

센서 동역학을 고려한 충격응답해석

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Analysis of Impact Responses Considering Sensor Dynamics

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Key Words : Sensor Dynamics(센서 동역학), Impact Response(충격응답), Impact Force Model(충격력 모델)

Abstract : Impact is the most common type of dynamic loading conditions that give rise to impulsive forces and affects the vibrational characteristics of mechanical systems. Since the impact force and response are measured indirectly through the sensors, it is difficult to predict the impact force and acceleration. In this study, contact force model based on the Hertz law is proposed in order to predict the impact force correctly. To investigate the influence of the position of the sensor attached to the impacting bodies, the two kinds of sensors were used. Finally, importance of the consideration of sensor dynamics is verified by applying the above contact force model to the real magnetic contactor.

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Dynamic Modeling of Satellite with Deployable Solar Arrays

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Key Words : Strain Energy Hinge, One dimensional nonlinear torsional spring, Lagrange's Eq.,
Solar Array Deployment

Abstract : This research is concerned with dynamic modeling of satellite with deployable solar arrays equipped with strain energy hinges (SEH). It is found from experiments that the SEH has nonlinear dynamic characteristics and complex buckling behavior, which is difficult to explain theoretically. In this paper, we use an equivalent one dimensional nonlinear torsional spring for the SEH. Lagrangian equations of motion are used for the derivations.