

# Heat equation on a $p$ -adic ball

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## ABSTRACT

We consider Vladimirov's fractional differentiation operator on a  $p$ -adic ball and the corresponding heat type equation. The meaning of the latter is not obvious since the operator is nonlocal. This equation can be described [1] in terms of the  $p$ -adic stable process, a stochastic process corresponding to the Vladimirov operator. In the talk we will explain this approach and present a new one [2], based on the Pontryagin duality for the ball considered as an additive Abelian group.

## References

- [1] A. N. Kochubei. Pseudo-differential equations and stochastics over non-archimedean fields. New York: Marcel Dekker, 2001.
- [2] A. N. Kochubei. Linear and nonlinear heat equations on a  $p$ -adic ball. Ukrainian Math J. 70, No.2 (2018), 217–231.