

## Fracture of random media from atoms to the continuum

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Almost all materials around us exhibit quenched disorder: Glasses are extreme cases where individual atomic positions are disordered, but even crystalline materials have disorder at a microstructural level and interfaces of common materials have surface roughness. This talk discusses computational aspects of cracks in such disordered media, starting from atomic-scale simulations of fracture toughness in amorphous carbon, over mesoscale simulations of the formation of crack morphologies in heterogeneous elastic media, to the depinning of contact lines in the adhesion of elastic spheres on rough surfaces. The calculations will employ a variety of techniques, from molecular scale simulations over phase-field approaches to line tension models for the crack front.



