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The Solution of Nonlinear Partial Differential Equation for The Phenomenon of Instability in Homogeneous Porous Media by Homotopy Analysis Method

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Abstract : When water is injected in oil formatted area in secondary oil recovery process the instability occurs near common interface due to viscosity difference of injected water and native oil. The governing equation gives rise to the non-linear partial differential equation and its solution has been obtained by Homotopy analysis method with appropriate guess value of the solution together with some conditions and standard relations. The solution gives the average cross-sectional area occupied by the schematic fingers during the occurs of instability phenomenon. The numerical and graphical presentation has developed by using Maple software.

Keywords : capillary pressure, homotopy analysis method, instability phenomenon, viscosity
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