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# DG method for the numerical pricing of two-asset European-style arithmetic Asian options

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### Abstrakt přednášky:

Option pricing models are an important part of financial markets worldwide. The PDE formulation of these models leads to analytical solutions only under very strong simplifications. For more general models the option price needs to be evaluated by numerical techniques. First, based on the ideal pure diffusion process for risky asset prices, we introduce the appropriate model describing the evolution of basket options. Next we incorporate a new path-dependent variable – an average – into this model and present the general form of PDE for pricing of European-style Asian option contracts on two assets. Further, we focus only on one subclass – Asian options with continuous arithmetic averaging – and discuss two concepts of a dimensionality reduction (w.r.t. payoff) leading to PDE with two spatial variables only. Then the numerical option pricing scheme arising from the discontinuous Galerkin method (DGM) is developed and some theoretical results are also mentioned. Finally, each afore-mentioned model is supplemented with the numerical results (obtained by DGM) on real market data.

### References:

- [1] J. Hozman, T. Tichý: DG method for numerical pricing of multi-asset Asian options – The case of options with floating strike. *Applications of Mathematics* **62** (2) (2017), 171–195.
- [2] J. Hozman, T. Tichý: DG method for the numerical pricing of two-asset European-style Asian options with fixed strike. *Applications of Mathematics*, 26 pages, 2017 (submitted).

Za organizátory semináře srdečně zve

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