PhD in Energy and Mineral Engineering at PSU

Nicolás's Research - Reports

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Main discussion points:

- Cheng's paper
- LBM Code state
- Short-term Medium-term objectives

Cheng's paper

Bulk equation for the Shan-Chen force:

$$\mathbf{F} = -G\psi(x)\sum_i \omega_i \psi(x + \mathbf{c}_i\delta t)\mathbf{c}_i \quad \psi := \sqrt{\frac{2(P^{\text{EoS}} - c_s^2\rho)}{G\delta t c_s^2}}$$

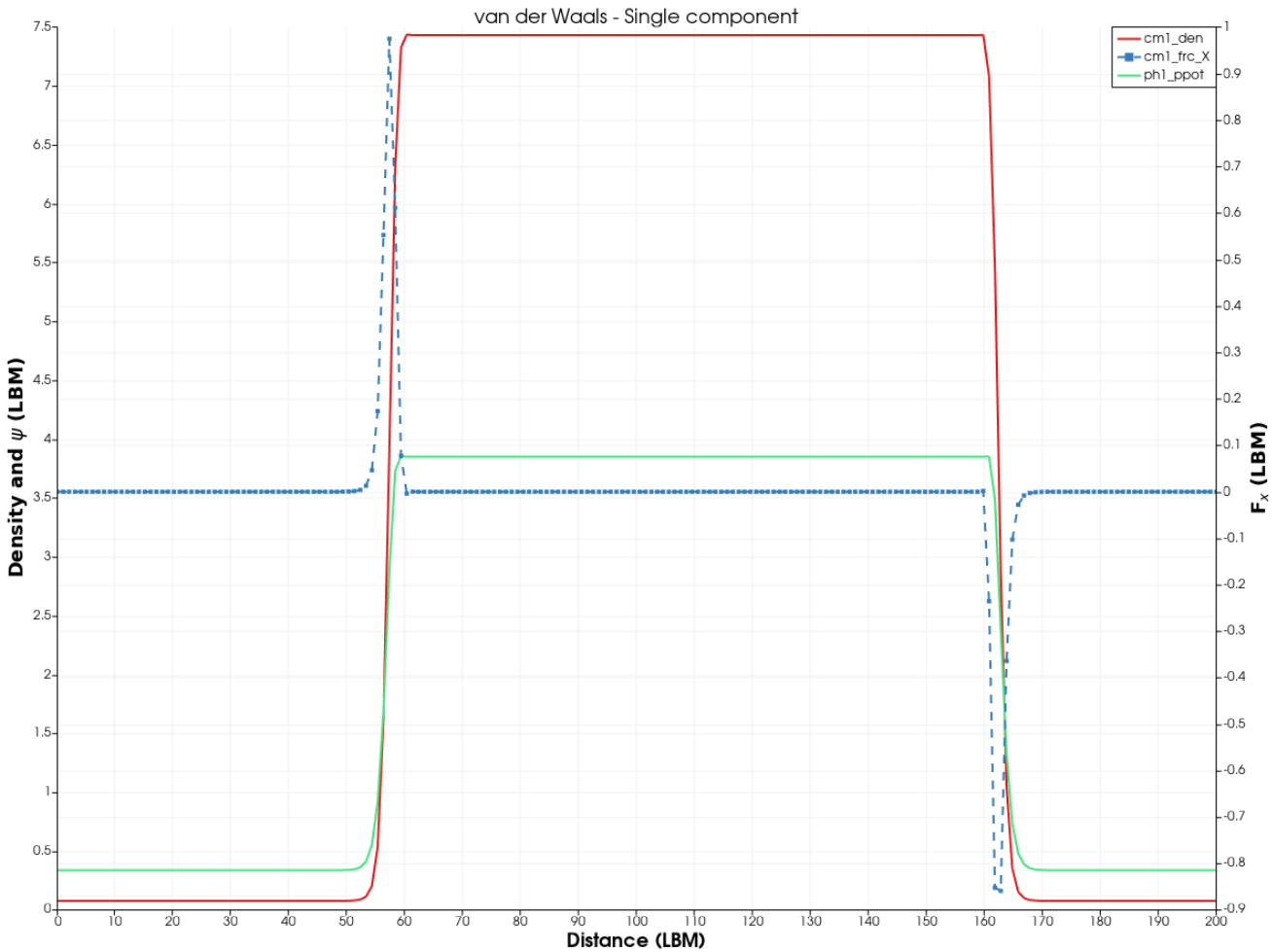
- MRT model
- Multi-component partially miscible

LBM state

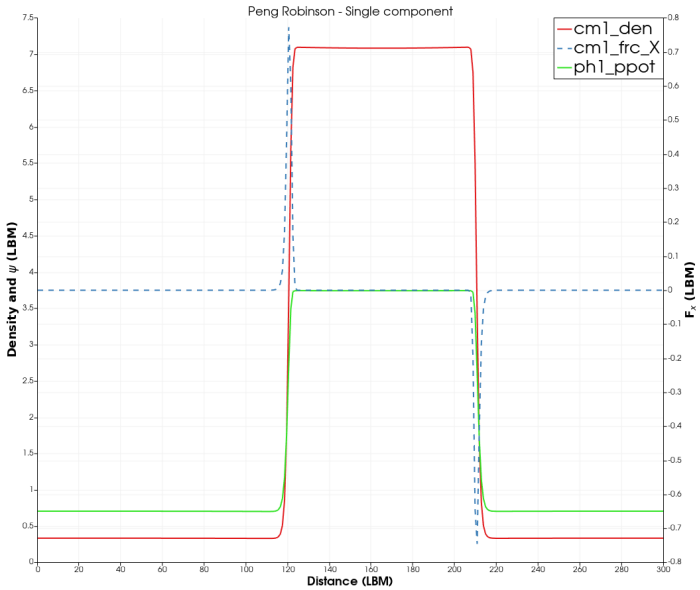
This I advanced before last state:

- Tried the binary printing (unsuccessful)
- Run the single component multi-phase model (successful)
- Equation to count the number of molecules in a lattice.
- Short-term mid-term objectives

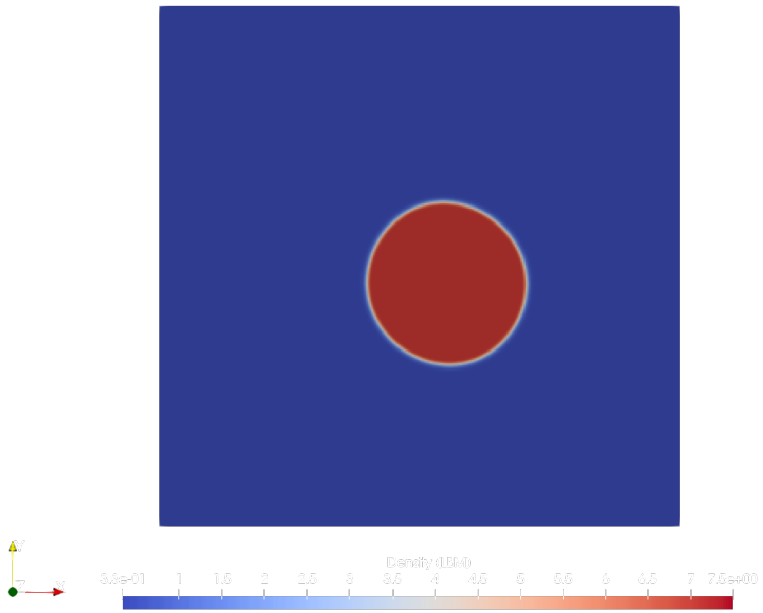
van der Waals validation



Peng Robinson validation



Figure



Where I am going?

I was rediscovering the concept of ψ that now belongs to the bulk (phase) entity. In Kruger's book is assigned to each component, so each components computes its own SC force. Other forces split according to ρ_i.
Two components structure is ready to start building the 2-component case that Cheng uses for validation.

Actions

- Dry-run of research proposal for qualifying exam.Deep dive into literature looking for problems in current problems and interesting applications (reactions-solute transport-energy-multiphase).
- LBM tutorials is the next short-term project
- Finish my own code to run the Cheng's cases in our simulator.
- Long-term: evaluate the Kruger's perspective of calculating SC per component.

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- Peng-Robinson caveat
- SPH
- Italian
  - A

Meeting with LBM questions

Questions:

- LBM Formulation
  - Are the equations molar/mass based? Which one should it be for efficiency?
- Boundary conditions
  - Composition for pressure BC at outlet or inlet

Present

Present...

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- A
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Main discussion points:

- Topic 1
- Topic 2

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- Text visible on slides 3

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- Text visible on slide 4

In this slide

In this slide
the text will be partially visible

In this slide
the text will be partially visible
And finally everything will be there

Sample frame title

In this slide, some important text will be highlighted because it's important. Please, don't abuse it.

Remark

Sample text

Important theorem

Sample text in red box

Examples

Sample text in green box. The title of the block is "Examples".

Two-column slide

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$$E = mc^2$$

- First item
- Second item

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