

Force Appropriation Method for Two Degrees of Freedom Nonlinear System

Mohd Shahrir Mohd Sani^a, Muhamad Norhisham Abdul Rani^b, Mohd Azmi Yunus^b, Ahmad Azlan Mat Isa^b, Liyana Roslan^b

^aAdvanced Structural Integrity of Vibration Research (ASIVR), Faculty of Mechanical Engineering, University Malaysia Pahang, 26600 Pekan, Pahang, Malaysia

^bDynamics and Control Laboratory, Faculty of Mechanical Engineering, Universiti Teknologi MARA (UiTM), 40450 Shah Alam, Selangor, Malaysia

ABSTRACT

In this paper, the vibrations of structures are investigated via force appropriation method in which modes are excited individually by forces. Multivariate mode indicator function (MMIF) is used in the modal testing for investigating the prospective nonlinearities in the structures. The method is applied to simulate two degree of freedom with simple nonlinearities. The results are presented and evaluated to indicate that the method has advantages when it comes to involving in mode by mode identification. Results calculated from modal assurance criteria (MAC) and modal purity indicator (MPI) show that the qualities of evaluating a pure normal mode are in satisfactory. This suggests that force appropriation method for nonlinear structures is reliable and efficient, particularly in terms of the isolation of individual modes and determination of high quality modal parameters.

KEYWORDS: Force appropriation, nonlinear, vibration, multivariate mode indicator function

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