

ON THE INTERACTION OF BARENBLATT'S SOLUTIONS TO THE POROUS MEDIUM EQUATION

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Abstract

In this paper we discuss two Barenblatt's solutions to the porous medium equation and investigate the interaction of the two. For the limiting case, Barenblatt's solution is nothing else but the fundamental solution of the heat equation. Linearity of the heat equation results in that the sum of fundamental solutions (SFS) is also a solution to the heat equation. The sum of Barenblatt's solutions (SBS), however, is not a solution to porous medium equation due to the nonlinearity. We present a numerical investigation of the interaction of two Barenblatt's solutions. We observe a significant difference between the numerical solution and SBS.

Key Words: Heat equation, Porous medium equation, Fundamental solution, Barenblatt's solution

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