SubPotential Lower Bounds for NonNegative Solutions to Certain QuasiLinear Degenerate Parabolic Equations

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Abstract. Nonnegative weak solutions of quasilinear degenerate parabolic equations of p–Laplacian type are shown to be locally bounded below by Barenblatt type subpotentials. As a consequence nonnegative solutions expand their positivity set. That is, a quantitative lower bound on a ball B_ρ at time $\bar{t}$ yields a quantitative lower bound on a ball $B_{2\rho}$ at some further time t. These lower bounds also permit one to recast the Harnack inequality of [1] in a family of alternative, equivalent forms.

References

[1] E. DiBenedetto, U. Gianazza and V. Vespri, *Harnack Estimates for Quasi–Linear Degenerate Parabolic Differential Equations*, Acta Math. (in press).