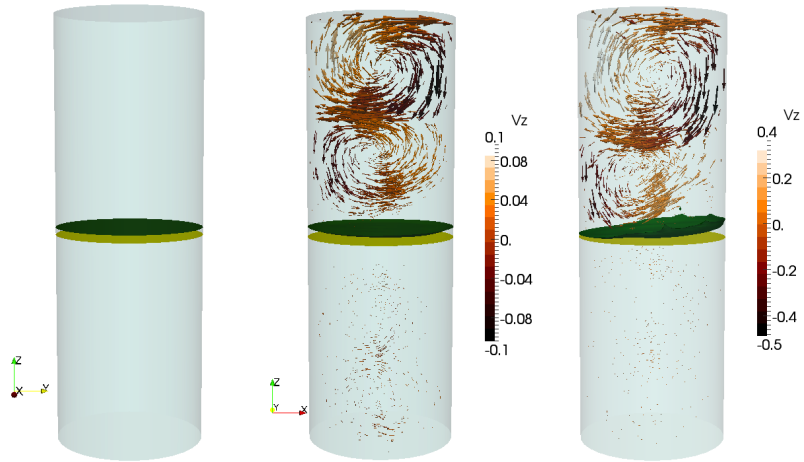
Momentum based approximation of Incompressible Multiphase Fluid Flows

Method :

- Level set method :
  $0 \leq \phi \leq 1$
  interface $= \phi^{-1}(1/2)$.
- Reconstruction of ρ from ϕ
- Navier-Stokes equation with $\mathbf{m} := \rho\mathbf{u}$
- Stabilization with entropy viscosity

Liquid Metal Battery application :



Vertical velocity field plot with :
Pm $= 2.65 \times 10^{-3}$, init (left),
Ha $= 23.7$ (mid), Ha $= 47.3$ (right)