

IDEAL QUANTUM METRICS FROM FRACTIONAL LAPLACIANS

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This talk presents a new framework for constructing computable Monge–Kantorovich metrics using Schatten ideals and commutators of fractional Laplacians on Ahlfors regular spaces. These “ideal” metrics admit explicit spectral formulas and naturally respect underlying dynamics. Our methods introduce new tools in noncommutative geometry, including a fractional Weyl law and Schatten-class commutator estimates. As an application, we extend the construction to expansive $\mathbb{Z}^m$ -actions and their associated C^* -algebras, illustrating the reach of fractional analysis across dynamics, fractal geometry, and quantum metric spaces. This is joint work with Bram Mesland.