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## MATHEMATIKKOLLOQUIUM

Das Institut für Mathematik lädt zu folgendem Vortrag ein:

**Friedrich Hubalek**

Vienna University of Technology

### **On exact simulation of moderately tractable infinite activity Lévy processes and their exponential transform**

For every infinitely divisible distribution  $P$  we can find a Lévy process  $(X_t)$  such that the law of  $X_1$  is  $P$ . Let us denote the associated semigroup of probability measures by  $P_t(A) = P[X_t \in A]$ .

In this talk we consider distributions, such as the Student T or the (generalized) hyperbolic distributions, where  $P_t$  with  $t \neq 1$  is not available explicitly, and simulation from  $P_t$  for non-integer  $t$  is not obvious.

We implement a simulation technique by Devroye, which is based on characteristic functions and give some modifications to improve efficiency. The method is exact, it does not use any truncation or other approximation, even though we do not assume that exact inversion of the characteristic function is available.

In the second part of the talk we consider the exponential and logarithmic transform of Lévy processes as introduced by Kallsen and Shiryaev. The transforms involve all jumps, and thus exact pathwise implementation is not feasible for infinite activity processes. Furthermore, the law of the transformed processes typically do not belong to any known class of distributions. We provide an exact simulation method for processes with monotonic Lévy densities near zero.

Zeit: **Dienstag, den 21. September 2010 um 16.15 Uhr**

Ort: **Victor-Franz-Hess Haus, Technikerstraße 25, HS G**

**Gäste sind herzlich willkommen!**

*Christel & Stefan Geiß*