

REGULARITY OF QUASILINEAR EQUATIONS IN THE HEISENBERG GROUP

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ABSTRACT. We discuss local regularity of weak solutions of quasilinear sub-elliptic equations of the form $\operatorname{div}_{\mathbb{H}^n} A(x, u, \nabla_{\mathbb{H}^n} u) + B(x, u, \nabla_{\mathbb{H}^n} u) = 0$ on domains in the Heisenberg Group \mathbb{H}^n for $n \geq 1$. The hypothesis for growth and ellipticity conditions, encompasses a wide range of such equations, with the p -laplace equations for all $1 < p < \infty$ being a model example; this in some sense, is the best possible generalization among the class of elliptic equations with isotropic growth functions. We establish $C^{0,\alpha}$ regularity of the horizontal gradient $\nabla_{\mathbb{H}^n} u$, which is also possibly the best result one can hope to obtain with the available tools so far, in this literature.