Informal Workshop on Upscaling

NTNU, May 1 - 3, 2023

Auditorium P13, PTS1.

This is an *informal* workshop, so the times here are to be interpreted as approximate. If anyone needs 45 minutes and have been allocated 30, no problem. And *vice versa*. There is plenty of time allocated to discussion that we can use for buffers.

Monday May 1

09:00-10:00 Saman Aryana: *Non-equilibrium effects in porous media – experiments and models*

10:00-11:00 Discussion

11:00-11:30 Marcel Moura*: Towards the measurement of entropy in porous media flows: our preliminary experimental attempts*

11:30-12:00 Santanu Sinha: *Disorder-induced non-linearity in the growth of viscous fingers*

12:00-13:00 Discussion

13:00-14:00 Lunch

15:00-16:00 Maja Rücker: *From contact angle to surface energies – could inverse gas chromatography help us with upscaling wetting?*

16:00-17:00 Discussion

Tuesday May 2

09:00-09:30 Dick Bedeaux: *Fluctuation-dissipation theorems in porous media*

09:30-10:00 Øivind Wilhelmsen: *The nano equation of state and density functional theory for calculating thermophysical properties in porous media*

10:00-11:00 Discussion

11:00-12:00 Steffen Berg: *From the energy dynamics of pore scale fluctuation to the 2-phase Darcy equations*

12:00-13:00 Discussion

13:00-14:00 Lunch

14:00-14:30 Alex Hansen: *Flow entropy, agiture, co-moving velocity, etc.*

14:30-15:00 Håkon Pedersen: *The co-moving velocity interpreted as a gauge field*

16:00-17:00 Discussion

17:00-17:30 Subhadeep Roy: *Approaching the continuum limit: effective rheology during a two-phase flow*

17:30-18:00 Discussion

Wednesday May 3

09:00-10:00 Ryan Armstrong: *New perspectives on multiphase flow: experimental insights into the Green Kubo relationship, configurational entropy, and co-moving velocity*

10:00-11:00 Discussion

11:00-11:30 Carl Fredrik Berg: *Traditional averaging procedures*

11:30-12:00 Thomas Ramstad: *Modelling of flow in porous fluid reservoirs on multiple scales*

12:00-13:00 Discussion

13:00-14:00 Lunch

14:00-15:00 James McClure: *Space-and-time averaging as a tool for scale transformation*

16:00-17:00 Discussion

17:00-17:30 Eirik Grude Flekkøy: *Superdiffusive heat in porous media*

17:30-18:00 Discussion

Thursday May 4

09:00-?? Discussions on the theme *what now*?