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Boyan Sirakov* (bsirakov@mat.puc-rio.br). *Optimal boundary half-Harnack estimates and a priori bounds for elliptic differential inequalities.*

We prove optimal boundary versions of some basic estimates from the regularity theory of uniformly elliptic PDE, such as growth lemmas and half-Harnack inequalities, and show how such estimates can be used to obtain new and optimal a priori bounds for positive sub- and super-solutions of a class of elliptic equations, both in divergence and in non-divergence form, involving a superlinear nonlinearity. One application is the multiplicity of solutions of the Dirichlet problem for a general class of elliptic operators with natural growth in the gradient, that is, in which the first and the second order terms have the same scaling with respect to dilations. (Received July 31, 2017)