

Abstract Submitted  
for the SHOCK07 Meeting of  
The American Physical Society

**Numerical Simulation of high velocity impact phenomenon by the Distinct Element Method (DEM)** YOKO TSUKAHARA, AKIKO MATSUO, Keio University, KATSUMI TANAKA, National Institute of Advanced Industrial Science and Technology — The Distinct Element Method (DEM) is one of the particle methods and is generally applied to granular materials and incompressible elastic materials. DEM with elastic-plastic deformation is developed for simulations of shock loading phenomenon in condensed media, and is applied to problems with large deformations. DEM gives more stable results than Lagrangian Finite Difference or Finite Element Method. Numerical oscillations are reduced by the consideration of artificial viscosity. The hydrodynamic constitutive law is introduced to the DEM, and the dynamic behaviors of materials, such as metals and concretes, under high velocity impact phenomenon are well compared with experimental and other computational results.

Yoko Tsukahara  
Keio University

Date submitted: 23 Feb 2007

Electronic form version 1.4