UNIVERSITÄT BERN

Philosophisch-Humanwissenschaftliche Fakultät

Institut für Sportwissenschaft

Kolloquium *„Berner Gespräche zur Sportwissenschaft“*

Montag, 27.02.2017, von 16.15 Uhr bis 17.45 Uhr
Hörsaal C001 (Universität Bern, ZSSW Gebäude C, Bremgartenstr. 145, 3012 Bern)

Sensorimotor learning and decision-making in complex environments

Prof. Dr. Dr. Daniel A. Braun *studied physics, biology and philosophy at the Albert-Ludwig-University, Freiburg. He was a visiting PhD student and postdoctoral research associate in the Computational and Biological Learning Laboratory at the University of Cambridge, UK, and a visiting scientist in the Computational Learning and Motor Control Laboratory at the University of Southern California, Los Angeles, USA. In 2011 he was awarded an Emmy-Noether-Grant by the Deutsche Forschungsgemeinschaft to establish an independent research group at the Max-Planck-Institute for Biological Cybernetics and the Max-Planck-Institute for Intelligent Systems in Tübingen. Subsequently, Prof Braun received his habilitation in neural and behavioral biology and in cognitive science at the Eberhard-Karl-University Tübingen. In 2015 he was awarded an ERC Starting Grant with the project “BRISC: Bounded Rationality in Sensorimotor Coordination” and was appointed professor of Learning Systems at Ulm University.*

Recent advances in movement neuroscience suggest that sensorimotor control can be considered as a continuous decision-making process in complex environments in which uncertainty and task variability play a key role. Leading theories of motor control assume that the motor system learns probabilistic models and that motor behavior can be explained as the optimization of payoff or cost criteria under the expectation of these models. Here we discuss how the motor system exploits task variability to build up efficient models through structural learning and compare human behavior to Bayes optimal models. In particular, we focus on deviations from these normative models due to effects of model uncertainty and we discuss in how far model uncertainty can be considered as a special case of a general decision-making framework that considers limited information-processing capabilities.