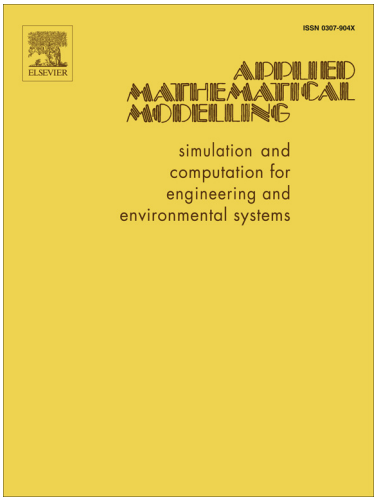
Accepted Manuscript



Genetic algorithm based wireless vibration control of multiple modal for a beam by using photostrictive actuators

Zheng Shijie, Lian Jingjing, Wang Hongtao

PII: S0307-904X(13)00434-4
DOI: http://dx.doi.org/10.1016/j.apm.2013.06.032
Reference: APM 9587

To appear in: *Appl. Math. Modelling*

Received Date: 5 July 2012
Revised Date: 3 May 2013
Accepted Date: 24 June 2013

Please cite this article as: Z. Shijie, L. Jingjing, W. Hongtao, Genetic algorithm based wireless vibration control of multiple modal for a beam by using photostrictive actuators, *Appl. Math. Modelling* (2013), doi: http://dx.doi.org/10.1016/j.apm.2013.06.032

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Genetic algorithm based wireless vibration control of multiple modal for a beam by using photostrictive actuators

Zheng Shijie[a]* Lian Jingjing[a] Wang Hongtao[b]

State Key Laboratory of Mechanics and Control of Mechanical Structures, Nanjing University of Aeronautics & Astronautics Nanjing 210016, China

College of Mechanical and Electrical Engineering, Nanjing University of Aeronautics and Astronautics，Nanjing 210016，China

ACCEPTED MANUSCRIPT

ABSTRACT

The lanthanum-modified lead zirconate titanate (PLZT) actuator, which are capable of converting photonic energy to mechanical motion, have great potential in applications of remote structural vibration control of smart structures and machines. In this paper, a novel genetic algorithm based controlling algorithm for multi-modal vibration control of beam structures via photostrictive actuators is proposed. Two pairs of photostrictive actuators are laminated with the beams and the alternation of light irradiation is in accordance with the changing of the corresponding modal velocity direction. The modal force indexes for beams with different boundary conditions are derived and a binary-coded GA is used to optimize the locations and sizes of photostrictive actuators to maximize the modal force index and guarantee the overall modal force index induced by two pairs of photostrictive actuators is positive. The control effect of multiple vibration modes of beams under

*Correspondence author: sjzheng@nuaa.edu.cn

دریافت فوری ← متن کامل مقاله

ISIArticles
مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات