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A Harnack Inequality for a Class of Second Order Degenerate Quasi-Linear Equations

Recent progress on the regularity of weak solutions to a class of degenerate quasi-linear second order equations with rough coefficients will be discussed. An equation in the class considered has the form

$$\mathrm{Div}\,(A(x,u,\nabla u)) = B(x,u,\nabla u)$$

where the functions A and B are assumed to satisfy specific structural conditions related to those described by J. Serrin (1964) and N. Trudinger (1967). The main focus of the talk will be issues associated to the development of a Harnack inequality for weak solutions. There are several equations of interest included in the class studied. The degenerate p-Laplacian is one such example.