

Dynamic Response of Beams and Plane Trusses to Interval Load

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Abstract

In mathematical models, parameters are most often represented by real numbers. In practice, it is impossible or at least very difficult to get reliable information about the exact values of the parameters. Then, depending on available information, instead of real numbers one can use various methods of modeling of uncertainty. In this paper, we present a problem of computing dynamic response of structures with interval structural parameters and subjected to interval loading. Interval dynamic equations are solved using three different approaches: parametric linear interval equations (Skalna, Rama Rao and Pownuk, 2008 and Skalna and Pownuk, 2008), optimization approach (Rama Rao, Pownuk and Vandewalle, 2010) and adaptive approximation (Pownuk, 2011). The applicability of those methods is illustrated through solution of beams and plane trusses with interval value of Young's modulus and subjected to interval dynamic loading.

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