Abstract Submitted
for the SHOCK11 Meeting of
The American Physical Society

Functional Graded Shells Subjected to Underwater Shock SHI WEI GONG, Institute of High Performance Computing, Singapore — This paper deals with the problem of functionally graded (FG) cylindrical shells subjected to underwater shock. A computational approach to predict the dynamic response of the FG cylindrical shells to underwater shock is presented. The effective material properties of functionally graded materials (FGMs) for the cylindrical shells are assumed to vary continuously through the shell thickness and are graded in the shell thickness direction according to a volume fraction power law distribution. Based on Doubly Asymptotic Approximation (DAA) method, the fluid-structure interaction equation for a submerged structure is derived, in which the constitutive relation for functional graded material is implemented. The coupled fluid-structure equations, relating structure response to fluid impulsive loading, are solved using coupled finite-element and boundary-element codes. The computational procedure for the prediction of transient response of the FG graded cylindrical shells subjected to underwater shock is described, with a discussion of the results.

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Date submitted: 07 Feb 2011 Electronic form version 1.4