An extension of Itô's formula for finite variation Lévy processes and its applications in option pricing

Ramin Okhrati
Department of Mathematical Sciences
University of Southampton
r.okhrati@soton.ac.uk

Extending Itô's formula to non-smooth functions is important both in theory and applications. One of the fairly general extensions of the formula, known as Meyer-Itô, applies to one dimensional semimartingales and convex functions. There are also satisfactory generalizations of Itô's formula for diffusion processes where the Meyer-Itô assumptions are weakened even further. We study a version of Itô's formula for multi-dimensional finite variation Lévy processes assuming that the underlying function is continuous and admits weak derivatives. We also discuss some applications of this extension, particularly in finance.

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This is a joint work with Uwe Schmock[1] from Vienna University of Technology.

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[1]Vienna University of Technology, Vienna, Austria, Email: schmock@fam.tuwien.ac.at