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Horizontal convex envelope in the Heisenberg group and applications to sub-elliptic equations

QING LIU AND XIAODAN ZHOU

Abstract. This paper introduces in a natural way a notion of horizontal convex envelopes of continuous functions in the Heisenberg group. We provide a convexification process to find the envelope in a constructive manner. We also apply the convexification process to show h-convexity of viscosity solutions to a class of fully nonlinear elliptic equations in the Heisenberg group satisfying a certain symmetry condition. Our examples show that in general one cannot expect h-convexity of solutions without the symmetry condition.

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