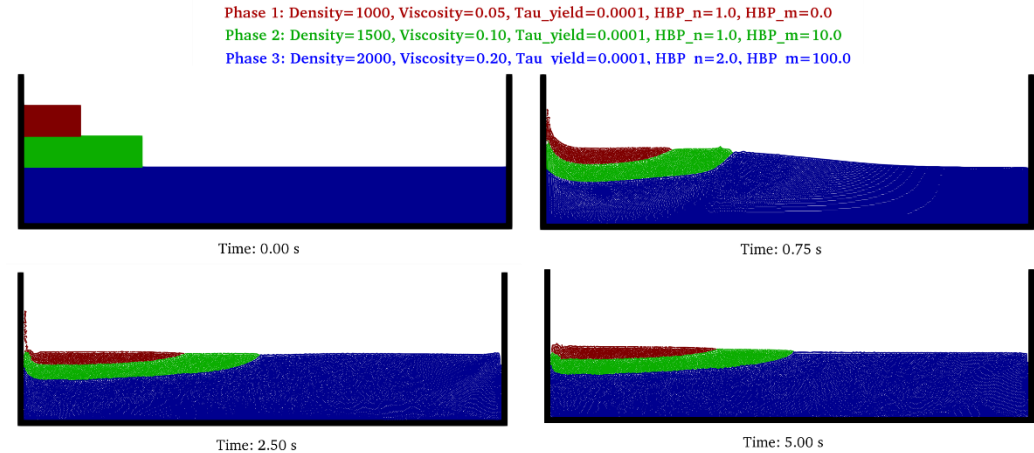


01_WETDAMBREAK

- 2-D dam break flow with three distinct phases in density and with rheology parameters: Bingham, power law and Newtonian using the Herschel–Bulkley–Papanastasiou (HBP) rheology model.
- Velocity gradient using the FDA approach and Morris viscous operator.

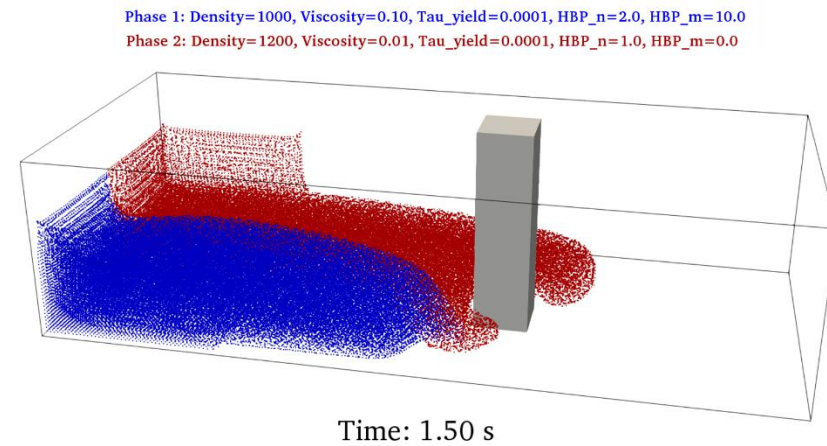
[Video](#)



02_DAMBREAK3D

- 3-D non-Newtonian dam break flow with two phases and different densities and with rheology parameters: Bingham (with a maximum yield strength) and Newtonian (HBP).
- Velocity gradient using the FDA approach and Morris viscous operator.

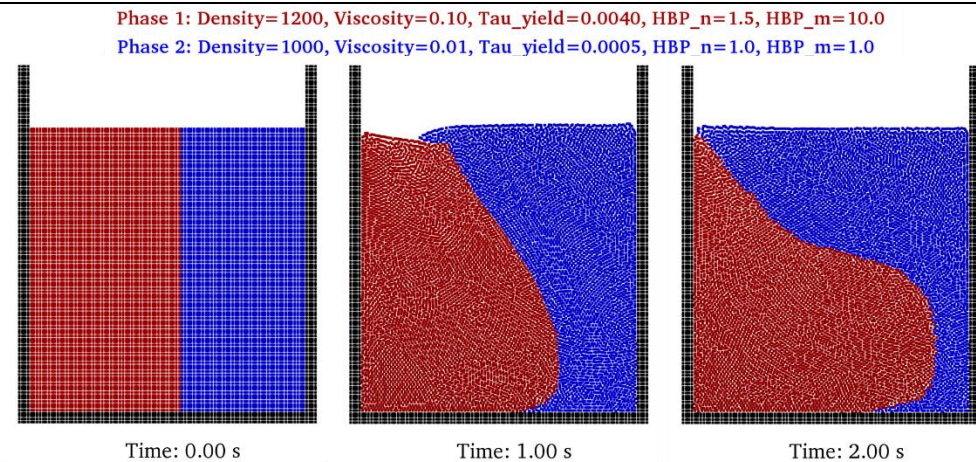
[Video](#)



03_LOCKGATE

- A gate locked container with two phases of different densities and with rheology parameters: power law using (HBP).
- Velocity gradient using the SPH approach and SPH viscous operator.

[Video](#)

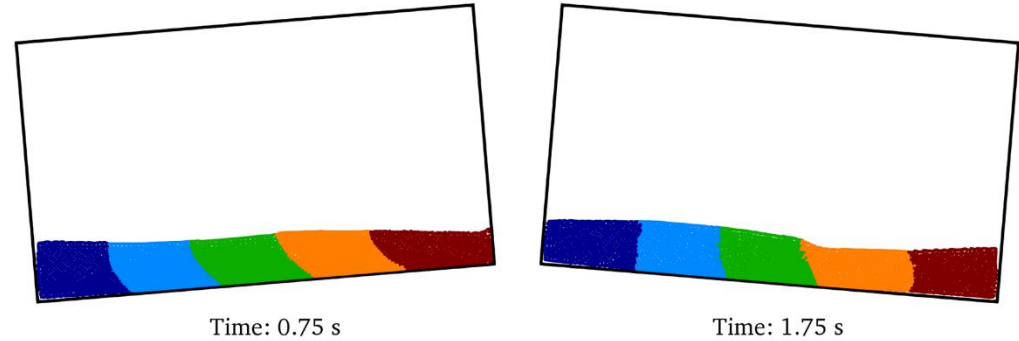


04_SLOSHINGMOTION

- 2-D sloshing tank with five phases of the same density and with rheology parameters ranging from Bingham to HBP and Newtonian.
- Velocity gradient using the FDA approach and SPH viscous operator.

[Video](#)

Phase 1: Density=1000, Viscosity=0.010, Tau_yield=0.0010, HBP_n=2.0, HBP_m=10.0
 Phase 2: Density=1000, Viscosity=0.050, Tau_yield=0.0010, HBP_n=2.0, HBP_m=10.0
 Phase 3: Density=1000, Viscosity=0.100, Tau_yield=0.0010, HBP_n=4.0, HBP_m=100.0
 Phase 4: Density=1000, Viscosity=0.010, Tau_yield=0.0020, HBP_n=1.0, HBP_m=10.0
 Phase 5: Density=1000, Viscosity=0.001, Tau_yield=0.0001, HBP_n=1.0, HBP_m=0.0

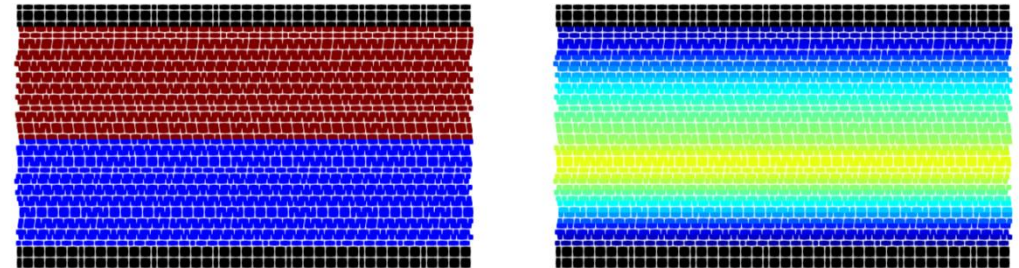


05_POISEUILLE

- A single phase Poiseuille flow test case with rheology parameters: Newtonian using the HBP model ($Re = 1.25$).
- A two phase Poiseuille flow test case of the same density with rheology parameters: Bingham (HBP) and Newtonian.
- Velocity gradient using the FDA approach and Morris viscous operator.

[Video](#)

Phase 2: Density=1000, Viscosity=0.1, Tau_yield=0.04, HBP_n=1.0, HBP_m=10.0
 Phase 1: Density=1000, Viscosity=0.1



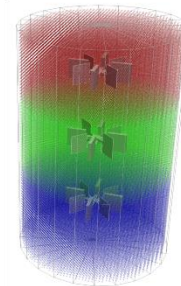
Time: 5.00 s

06_IMPELLERS3D

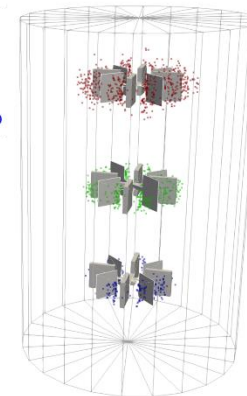
- Mixing of non-Newtonian fluids using a Rushton impeller (STL) with three phases of the same density but different rheology parameters: Bingham (with a maximum yield strength)
- Velocity gradient using the FDA approach and Morris viscous operator.

[Video](#)

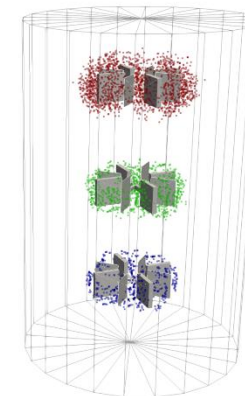
Phase 1: Density=1000, Viscosity=0.001, Tau_yield=0.0021, HBP_n=1.0, HBP_m=1.0
 Phase 2: Density=1000, Viscosity=0.010, Tau_yield=0.0210, HBP_n=1.0, HBP_m=10.0
 Phase 3: Density=1000, Viscosity=0.100, Tau_yield=0.2100, HBP_n=1.0, HBP_m=100.0



Time: 2.50 s



Time: 3.75 s



Time: 5.00 s

