome contributions on the active control of dynamic system instability that would otherwise cause structural vibration and/or sound radiation.

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How to submit:

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