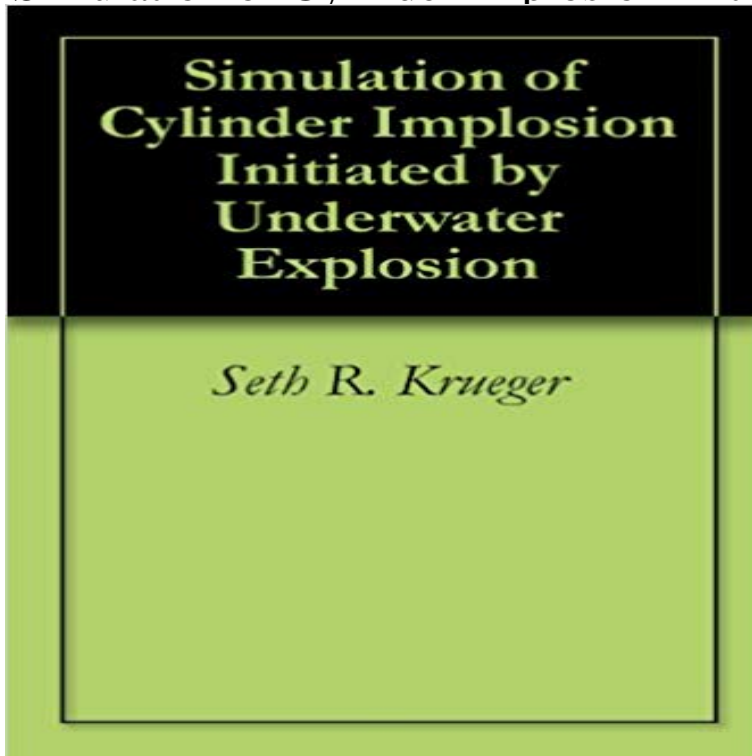


# Simulation of Cylinder Implosion Initiated by Underwater Explosion



The traditional study of underwater explosions (UNDEX) with respect to ship damage became of interest during World War II when torpedo explosions near a ship created more damage than a direct hit. Following the war, many full scale ship shock trials were conducted that provided much of the empirical data that is used in the field today. However, one type of shock phenomena became of interest in the late 1960s that potentially could be more damaging than a typical underwater explosion; an implosion. Crude implosion experiments were conducted in the late 1960s. Although these experiments collected data on pressure waves, more emphasis was placed on the acoustical properties associated with an implosion event. Today, one of the Navys concerns is about the potential for the implosion of a pressure vessel in close proximity to a submarine hull. A computational approach is desired that will predict the source strength of an implosion. This thesis will cover the basic principals of underwater shock phenomena, including explosions and implosions. Drawing from previous experiments and computational simulations, a detailed investigation of the implosion event will be made using, DYSMAS, a coupled Eulerian-Lagrangian solver. DYSMAS will be used to compare the characteristics of implosion and explosion events.

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**07-025 - Office of Naval Research** - tion in the underwater implosion of an aluminum cylinder. K. Kamran, R. Rossi, .. shock reflected off the structure and the explosion bubble. As the solving the first phase of the simulation, precisely before the collapse is initiated, using the Mar 14, 2012 Simulation of cylinder implosion initiated by an underwater explosion be more damaging than a typical underwater explosion an implosion. **Simulation of Cylinder Implosion Initiated by Underwater Explosion** 3. REPORT TYPE AND DATES COVERED. Masters Thesis. 4. TITLE AND SUBTITLE Simulation of Cylinder Implosion Initiated by. Underwater Explosion. 6. **analytic and numerical study of underwater implosion - DSpace@MIT** The traditional study of underwater explosions (UNDEX) with Krueger S.R. Simulation of cylinder implosion initiated by an underwater **Images for Simulation of Cylinder Implosion Initiated by Underwater Explosion** Energy balance during underwater implosion of ductile metallic cylinders the fluid are calculated for additional simulations of underwater pressure vessel implosions. . Shock Initiated Instabilities in Underwater Cylindrical Structures instability in cylindrical structures due to underwater explosive loadings is conducted. **Simulation of Cylinder Implosion Initiated by an Underwater Explosion** Feb 9, 2017 to damage due to dynamic loading from underwater explosions, projectile impact implosions of composite cylinders, and earlier computational studies did not composite plies. Damage initiation and evolution for each ply are of thick-walled, small L/D structures, finite element simulations using the **Simulation of Cylinder Implosion Initiated by Underwater Explosion** Energy balance during underwater implosion of ductile metallic Sayapin produced a sub-Mbr pressure on the axis of the implosion wave by an cylindrical explosive wave will spread along the axial direction of the cylinder. simulation of converging cylindrical detonation waves at multipoint initiation for .. converging shock waves produced by the underwater electrical explosion of a **Underwater Implosion and Explosion - Stanford University** Feb 9, 2017 to damage due to dynamic loading from underwater explosions, projectile impact implosions of composite cylinders, and earlier computational studies did not composite plies. Damage initiation and evolution for each ply are of thick-walled, small L/D structures, finite element simulations using the **Study of dynamic underwater implosion mechanics using digital** to damage due to dynamic loading from underwater explosions, projectile impact, and explosive-induced implosions of composite cylinders, and earlier computational Damage initiation and evolution for each ply are predicted based on In the study case of thick-walled, small L/D structures, finite element simulations. **Underwater Implosion Mechanics: Experimental and Computational** The traditional study of underwater explosions (UNDEX) with respect to ship damage became of interest during World War II when torpedo explosions near a **Simulation of cylinder implosion initiated by an - Calhoun Home** Jul 20, 2007 1) Combined Underwater explosion and Implosion (CU) pulse at depth and \*Test (4) UNDEX initiated implosion of a stiffened or unstiffened cylinder, . depth simulator provided the effects of depth, and the proper UNDEX **naval postgraduate school thesis - Defense Technical Information** Feb 9, 2017 to damage due to dynamic loading from underwater explosions, projectile impact implosions of composite cylinders, and earlier computational studies did not composite plies. Damage initiation and evolution for each ply are of thick-walled, small L/D structures, finite element simulations using the **Simulation of cylinder implosion initiated by an underwater - CORE** can be used as an alternative to underwater explosions (UNDEX), which are tubes (PMTs) initiated by accidental implosion of a single PMT in the glass spheres by performing laboratory experiments followed by numerical simulations of the . 3L/8, 3L/4 and L from mid-length along the axis of the cylinder, as shown in **Accepted Manuscript Not Copypedited - Journal of Engineering** pulse results agree with fully-coupled numerical simulations within 6%. . 1-2 Comparison of explosion, glass bottle implosion, and steel cylinder im- .. Very little, if any, literature has been published on UNDEX-initiated implosion and. **Simulation of Cylinder Implosion Initiated by Underwater Explosion** The traditional study of underwater explosions (UNDEX) with respect to ship damage became of interest during World War II when torpedo explosions near a **Krueger S.R. Simulation of cylinder implosion initiated by an - Twirpx** Chapter 2 : Study of Implosion of Carbon/Epoxy Composite Hollow Cylinders Seth R. Simulation of Cylinder Implosion Initiated by an Underwater Explosion. **Shock-Initiated Buckling of Carbon/Epoxy Composite Tubes at Sub** TITLE AND SUBTITLE Simulation of Cylinder Implosion Initiated by The traditional study of underwater explosions (UNDEX) with respect to ship damage **NPS vita for Young S. Shin: more info** Simulation of Cylinder Implosion Initiated by Underwater Explosion on ResearchGate, the professional network for scientists. **Response of Cylindrical Composite Structures Subjected to** Krueger, S.(ENS, USN), and Shin, Y.S., Simulation of Cylinder Implosion Initiated by Underwater Explosion, Proceedings of the 77th Shock and Vibrations **Simulation of Cylinder Implosion Initiated by Underwater Explosion** Apr 29, 2015 A comprehensive investigation on the implosion of composite cylinders subjected to a nearby explosion is performed. Experiments are **A Compressible Lagrangian Framework For The Simulation Of** TITLE AND

SUBTITLE Simulation of Cylinder Implosion Initiated by The traditional study of underwater explosions (UNDEX) with respect to ship damage **Response of Cylindrical Composite Structures Subjected to** The traditional study of underwater explosions (UNDEX) with respect to ship damage became of interest during World War II when torpedo explosions near a **Predictive Simulation of Underwater Implosion - Multiphysics** Jun 8, 2014 initiation and propagation of cracks in the structure. This computational dictive simulation of underwater implosion is still a formidable challenge. periment of Mode 3 collapse of an aluminum cylinder under hydrostatic namely air, water, and the gaseous explosion product from TNT. **PHYSICAL Response of Cylindrical Composite Structures Subjected to** Apr 11, 2014 Download Simulation of Cylinder Implosion Initiated by Underwater Explosion book by Unknow free. Type: ebook (pdf, ePub) Language: **Experimental and Numerical Research on Cylindrical - Hindawi** Figure 1: Pressure field after an underwater air-filled glass sphere implosion An underwater explosion is an obvious potential threat to a nearby In the ALE framework, a body-fitted fluid mesh is updated during the simulation according to the Results of a mode-2 collapse of an underwater aluminum cylinder compare **Simulation of biodynamic response to underwater explosion**