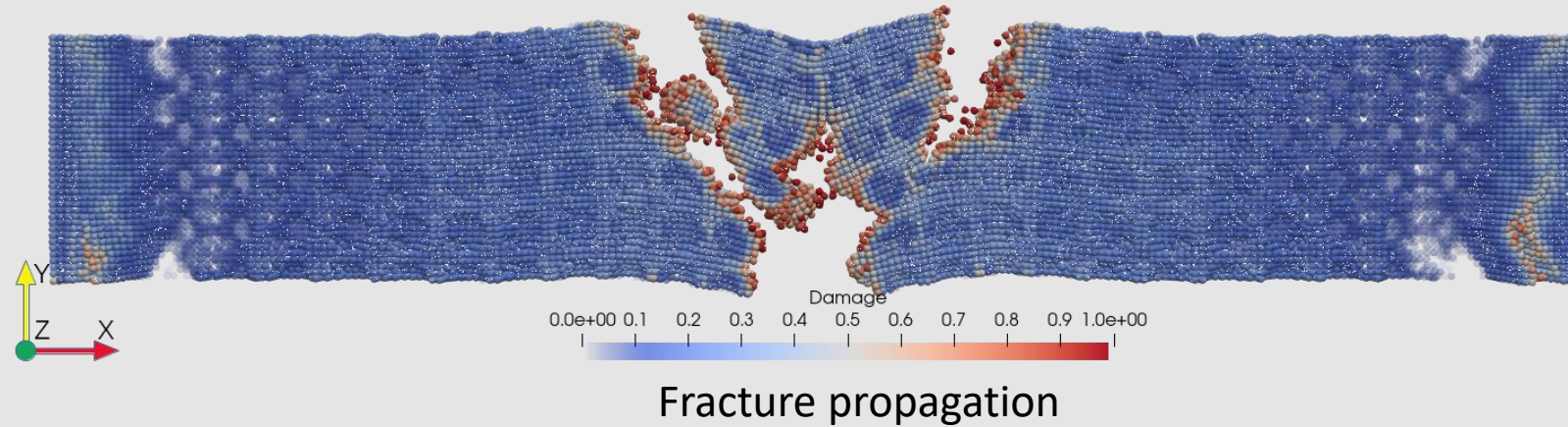
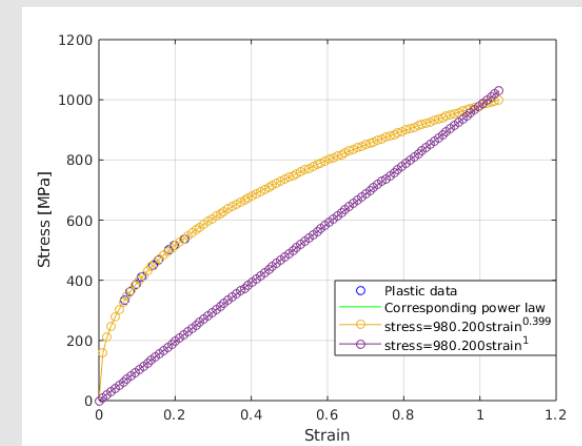
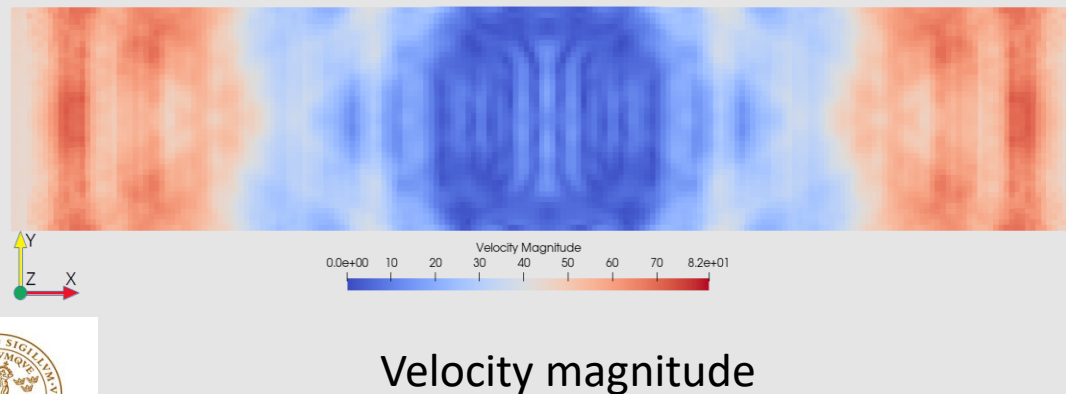
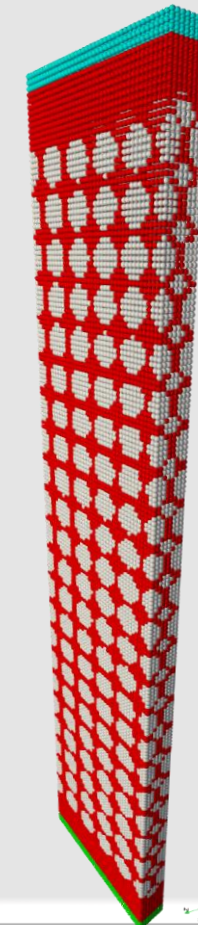


# Evaluation of Peridynamics and Its Application in Harmonic-Structured Material Simulations-

Harmonic-structured materials are multi-scale architected metallic materials, where coarse and ultra-fine grains are arranged in a specified topology. In experiments, they have shown to exhibit both high strength due to the coarse grains as well as high ductility due to the ultra-fine grains. Peridynamics is an alternative formulation to classical continuum mechanics in which nonlocality, the interaction between particles not adjacent to each other, is possible. Such interactions are especially prevalent on molecular scales, and for this reason peridynamics can utilize the benefits of both classical continuum mechanics and molecular dynamics, resulting in satisfactory discontinuity modeling of impacts, cracks etc and being a useful tool for multiscale modelling. This master thesis will use peridynamics to study harmonic-structured materials, examining their material properties and develop 2D models of the behaviour.



Domain generation



Division of Mechanics  
Aylin Ahadi