



Institut für Mathematik

## Seminar zur Stochastik

Dienstag, 6. Februar 2018  
12 Uhr c. t.  
SR 147 UHG, Fürstengraben 1

**Herr Dr. Semen Bodnarchuk**  
(National Technical University of Ukraine)

### “The modified Euler method for SDE’s driven by Wiener noise: weak convergence order”

**Abstract:** Our goal is to provide direct and clear way for obtaining the weak approximation of diffusion processes of the form

$$X_t = x + \int_0^t a(X_s) ds + \int_0^t \sigma(X_s) dW_s, \quad 0 \leq t \leq T.$$

In the classical approach the Ito-Taylor expansion is used for such a reason (see, for example, book P. E. Kloeden, E. Platen (1995)). But in this case we need to simulate multiple Ito integrals which is quite complicated problem. Instead of such multiple integrals the random variables which have to satisfy some moment conditions can be used (for details, see Corollary 5.12.1, Kloeden & Platen). And it is not so convenient, because in multi-dimensional case for weak approximation of higher order the choosing of such variables is not very clear. We propose another way for obtaining the weak approximation of diffusion processes which avoids all mentioned above difficulties.

[1] P. E. Kloeden, E. Platen, *Numerical solution of stochastic differential equations*, Springer, 1995

**Alle Interessenten sind herzlich eingeladen**

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