

Modelling and control design of vibration reduction systems: methods and procedures of selecting vibro-isolation properties

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Abstrak

This book describes the modelling and optimisation of vibration reduction systems in an integrated fashion using nonlinear equations of motion. It proposes an effective optimisation method for determining the basic characteristics of the non-linear visco-elastic elements used in passive vibration reduction systems. In the case of semi-active and active vibration isolators, a design process of the advanced control systems is proposed that makes possible to optimise the controller settings relatively to the selected vibro-isolation criteria. The approach developed here is subsequently tested by means of experimental investigations conducted on various sample vibration reduction systems: passive, semi-active and active.