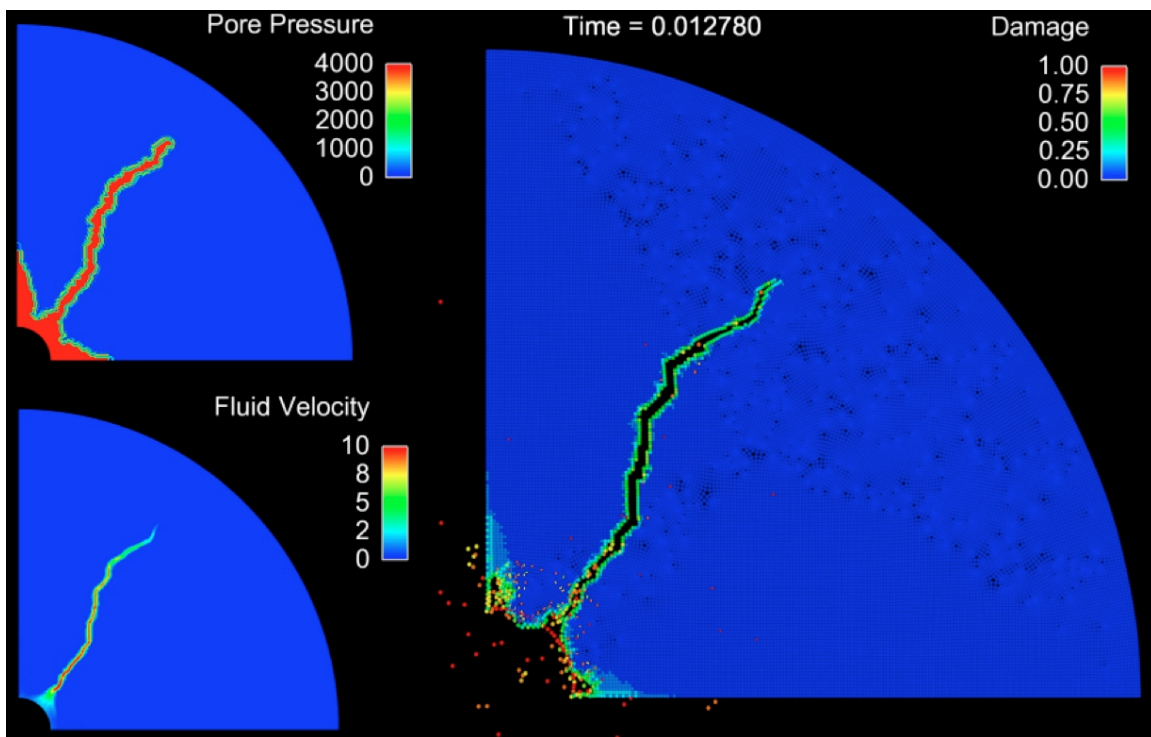


## How Nonlocal Formulations are Changing the Modeling and Simulation Landscape at Sandia National Laboratories

Dan Turner  
*Center for Computing Research, Sandia National Laboratories*  
Albuquerque, New Mexico 87185

October 16, 2017

Nonlocal formulations have continued to gain momentum due to a number of attractive features: they naturally handle discontinuities, inherently improve signal-to-noise ratios, and simplify discretization of complex domains. This talk will provide an overview of several application areas in which nonlocal formulations have been used to greatly extend modeling and simulation capabilities at Sandia. These areas include image processing, digital image correlation, hydraulic fracture modeling, and manufacturing process simulation and design.



**Figure 1:** A demonstration of nonlocal mechanics being used to model hydraulic fracturing of porous media

The talk will conclude with some remaining challenges to using nonlocal formulations more effectively. The goal of this talk is to get the audience to consider using nonlocal formulations, contribute to their development, and potentially work towards addressing some of these challenges.

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