عنوان مقاله:

Analysis of the Dynamical Behavior of the Delay Mechanism in a Projectile Motion Controller, Using ۳D Finite Element Simulation

محل انتشار:

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خلاصه مقاله:

In this paper, dynamical behavior of the delay mechanism of a special projectile controller is studied, using ۳D finite element simulation. The controller considered here is among of high-acceleration mechanical controllers. Due to high linear and angular accelerations of the projectile and also explosion risk, experimental investigation is very limited and almost impossible. So, numerical simulation is a valuable tool for designing of this kind of controllers. In the simulations here, the metal coil and its ring belt are the deformable parts of the model, while other parts are assumed to be rigid. Plastic deformation of these deformable parts, during the projectile motion, has a very important effect on the proper operating of the controller. To study the effect of coil material properties, a bilinear stress-strain curve with different yield stress was assumed. The simulation results show that there is an optimum yield stress for the metal coil, by which the appropriate operation of controller may be reached. For the special controller considered here, this optimum yield stress is about ۲۸۵(MPa). All simulations made use of ABAQUS commercial software.

کلمات کلیدی:

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