SPACE-TIME HOMOGENIZATION PROBLEMS FOR POROUS MEDIUM EQUATIONS WITH NONNEGATIVE INITIAL DATA

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Abstract. This paper concerns a space-time homogenization limit of nonnegative weak solutions to porous medium equations. In particular, the so-called homogenized matrix will be characterized in terms of solutions to cell problems, which drastically vary in a scaling parameter $r > 0$. A similar problem has already been studied in [1], where the growth of the power nonlinearity is strictly restricted due to some substantial obstacles. In the present paper, such obstacles will be overcome by developing local uniform estimates for the gradients of nonnegative weak solutions.