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Summability questions for degenerate parabolic equations

Abstract: This talk is based on joint works with John L. Lewis and Peter Lindqvist.

We describe recent advances in regularity of solutions to parabolic equations of p -Laplacian type. In particular, we consider reverse Hölder inequalities for the gradient of a weak solution. Using these estimates we are able to relax the standard Sobolev type assumptions and still obtain the usual regularity properties as boundedness, Hölder continuity and higher integrability.

We also consider local summability of limits of increasing sequences of supersolutions and show that, in a certain sense, the Barenblatt solution is the worst possible example of such a function.