The Zukunftskolleg Lecture in the summer term 2012

Joseph Y. Halpern, Prof. for Computer Science, Cornell Universität, Ithaca, USA

"Knowledge and and common knowledge in multi-agent-systems"

21. Juni 2012 / 17.00 – 18.30 Uhr / A 702

Joseph Halpern's interdisciplinary research combines topics of Computer Science, Economics, Linguistics, Mathematics, and Philosophy. In this talk, he will start by considering puzzles and paradoxes involving knowledge. Understanding these puzzles gives insight into understanding and reasoning about so-called *multi-agent systems*, systems of interacting agents (who could be people, robots, or computers), and illustrates the importance of considering the state of knowledge of the agents in the system. The notion of *common knowledge* turns out to be of particular interest. Something is common knowledge, if it is known by everyone, everyone knows that it is known by everyone, everyone knows that everyone knows that it is known by everyone, and so on.

Common knowledge is essential for reaching agreements and coordinating. But in practical distributed systems, common knowledge is shown not to be attainable. Various relaxations of common knowledge are introduced that are attainable in many cases of interest.   The lecture concludes with a discussion of the role of knowledge in distributed systems.

Franz Huber, Fellow at the Zukunftskolleg, will chair the public lecture and the following discussion. A reception will follow the lecture, which will give the audience the opportunity to continue their conversation with Joseph Halpern about his research work.