# Characterization of horizontal quasiconvexity in the Heisenberg group and applications

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This talk is concerned with PDE-based characterizations of horizontal quasiconvexity in the Heisenberg group $\mathbb{H}$. For upper semicontinuous, h-quasiconvex functions, we provide a characterization in terms of the viscosity subsolution to a first-order nonlocal Hamilton-Jacobi equation and a sufficient condition in terms of a second-order PDE. Applications of these characterizations include constructing horizontally quasiconvex envelope of a continuous function, construct h-convex hull of a given set, and investigating the convexity preserving property of curvature flow in the Heisenberg group $\mathbb{H}$. This talk is based on joint work with Antoni Kijowski, Qing Liu and Ye Zhang.