Buoyancy effects on micro-annulus formation: density unstable Newtonian-Bingham fluid displacements in vertical channels

M. Zare, I.A. Frigaard

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Highlights

- Density unstable displacement of Bingham fluid by a Newtonian fluid
- Many different instabilities observed (m $<$ 1 tends to be of Kelvin-Helmholz type; m $>$ 1 for inverse bamboo and mushroom
- Increasing yield stress tends to destabilize
- Find partially static residual layers: static only closest to the wall
- Static wall layers, even for $B_N <$ 6, unlike the density stable situation