Einladung

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

Backward stochastic differential equations (BSDEs)

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DATUM: Mittwoch, 11. Mai 2016
ZEIT: 13:45 Uhr
ORT: Science Park 2, S2 054, JKU Linz

Abstract: Stochastic differential equations (SDEs) have proven to be useful for modeling a tremendous amount of phenomena where random effects over continuous time are involved. In (most) mathematical models, an SDE is an integral equation which contains integrals with respect to time to describe the dynamics of the differential equation as well as stochastic integrals which usually are considered as noise or disturbance terms of the equation. The stochastic integrals are constructed by using a driving (or noise) process, which is a stochastic process being responsible for the randomness of the equation. As this process grows in time, also the randomness of the stochastic terms in the equation increases. This results in the fact, that starting with a deterministic initial condition $X_0 = \xi$ at time $t = 0$, we obtain a random variable, X_T, as solution of our SDE at time $t = T$.
However, in many situations the following question arises: What happens if we look at the problem backwards in time? If we start with a random terminal condition $X_T = \xi$ at time $t = T$, are we able to attain a deterministic value X_0 by following the dynamics of the equation analytically? Put in other words, does the SDE subtract the right amount of randomness when going backwards in time, such that we find out with what nonrandom initial condition we started?
This question finally leads to the concept of backward stochastic differential equations (BSDEs). In this talk I will motivate these equations from various viewpoints, present their treatment in simple cases and give an overview about my current field of interest within the theory of BSDEs.

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