

1046-35-1453

Koffi B Fadimba* (Koffif@usca.edu), University of South Carolina Aiken, 471 University Parkway, Aiken, SC 29801. *Immiscible Two-Phase Flow Through Porous Media: A Case of Uniqueness of a Solution*. Preliminary report.

Uniqueness of a solution for the pressure/saturation system

$$\begin{cases} \mathbf{u} = -a(S)\nabla p & \text{in } \Omega \times (0, T) \\ \nabla \cdot \mathbf{u} = Q_1 & \text{in } \Omega \times (0, T) \\ \phi \frac{\partial S}{\partial t} + \nabla \cdot (f(S)\mathbf{u} - k(S)\nabla S) = Q(S) & \text{in } \Omega \times (0, T) \end{cases} \quad (1)$$

has been proved under conditions that seem rather strong. In this paper we exhibit an example of permeabilities for which some of these conditions are satisfied. We also show that, in this case, the solution of the often considered regularization problem converges to the solution of the initial problem. (Received September 15, 2008)