Abstract Submitted
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Modeling Tunnel Response to Wave Propagation in Jointed Rock with the Material Point Method[1] ELIZABETH KALLMAN, TYLER BAKER, HOWARD SCHREYER, DEBORAH SULSKY, PAMELA JOHNSON, University of New Mexico — Tunnels and other structures are often embedded underground within a media of jointed rock. If the tunnel is subjected to the resulting wave of an explosive blast in proximity, it is of interest to determine the blast properties, as well as the material and geometrical factors which identify a parameter space where the integrity of the structure may be compromised. The constitutive framework within the Material Point Method (MPM) [1,2] is extended to model joints as existing cracks. Results are presented investigating the effect of gap closure, and of impulse and energy transmission around embedded structures such as tunnels.

[1] Schreyer, H.L., 2007, "Modelling surface orientation and stress at failure of concrete and geological materials", *J. for Numerical and Analytical Methods in Geomechanics*, Vol 31, pp 141-171.
[2] Sulsky, D., Schreyer, H., Peterson, K., Kwok, R., and Coon, M., 2007, "Using the material-point method to model sea ice dynamics", *J. Geophys. Res.*, Vol 112:CO2S90, doi:10.1029/2005JC00329

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