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Symmetry and M-matrix issues for the O-method on an unstructured grid. (English)

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Comput. Geosci. 6, No. 3-4, 381-404 (2002).

Summary: More sophisticated discretization methods than the traditional control-volume finite-difference methods, have been proposed by Aavatsmark et al. in recent papers for solving the mass balance equations for porous media flow. These methods are based on a local representation of fluxes across cell-edges of control volumes (CVs). This paper will focus on mathematical properties of the discrete operator that arises when an elliptic term of the form $-\nabla\cdot(\mathbf{K}\nabla p)$ is discretized based on these discretization principles.

MSC:

76M20 Finite difference methods applied to problems in fluid mechanics
76S05 Flows in porous media; filtration; seepage

Cited in **9** Documents

Keywords:

control volume; discretization; multi-point flux approximation; unstructured grid

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