

REGULARITY OF VARIATIONAL PROBLEMS IN THE HEISENBERG GROUP

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ABSTRACT. As a joint work of myself and my adviser X. Zhong, we show the local $C^{1,\alpha}$ regularity of weak minimizers of scalar variational integrals of p -growth, for all $1 < p < \infty$, with the p -Laplace equation $\operatorname{div}_H(|\mathfrak{X}u|^{p-2}\mathfrak{X}u) = 0$, as a model example. This is done in the setting of the Heisenberg Group \mathbb{H}^n , with left invariant vector fields satisfying the Heisenberg algebra $[X_i, X_j] = T\delta_{j,n+i}$ and the horizontal gradient $\mathfrak{X}u = (X_1, X_2, \dots, X_{2n})$. We provide quantitative estimates for the local oscillation of $\mathfrak{X}u$, using truncation of the horizontal derivatives.