

Abstract Submitted
for the SHOCK15 Meeting of
The American Physical Society

Impact and damage of an armor composite A.D. RESNYANSKY, S. PARRY, Weapons and Combat Systems Division, DSTO, PO Box 1500, Edinburgh SA 5111, Australia, N.K. BOURNE, D. TOWNSEND, School of Materials, University of Manchester, Manchester, M13 9PL, UK, B.J. JAMES, Defence Science and Technology Laboratory (Dstl), Porton Down, Salisbury, Wiltshire, SP4 0JQ, UK — The use of carbon fiber composites under shock and impact loading in aerospace, defense and automotive applications is increasingly important. Therefore prediction of the composite behavior and damage in these conditions is critical. Influence of anisotropy, fiber orientation and the rate of loading during the impact is considered in the present study and validated by comparison with experiments. The experiments deal with the plane, ballistic and Taylor impacts accompanied by high-speed photography observations and tomography of recovered samples. The CTH hydrocode is employed as the modeling platform with an advanced rate sensitive material model used for description of the deformation and damage of the transversely isotropic composite material.

Anatoly Resnyansky
Defence Science Technology Org

Date submitted: 30 Jan 2015

Electronic form version 1.4