

On the regularity theory for non-uniformly elliptic problems

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Abstract

I will discuss regularity properties for solutions of linear second order non-uniformly elliptic equations in divergence form. Assuming certain integrability conditions on the coefficient field, we obtain local boundedness and validity of Harnack inequality. The assumed integrability assumptions are sharp and improve upon classical results due to Trudinger from the 1970s.

If time permits I will discuss applications to nonlinear non-uniformly elliptic problems and/or homogenization theory.

The talk is mainly based on joint works with Peter Bella.