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*9:40 - 10:10 registration**T. Tichý*↓

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11:10 - 11:00 Bohdan Maslowski · KPMS MFF UK, Prague, CZ*Some results on parameter estimation for linear fractional SPDEs*

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11:10 - 12:00 Jan Swart · ÚTIA AS CR (AV ČR), Prague, CZ*Systems of branching, annihilating, and coalescing particles*

We consider systems of particles performing independent random walks on a lattice, where moreover particles split into two with some positive branching rate and pairs of particles, present on the same site, with certain rates either coalesce (i.e., unite to form a single particle) or annihilate (i.e., both particles disappear). It turns out that such particle systems are dual to certain systems of interacting diffusions and the latter, though seemingly more complicated, can be used to prove nontrivial facts about the particle system. We also show that some particle systems can be obtained as thinnings of others. This is joint work with Siva Athreya.

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*12:00 - 14:00 lunch time**M. Šmíd* ↓

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14:00 - 14:50 Tomáš Tichý · Technical University of Ostrava, CZ*State of the art of financial modeling*

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15:00 - 15:50 Andrea Karlová · KPMS MFF UK + ÚTIA AS CR (AV ČR), Prague, CZ*Volatility Surfaces Induced by Stable Distributions*

In the talk we derive approximate formulas for volatility surfaces generated by stable laws. We discuss its properties and quality of numerical implementation.

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*15:50 - 16:20 coffee break**A. Karlová*↓

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16:20 - 17:10 Martin Šmíd · ÚTIA AS CR (AV ČR), Prague, CZ*Zero intelligence models of continuous double auction: distribution, estimation, approximation*

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17:20 - 18:10 Radka Picková · Columbia University, New York, USA*Generalized Volatility-Stabilized Processes*

We consider systems of interacting stochastic processes which generalize the Volatility-stabilized market models introduced in Fernholz and Karatzas (2005). We show how to construct a weak solution of the underlying system of stochastic differential equations, express the solution in terms of time changed squared-Bessel processes, and argue that this solution is unique in distribution. Sufficient conditions for the existence of a strong solution are also provided. Moreover, we discuss the significance of these processes in the context of arbitrage relative to the market portfolio within the framework of Stochastic Portfolio Theory.

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18:20 - 18:50 Lenka Slámová · KPMS MFF UK, Prague, CZ*Discrete stable distributions - new approach to modelling financial returns*

Stable distributions play an important role both in the theory and applications. A lot of phenomena are modeled by continuous stable distributions even if the character of the data suggests a discrete approach. An analogue of the stability property may be obtained also in the discrete case when we chose a different normalization procedure. The aim of this talk is to present a new class of discrete stable distributions. The known discrete stability of random variables on  $\mathbb{N}$  is generalized to the case of random variables on  $\mathbb{Z}$ . We give brief introduction to the theory of discrete stability on  $\mathbb{Z}$ , show connection of discrete stable random variables to their absolutely continuous counterparts and focus on methods of estimation of parameters of these distributions from both simulated data and real data of financial returns.

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*19:00 - 22:00 dinner*

9:20 - 9:50      *tea**K. Janeček* ↓

9:50 - 10:30      Jan Večeř · Frankfurt School of Fin. &amp; Manag., Frankfurt, Germany

*Options on Harmonic Average*

The contracts written on the harmonic average of the underlying price are quite popular in the foreign exchange market. If  $X$  denotes the foreign currency and  $Y$  denotes the domestic currency, the payoff of the contract is a function of a price of an asset  $H$  which is defined as

$$H(T) = \left[ \int_0^T [X_Y(t)]^{-1} \eta(t) dt \right]^{-1} Y(T) = \left[ \frac{1}{\int_0^T Y_X(t) \eta(t) dt} \right] Y(T).$$

The harmonic average resembles a quanto option: the price  $Y_X(t)$  is monitored with respect to the foreign currency  $X$ , but the payoff is settled in the domestic currency  $Y$ . Although the pricing problem appears to be rather complex, it can be ultimately simplified to a partial differential equation in one spatial variable after a numeraire change and using the time reversal argument.

10:40 - 11:00      Lukáš Adam · KPMS MFF UK, Prague, CZ

*Modelling the Optimal Shape of an Electrostatic Separator*

11:10 - 12:00      Petr Dostál · KPMS MFF UK, Prague, CZ

*Philosophical aspects of trading with proportional transaction costs*

Several problems of trading with proportional transaction costs will be discussed together with the optimal or almost optimal solution for small transaction costs.

12:00 - 14:00      *lunch time**J. Večeř* ↓

14:00 - 14:50      Karel Janeček · RSJ a.s., Prague, CZ

*TBA*14:50 - 15:20      *discussion*↑ *K6* ↑