Study on the Nonlinear Dynamic Characteristics of Structures under Seismic Loadings JIWON MOON, RICHARD KYUNG, CRG-NJ — In the presented dynamic analysis, the governing equations of motion are derived using two degrees of freedom in the system, taking into account a variety of conditions. The predictive dynamics model for impact-absorption systems is used in order to simulate the vibrational movement of the multi-link manipulator such as from buildings to car suspension systems. Recent advances in the predictive dynamics allow the user not only to predict dynamics-based mechanics, but also to perform the virtual simulations of the system. In this paper, the dynamic analysis in impact-absorption systems was performed by deriving the governing differential equation of motion and plotting the amplitude and the phase of the masses with respect to the frequency. Periodic excitation such as trigonometric function and forced vibration were applied to the spring mass system to find the motion of the seismic instrument or vibrometer. Instead of using soft springs, very hard springs were tested to give a high natural frequency of the system. A system, whose damping is negligible, was also employed to find the magnitude of the vibration. The study shows the addition of vibration absorber devices resulted in a significant improvement in the systems stability.

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