Regularity for degenerate equations with Hamiltonian terms

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We obtain sharp, quantitative regularity estimates for elliptic degenerate equations involving Hamiltonian terms. The inclusion of a Hamiltonian term of the form $h(x)|Du|^\beta, \beta > 0$ introduces additional complexity in understanding the behavior of the equation when the gradient is either very small or very large. Specifically, the equation degenerates as $|Du|$ becomes very small and exhibits blow-up as $|Du|$ becomes very large. It is worth mentioning that the set where the gradient of an existing solution vanishes or blow-up is an apriori unknown region, thus, analyzing equations of that sort by means of free boundary tools is a promising approach. This is a joint work with Pedra D. S. Andrade (PLUS - Austria).

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