

# Geometric inequalities on the Heisenberg group

Kinga Sipos

## Abstract

Contrary to former belief, we established on the Heisenberg group  $\mathbb{H}^n$  a determinant inequality holding for the Jacobians of the density functions of the probability measures involved in the optimal mass transportation problem (namely the measure on the initial/ starting space, the one on the destination space and the interpolation measure). We showed that this determinant inequality implies a set of geometric inequalities, like the curvature-dimension condition, measure contraction property, a geodesic version of the Borell-Brascamp-Lieb inequality (which in a particular case provides exactly the Prékopa-Leindler inequality) and Brunn-Minkowski inequalities.