

Abstract Submitted
for the SHOCK07 Meeting of
The American Physical Society

Dynamic Response of Submerged Solids to Extreme Fluid Loading SHI WEI GONG, MING CHENG, ZHUANGJIAN LIU, CHUN LU, Institute of High Performance Computing, Singapore — This paper deals with the dynamic response of submerged solids to extreme fluid loading induced by underwater explosion. The computational procedure is elaborated for the simulation of charge detonation, shock wave propagation from water media to the target solid, fluid-solid interaction, and dynamic response of the submerged solid. The benchmark tests are conducted, showing that the present method is reasonable and feasible. Cases studies are carried out for a single solid exposed to a single charge detonation or multiple charge detonations; and also multiple solids exposed to a single charge detonation or multiple charge detonations. The effects of different solid geometries on their dynamic responses to underwater explosive loading are also examined. From the results obtained, some insights to the problem of submerged solids subjected to underwater explosive loading are deduced.

Shi Wei Gong
Institute of High Performance Computing

Date submitted: 16 Mar 2007

Electronic form version 1.4