ICM 1998, Berlin, Aug. 18–27

Abstracts of Short Communications and Posters

Section:

12. Probability and Statistics

1991 MS Classification: 1991 MS Classification: 34, 60, 70

Sireteanu, Tudor, Institute of Solid Mechanics, Romanian Academy, Bucharest, Romania; Bellizzi, Sergio, Laboratoire de Mecanique et d'Acoustique, CNRS, Marseille, France; Ursu, Ioan, "Elie Carafoli" National Institute of Aerospace Research, Bucharest, Romania

An extension of Gaussian equivalent linearization

A new criterion for Gaussian equivalent linearization technique is described for obtaining approximate solutions to non-linear random vibrations problems. The linear equivalent stiffness and damping coefficients are determined by imposing the equality of the Gaussian expectations of the absolute values of the equivalent linear and non-linear additive terms, raised to some real positive powers. The results obtained by numerical simulation have shown that, for any elastic and damping terms of monomial form added to linear characteristic, there exist two real positive powers such that the mean square response of equivalent linear system be equal to the mean square response of the non-linear system of interest. Generalization of the new linearization technique and some illustrative examples are presented.