



Mesoscopic Simulation Software: Microstructure Intelligent Design (MInDes)

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MINDES

about MInDes



Microstructure Intelligent Design

Microstructure Intelligent Design Software

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- home page <https://github.com/Microstructure-Intelligent-Design>

introduction

A open-source software package for evolving microstructure at mesoscopic scales with the goal of coupling thermodynamic, kinetic, thermophysical, and mechanical databases, which considering the influence of multiphysics fields.

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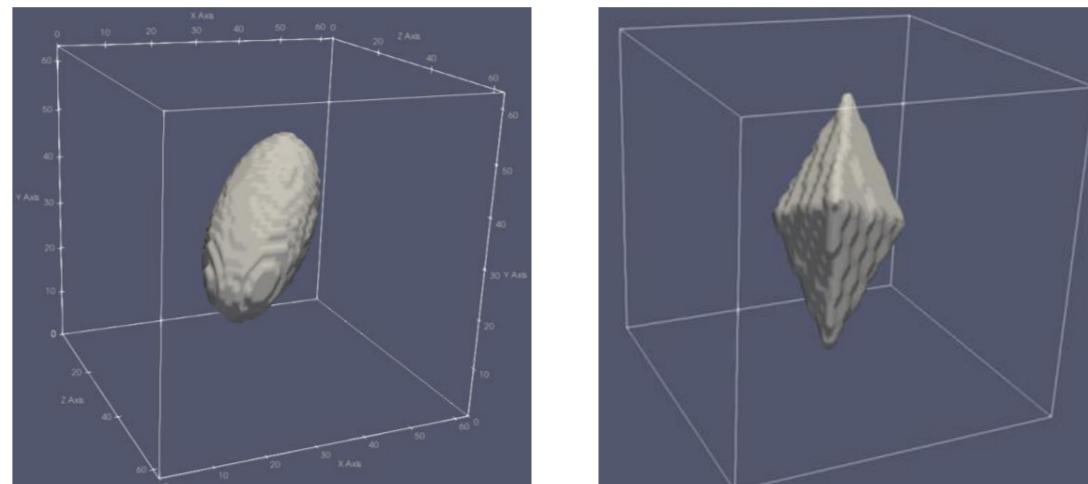
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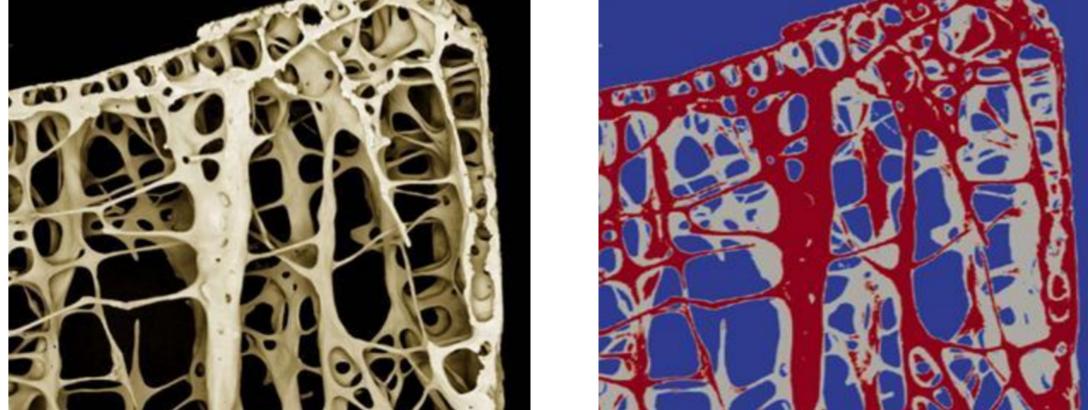
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microstructure modeling

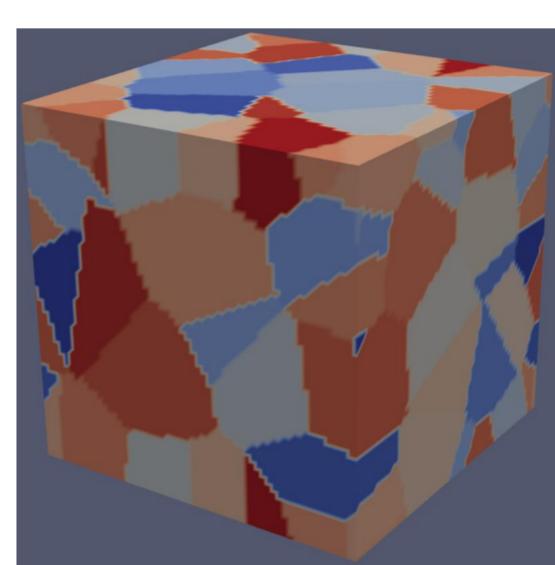
ellipsoid and polyhedron 3D



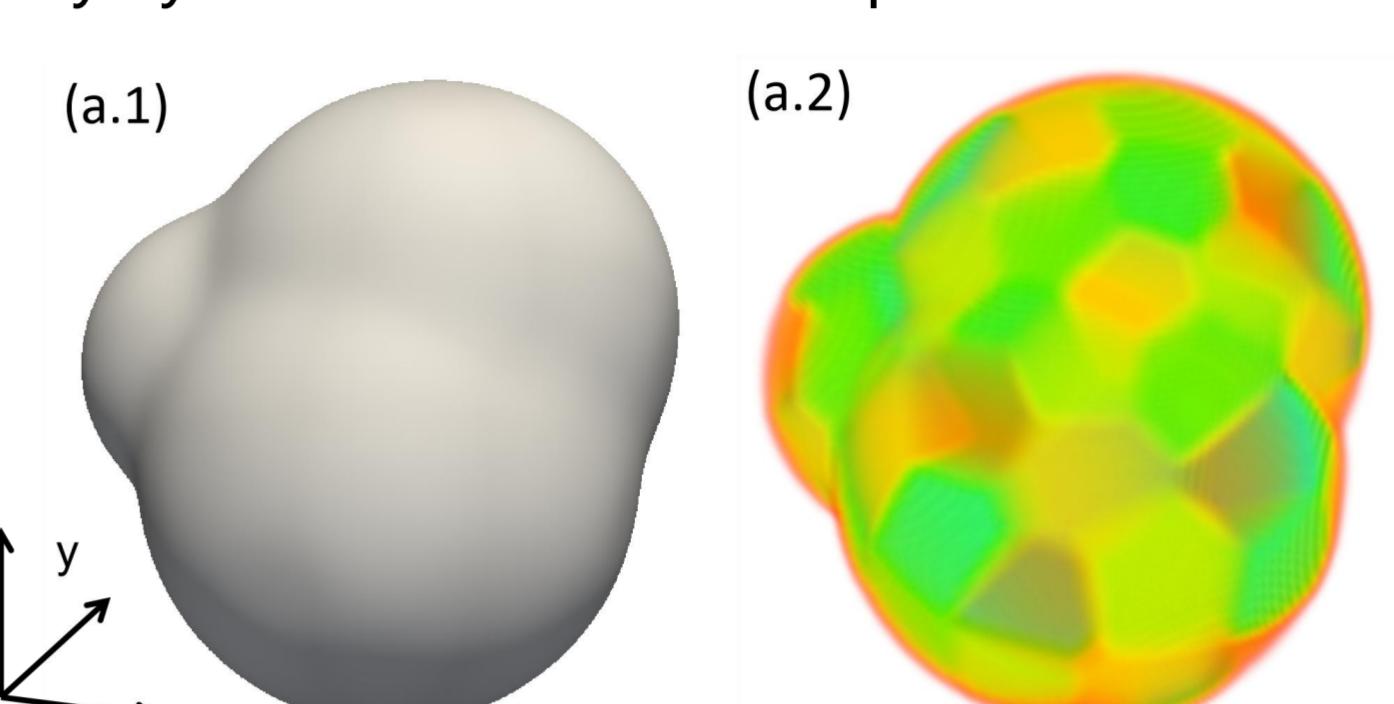
read data from bmp24 format fig.



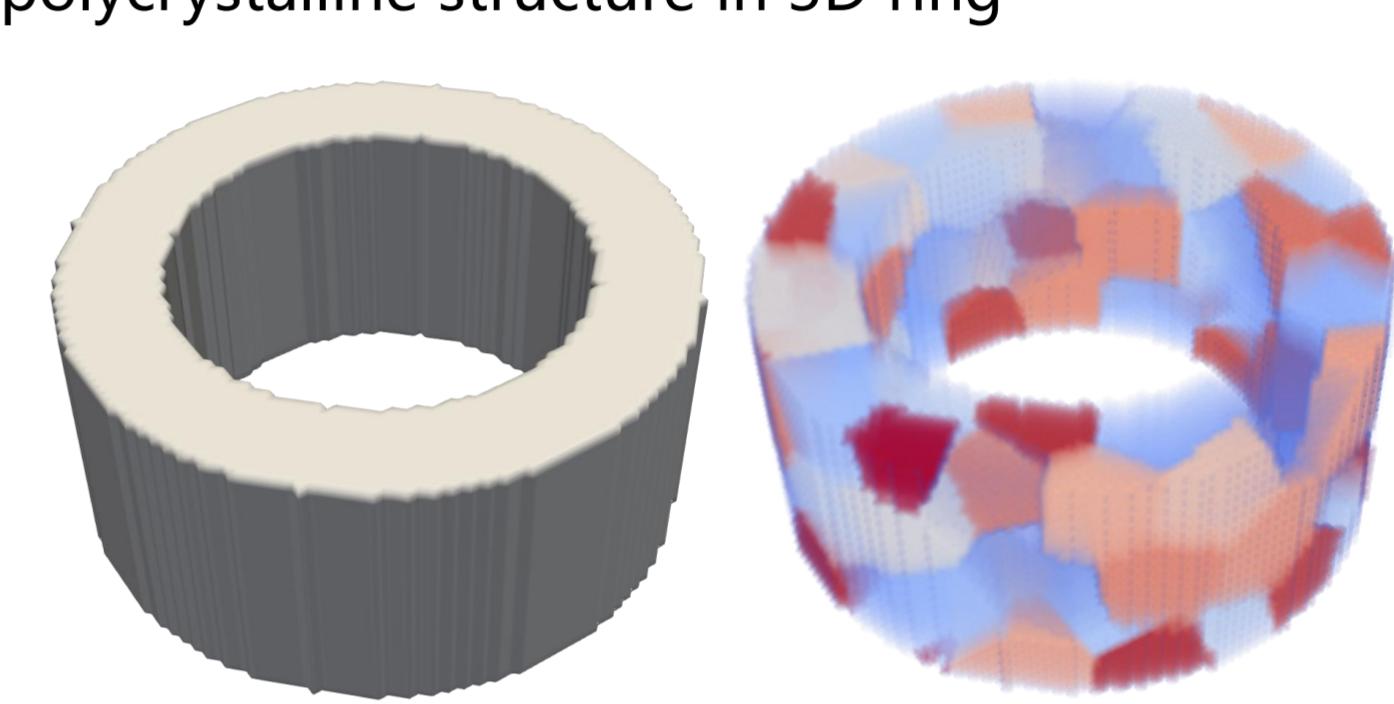
voronoi method 3D



polycrystalline structure in 3D particle

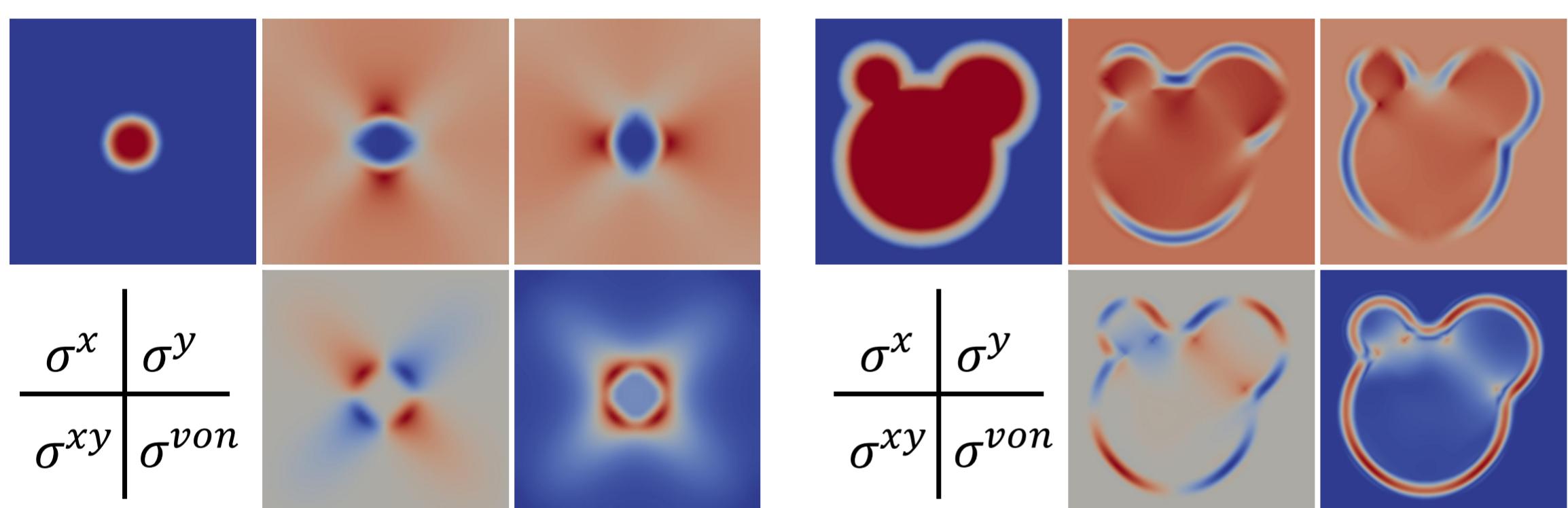


polycrystalline structure in 3D ring

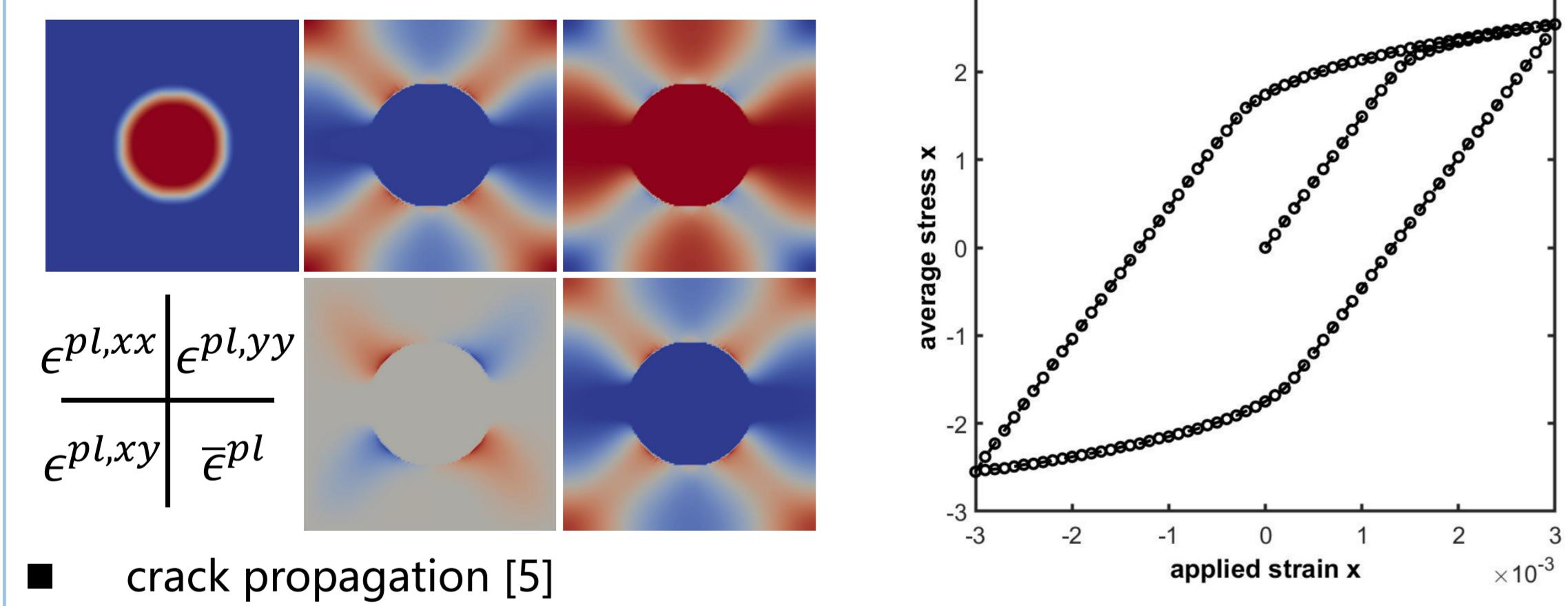


solid mechanics module

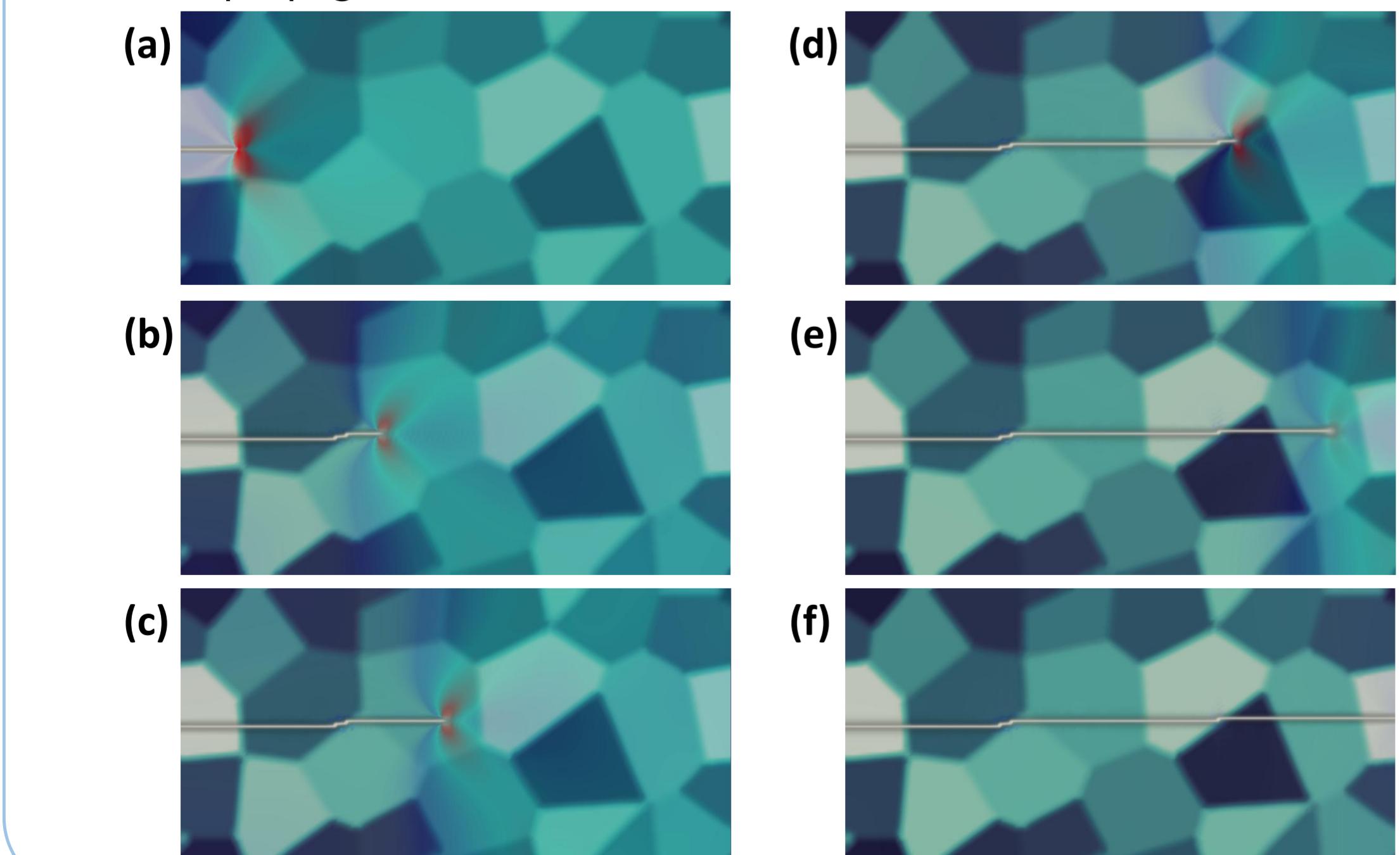
mechanical equilibrium [1-3]



plastic yielding [4]

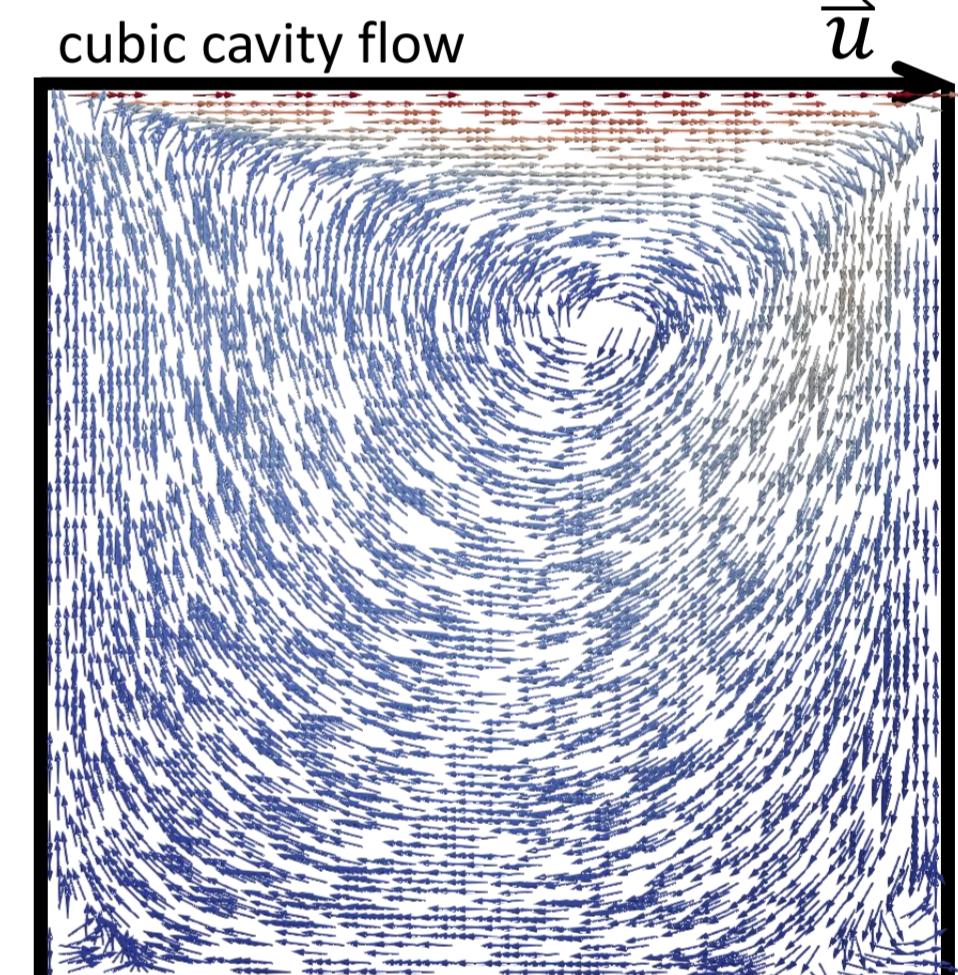
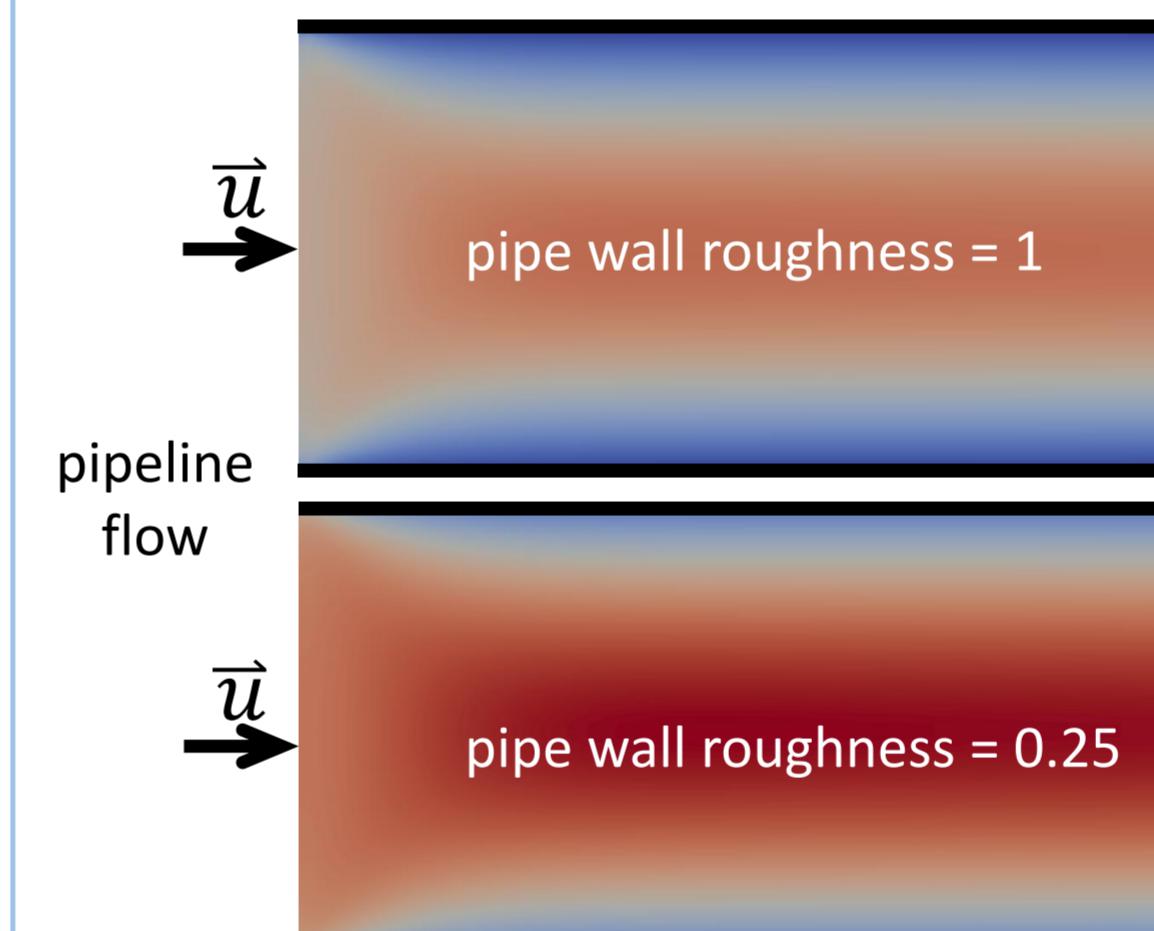


crack propagation [5]

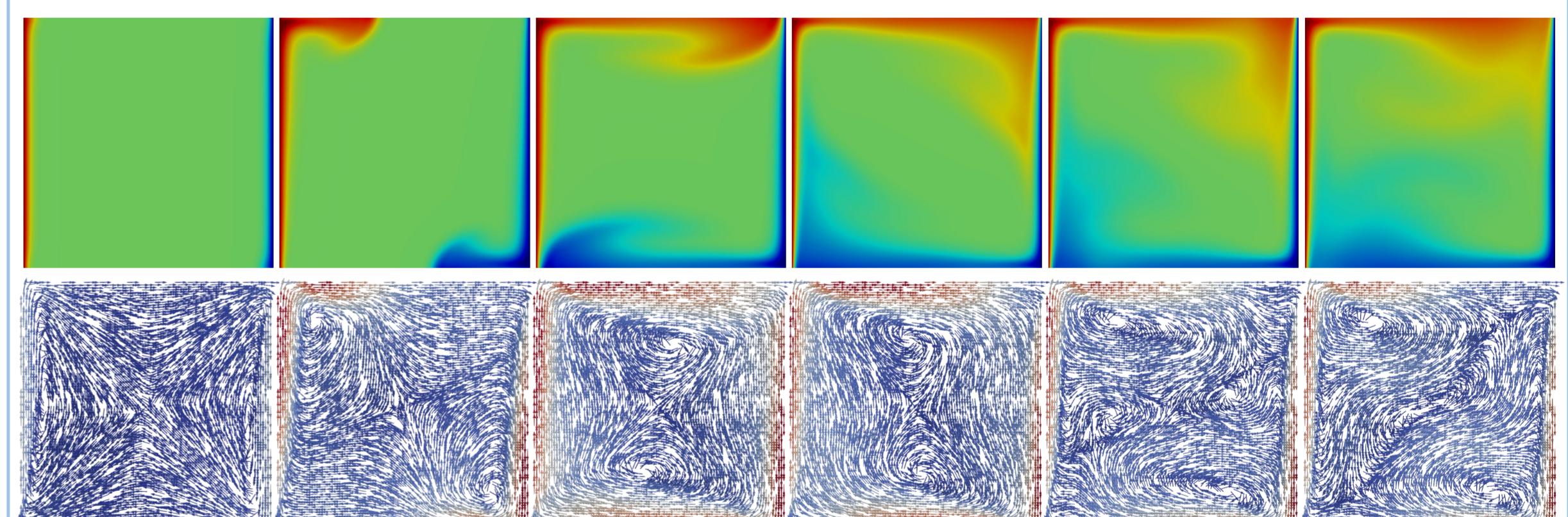


fluid mechanics module

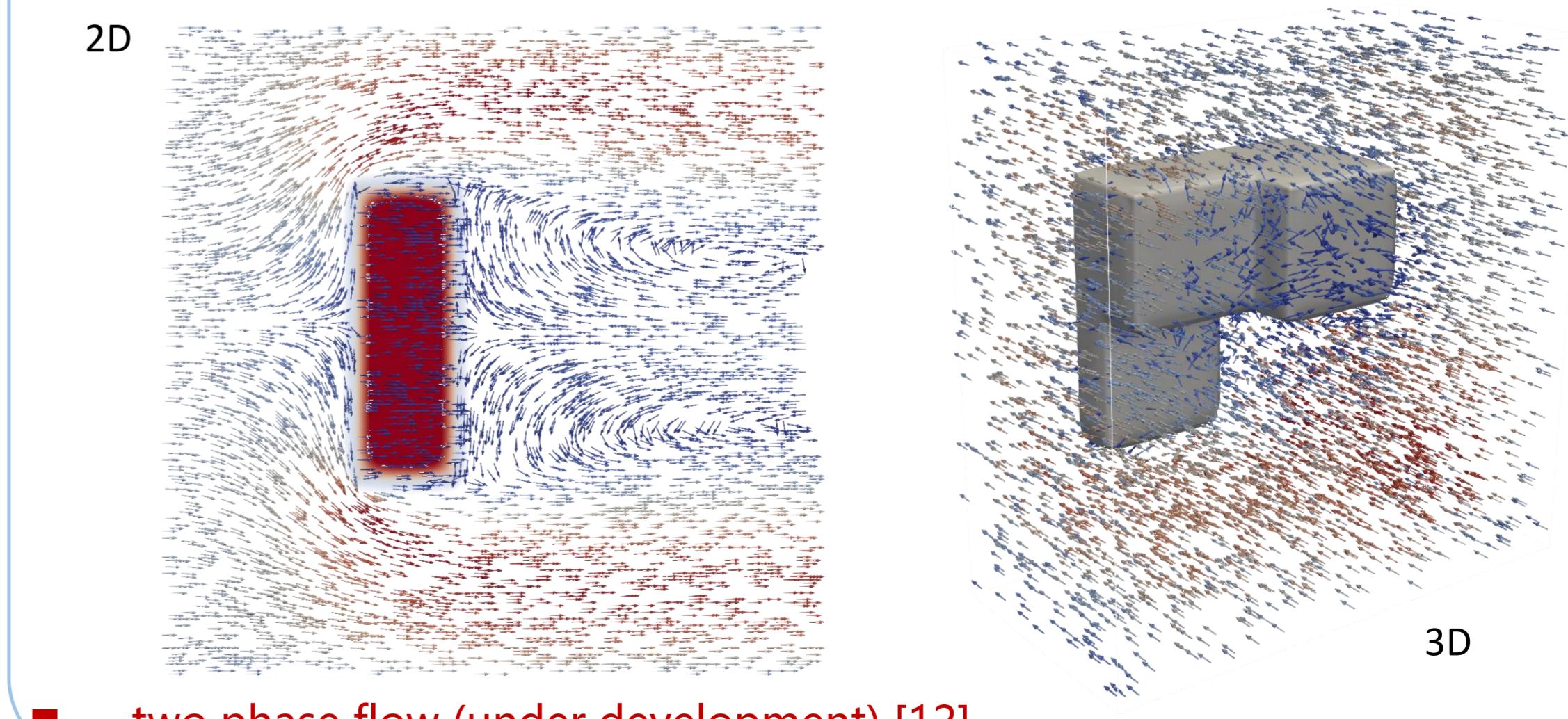
momentum equilibrium [6-8]



natural convection [9, 10]



solid-liquid coupling [11]



two phase flow (under development) [12]

reference

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