

Abstract Submitted  
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**The effect of moisture content on the dynamic fragmentation of wet sand at high strain rates** KUN XUE, Beijing Institute of Technology — A comprehensive model is established to account for the instability onset of rapidly expanding granular shells subject to the explosion loadings generated by the detonation of the central explosives. The moisture content strongly influences the shock interactions in the wet particle beds and the ensuing evolution of the granular compacts. A material model for granular materials which can account for the degree of saturation was incorporated into a non-linear dynamic simulation program to investigate the moisture of effect on the shock responses of wet granular materials. In conjunction with our instability model, the predicted instability diameters of the expanding dry/wet granular shells are in a good agreement with the experimental results. Particularly the postponed instability onset of the wet granular shell found both experimentally and analytically can largely be attributed to the significantly greater kinetic energy obtained by wet particles thanks to less energy of shock wave consumed in compacting the granular materials.

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