The rise and fall of firm collaborations - Insights from a large-scale analysis of R&D networks
by
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Time: 2:30 pm – 4:00 pm
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Abstract
In our essay "Economic Networks - The New Challenges" (Science 24 July 2009: Vol. 325 no. 5939 pp. 422-425) we advocate a "new and fundamental understanding of the structure and dynamics of economic networks". Key is in merging two different perspectives, (i) the "micro" approach, in which agents establish and delete links based on strategic interactions, and (ii) the "macro" approach that reveals the structure and dynamics of networks at large scales. While we present both perspectives in this talk, emphasis is on the second one. Drawing on a large database of publicly announced R&D alliances, we track the evolution of R&D networks in a large number of economic sectors over a long time period (1986-2009). We analyse how network properties develop over time, to reveal a rise-and-fall dynamics. We capture this in an activity-driven network model that, to a remarkable degree, reproduces our empirical findings. Using the same model, we are able to reproduce the strategies of firms in choosing their collaboration partners conditional on their position in the R&D network.

Prof. Frank Schweitzer has been Full Professor for Systems Design at the Department of Management, Technology and Economics of ETH Zurich, since 2004. The research of Frank Schweitzer focuses on applications of complex systems theory in the dynamics of social and economic organizations. His methodological approach can be best described as data-driven modeling, i.e., it combines the insights from big data analysis with the power of agent-based computer simulations and the strength of rigorous mathematical models. Frank Schweitzer is a founding member of the ETH Risk Center and Editor-in-Chief of ACS - Advances in Complex Systems and EPJ Data Science.

All interested are welcome.