## عنوان مقاله:

Low-velocity Impact Response of Viscoelastic Composite Laminates Considering Large Deflection and Higher-order Shear Deformation

## محل انتشار:

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## خلاصه مقاله:

This paper presents an experimentally validated finite element analysis of the low-velocity impact on viscoelastic laminates with consideration of large deflection and higher-order shear deformation effects in the time domain. The generalized Maxwell model (Wiechert) is incorporated into the FEM procedure to simulate the viscoelastic feature of the structure. In a geometrically nonlinear analysis, a displacement field considering higher-order shear deformation and large deflection of the laminate is assumed, and the finite element formulation is extracted. To evaluate the contact force, the modified Hertzian contact law is implemented into the finite element program. Numerical results including contact force output histories and deflections are then derived and compared with the experimental data. The obtained results show that the viscoelasticity effect and large deflection have a significant effect on the results, so they must be considered to gain a precise description of the low-velocity impact response. This model achieved good conformance with experimental results.

## کلمات کلیدی:

Low velocity impact, Laminated Composite, Sandwich structure, Viscoelasticity, Large deflection