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María Soria-Carro*, Department of Mathematics, The University of Texas at Austin, Austin, TX 78712. *On a decreasing family of integro-differential operators: From fractional Laplacian to nonlocal Monge-Ampère*. Preliminary report.

Integro-differential operators arise naturally in the study of stochastic processes with jumps. A classical example is the fractional Laplacian. In 2015, Caffarelli and Silvestre introduced a nonlocal analog of the Monge-Ampère operator as an infimum of integro-differential operators over a family of kernels whose level sets have the same measure as the level sets of the kernel of the fractional Laplacian. Motivated by their work, we study a new family of ordered operators that arise from imposing weaker geometric conditions on the kernels. The key tools in the analysis of these operators are Ryff's theorem, from the theory of rearrangements, and Brenier–McCann's theorem, from optimal transport. This is a work in progress with my advisor, Luis Caffarelli, for my Ph.D. dissertation. (Received August 10, 2021)