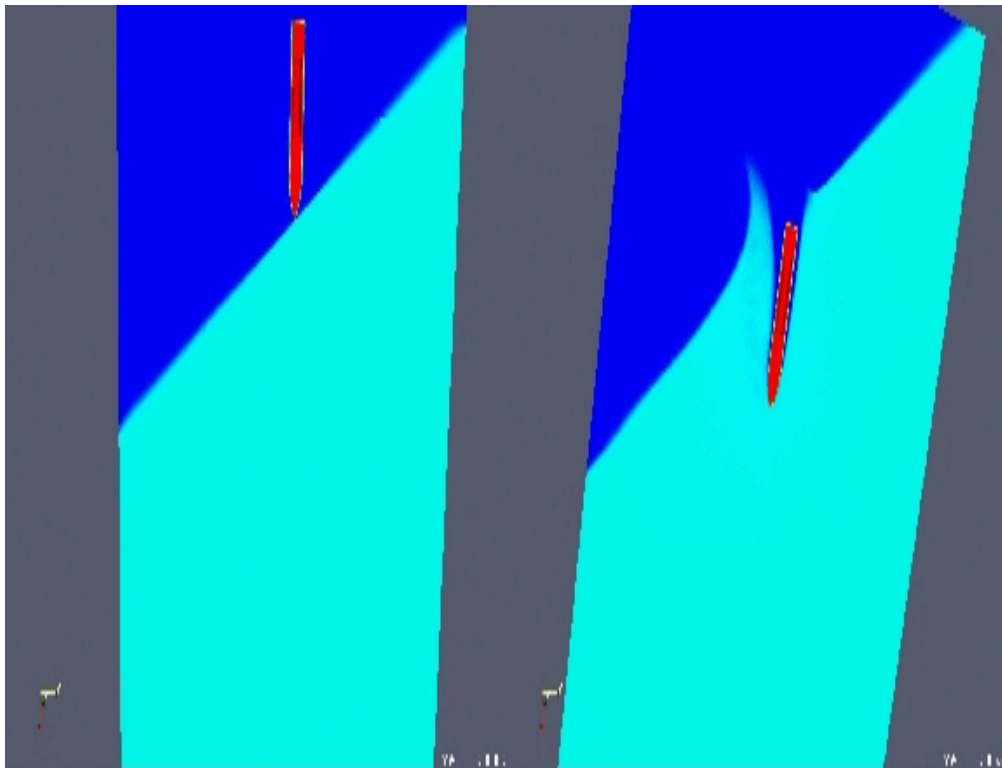


SHISM – Soft Hard Interactions for Surface Mechanics

The SHISM (Soft-Hard Interactions for Surface Mechanics) algorithm provides a method for analyzing the response of a hard object and a relatively softer media. It is an algorithm for modeling penetration events, using a Lagrangian mesh for the penetrator and a non-overlapping ALE mesh for the target space. The coupling between the meshes is accomplished using conventional Lagrangian contact algorithms, provided by the ACME library¹. The softer material in the media may undergo significant flow and deformation that is accommodated by the ALE mesh. However, the interface between the soft and hard material is explicitly maintained allowing accurate analysis of the interaction. This algorithm is fully parallelized and has been applied to a range of penetration problems such as small steel projectiles into aluminum and large steel penetrators into concrete and limestone.

Cutaway of penetration of a 30-degree oblique impact of a steel projectile into concrete.



1 <http://www.jal.sandia.gov/SEACAS/AcmeWeb/html/index.html>