

Control of tremors of human's arm by a passive nonlinear absorber

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Abstract: The aim of this work is to develop a mechanical nonlinear absorber for cancelation of tremors of human's arm due to some disease such as Parkinson. Governing equations of the upper limb representing by a two-degrees-of-freedom pendulum are coupled to the equation of the nonlinear absorber. A time multiple scale method is exploited for detecting the responses of the system at different time scales, i.e. fast and slow scales. After revealing fast dynamics of the system, the characteristic points of the system are tracked. These points should correspond to comfortable amplitude variations of the arm. Analysis of the dynamics of the system provides tools for tuning parameters of the absorber.

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