1158-00-3 **Joseph Teran***. *Elastoplasticity Simulation with the Material Point Method*

Hyperelastic constitutive models describe a wide range of materials. Examples include biomechanical soft tissues like muscle, tendon, skin etc. Elastoplastic materials consisting of a hyperelastic constitutive model combined with a notion of stress constraint (or feasible stress region) describe an even wider range of materials. A very interesting class of these models arises from frictional contact considerations. I will discuss some recent results and examples in computer graphics and virtual surgery applications. Examples include simulation of granular materials like snow in Walt Disney's "Frozen" as well as frictional contact between thin elastic membranes and shells for virtual clothing simulation. I will also discuss practical simulation of these materials with some recent algorithmic modifications to the Particle-In-Cell (PIC) technique, the Material Point Method (MPM). (Received June 11, 2019)