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William Beckner* (beckner@math.utexas.edu), Department of Mathematics, University of Texas at Austin, Austin, TX 78712. *Embedded Symmetry & Encoding Information*. Preliminary report.

Symmetry is intrinsic to the framework of Fourier Analysis. Our purpose is to formulate a new paradigm for analysis on Lie groups that moves beyond the Euclidean domain starting with $SL(2, \mathbb{R})$ invariance and the Heisenberg group. These basic groups are a natural playing field to explore the laws of symmetry and the interplay of geometric structure. New results illustrate connections among Sobolev embedding on the Heisenberg group, Stein-Weiss integrals with mixed homogeneity, and Riesz potentials on hyperbolic space with insight gained from application – vortex dynamics, Keller-Segel model for chemotaxis, and the global Biot-Savart law in physics. Fundamental identities, formulas, and inequalities are essential for developing analysis on a geometric manifold – explicit, elegant, influential – plus they encode information about the manifold. (Received June 25, 2020)