

On Double Porosity Model for Two-Phase Flow in Porous Media

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We consider modeling of fractured porous media by homogenization theory. Incompressible two-phase flow is considered in a periodic porous medium with thin fissures. Completely homogenized double porosity model is obtained by letting matrix-block size tend to zero, linearizing the *imbibition equation* and then letting relative width of the fissures to zero.

We discuss different ways of linearizing the imbibition equation which lead to different simplified double porosity models. These models are then compared numerically with the aim to improve precision of simplified double porosity model for the two-phase flow. Finite volume method is designed for efficient simulation of considered double porosity models and numerical simulations are presented showing relevance and complexity of different models.

Keywords: two-phase flow, double porosity model, finite volume method.

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REFERENCES

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