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Compositional modeling in porous medium using iterative IMPEC scheme and constant volume-temperature flash

Wednesday, 2 June 2021 20:05 (15 minutes)

In this contribution, we present a new numerical solution of a two-phase compressible Darcy's flow of a multi-component mixture in a porous medium. The mathematical model consists of mass conservation equation of each component, extended Darcy's law for each phase, and an appropriate set of the initial and boundary conditions. The phase split is computed using the constant temperature-volume flash (known as *VTN*-specification) [1]. The transport equations are solved numerically using the mixed-hybrid finite element method and a novel iterative IMPEC scheme [2]. We provide examples showing the performance of the numerical scheme.

Time Block Preference

Time Block B (14:00-17:00 CET)

References

- [1] T. Smejkal and J. Mikyška, "Unified presentation and comparison of various formulations of the phase stability and phase equilibrium calculation problems," *Fluid Phase Equilibria*, vol. 476, pp. 61–88, 2018.
- [2] H. Chen, X. Fan, and S. Sun, "A fully mass-conservative iterative IMPEC method for multicomponent compressible flow in porous media," *Journal of Computational and Applied Mathematics*, vol. 362, pp. 1–21, 2019.

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