

## Control of a Nonlinear Slewing Flexible Beam

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Nowadays, a great number of space missions involve large space structures, where a high degree of pointing accuracy is needed. In such systems, the coupling between the energy source and flexible structure must be taken into account in the control system design. In this paper, a control law is designed for the ideal (no influence of the structure over the energy source) and the non-ideal (the structure behavior changes the energy source behaviour) linear model using a dc motor to drive a flexible slewing beam-like structure. Although, the gain of the control law is obtained for the linear model, its performance is tested also for the non-linear system. The non-linear term is proportional to the square of the angular velocity of the motor. Low and high velocities are investigated in order to verify the robustness of the proposed control law when dealing with the not modeled terms.

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