SECOND QUANTISED REPRESENTATION OF MEHLER SEMIGROUPS ASSOCIATED WITH BANACH SPACE VALUED LÉVY PROCESSES

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The solutions of linear SPDEs driven by Banach space valued additive Levy noise are generalised Ornstein-Uhlenbeck processes. These are Markov processes and their transition semigroups are sometimes called Mehler semigroups. If the driving noise is a Brownian motion then Anna Chojnowska-Michalik and Ben Goldys [1, 2] have shown that these semigroups can be represented by means of second quantisation within a suitable chaotic decomposition. The result has recently been extended to the Levy case (for Hilbert space valued noise) by Szymon Peszat [3] using a point process construction. In this talk I will present an alternate approach to this construction based on the use of exponential martingales.

This talk is based on joint work with Jan van Neerven (Delft)

References

[1] A.Chojnowska-Michalik, B.Goldys, Nonsymmetric Ornstein-Uhlenbeck operator as second quantised operator, *J. Math. Kyoto Univ.* **36**, 481-98 (1996)

[2] A.Chojnowska-Michalik, B.Goldys, Symmetric Ornstein-Uhlenbeck semigroups and their generators, *Probab. Theory Relat. Fields* **124**, 459-86 (2002)

[3] S.Peszat, Lévy-Ornstein-Uhlenbeck transition operator as second quantised operator, *J. Funct. Anal.* **260** 3457-73 (2011)