

Experimental study of active vibration control of a flexible beam system using iterative learning algorithm

Abstract

Experimental studies are conducted on active vibration control using self-tuning proportional integral derivative and self-tuning proportional iterative learning algorithm control schemes to suppress vibration on a flexible beam via real-time computer control. An experimental rig is developed to investigate controller performance when a change in the dynamic behavior of the flexible beam system occurs. The performance of the self-tuning control schemes is validated experimentally and compared with that of conventional control schemes through the use of an iterative learning algorithm. Experimental results clearly reveal the effectiveness and robustness of the self-tuning control schemes over conventional control schemes.

Keywords; Active vibration control; Flexible beam; Iterative learning algorithm