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## DK Seminar

March 18, 2015, 14:00 - 15:30  
Vienna University of Technology,  
Freihaus, green area, 4th floor, 101C

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### **Spin-polarized drift-diffusion model and possibility of its application to semiconductor devices**

Spin of electron as an additional degree of freedom to the electron's charge could be used to transport and store information in metals or semiconductors. Theoretically devices based on spin could be smaller and faster than their counterparts based on electron's charge only (e.g. usual transistors or diodes). The considered model is devoted to describe the transport of spin in semiconductor devices (such as spin transistors and spin diodes). Work on this model during the past two years brought proofs of existence and boundedness of continuous and numerical solutions, proofs of entropy decay for continuous and discrete cases. In the talk I remind the derivation of the model from Boltzmann equation, show its modification which includes spin-orbit interaction and report failure of application of the modified model to the spin-transistor.