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Shock characterization of fiberglass composite laminates: numerical and experimental comparison

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When subjected to a no contact underwater explosions (UNDEX), naval composite structures show highly nonlinear deformations. In this paper, fiberglass composite laminates are characterized dynamically. Experimentally, modal analyses are carried out to determine the modal parameters of the specimens, while dedicated shock tests are performed using the MIL S 901 D Medium Weight Shock Machine to measure their shock deformations. Numerically, a Finite Element model is set, running modal analyses and dynamic calculations to predict the structural response of different materials. In the end, results obtained by calculations are compared with experimental data, validating the model.

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