Abstract

Holterman J. and J. van Amerongen, *"Analog Controller Design for an Active Damping Element"*, Proceedings of the 3rd IFAC Symposium on Mechatronic Systems, 3rd IFAC Symposium on Mechatronic Systems, September 6-8, 2004, Sydney, Australia, pp 313-318, 2004

The ‘Smart Disc’ is an active structural element to be used for damping vibrations in high-precision machines. It is based on a piezoelectric position actuator and a collocated piezoelectric force sensor. Active damping is realised by a feedback loop. In order to miniaturise the electronics involved in the Smart Disc concept, the sensor amplifier, the controller electronics, and the actuator amplifier may be integrated into an analog circuit based on a single operational amplifier. Controller design then boils down to proper dimensioning of a first-order lowpass filter with three electric components: one capacitor and two resistors.