

# Regularity estimates for fully nonlinear unbalanced degenerate models

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In this Talk we will establish sharp  $C_{\text{loc}}^{1,\beta}$  regularity estimates for bounded solutions of a class of fully nonlinear elliptic PDEs with unbalanced degeneracy, whose model equation is given by

$$[|Du|^p + \mathbf{a}(x)|Du|^q] \mathcal{M}_{\lambda,\Lambda}^+(D^2u) = f(x) \quad \text{in } \Omega,$$

for a bounded domain  $\Omega \subset \mathbb{R}^N$ , and suitable data  $p, q \in (0, \infty)$ ,  $(p < q)$   $\mathbf{a} \geq 0$  and  $f$ . Our approach is based on geometric tangential methods and makes use of a refined oscillation mechanism combined with compactness and scaling techniques. At the end, we present some connections of our findings with a variety of nonlinear problems in the theory of elliptic PDEs, which may have their own mathematical interest. This is a joint work with Gleydson C. Ricarte (UFC-Brazil).