L_p-estimates for nonlocal in time heat kernels

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Abstract

In [1] and [2], the authors study independently the so called *fully nonlocal diffusion equation*, which is of fractional order both in space and time. In both papers, the authors need several technical results about the so-called Mittag-Leffler functions and Fox H-functions to obtain L_p-estimates of the solutions. This approach seems not to be very helpful (or easy) to derive the L_p-estimates of solutions to equations with other nonlocal in time operators (for example sums of fractional derivatives). In this talk, we present a method to obtain L_p-estimates of fundamental solutions of more general nonlocal diffusion equations.

References

[1] K. Kim and S. Lim, *Asymptotic behaviors of fundamental solution and its derivatives to fractional diffusion-wave equations*, **J. Korean Math. Soc**. 53 (2016), no. 4, 929–967.
[2] J. Kemppainen, J. Siljander, and R. Zacher. *Representation of solutions and large-time behavior for fully nonlocal diffusion equations.* **J. Differential Equations**, 263(1):149-201, 2017.