Einladung

zum Vortrag im Rahmen des **SFB Colloquiums** (Standort Linz), mit dem Titel

Analytical methods for Lévy processes with applications to finance: Part 2

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Abstract: We discuss two recent results [1, 2] which solve the option pricing problems introduced in Part 1. First, we develop an algorithm for pricing Asian options where we assume the stock price is driven by a meromorphic process. To do so we derive an explicit expression for the Mellin transform of the exponential functional, which allows us to identify its distribution as that of an infinite product of independent Beta random variables. We use this information to develop a straightforward and effective pricing algorithm, and discuss the numerical aspects of this procedure in some detail. Secondly, we attack the problem of pricing barrier options when the stock price is driven by *any* one of the popular processes introduced in Part 1. Our approach is to approximate these processes by hyper-exponential processes, for which we can identify the Wiener-Hopf factors and can therefore price barrier options. The approximation algorithm is simple and very effective, which allows us to derive accurate prices with minimal computation.

References
[1] D. Hackmann and A. Kuznetsov. Approximating Lévy processes with completely monotone jumps. http://arxiv.org/abs/1404.0597, 2014. Forthcoming in The Annals of Applied Probability.
[2] D. Hackmann and A. Kuznetsov. Asian options and meromorphic Lévy processes. *Fi-nance and Stochastics*, 18:825-844, 2014.