Max Planck Lecture in Stuttgart

Die Max Planck Lecture wird von bedeutenden Wissenschaftlern und Experten ihres Fachs auf dem Max-Planck-Campus in Stuttgart-Büsnau gehalten. Die beiden Max-Planck-Institute für Intelligente Systeme (IS) und für Festkörperforschung (FKF) tragen seit 2003 gemeinsam die Max Planck Lecture und laden in der Regel wechselseitig je einmal jährlich einen Sprecher ihrer Wahl zum Vortrag ein. Dieser richtet sich an Forscherkollegen, Projektpartner aus der Industrie, wissenschaftspolitische Entscheidungsträger und weitere Personen mit naturwissenschaftlichem Interesse.

Sprecher der Max Planck Lecture seit 2007:

27. April 2007/MF
Prof. Dr. Mark E. Welland
University of Cambridge, United Kingdom
Using Physics to Quantify Aspects of Alzheimer's and Related Human Diseases

11. Juli 2007/FKF
Prof. Dr. Peidong Yang
University of California, Berkeley, USA
Nanowire Building Blocks for Photonics & Energy Conversion

22. Juli 2008/MF
Prof. Dr. A. Paul Alivisatos
Lawrence Berkeley National Laboratory, USA
Nanocrystals as Model Systems for Understanding Structural and Chemical Transformations in the Solid State

15. Oktober 2008/FKF
Prof. Dr. Moty Heiblum
Weizmann Institute of Science, Israel
Electron Interference in two Dimensions: Phase Measurements, Controlled Dephasing and Phase Recovery

08. Juni 2009/MF
Prof. Dr. Yves Bréchet
Grenoble Institute of Technology, France
Architectured Materials and Multifunctional Designs: Foams, Wools and Interlocked Materials

23. November 2009/FKF
Prof. Dr. Harold Y. Hwang
University of Tokyo, Japan
Atomic Engineering Oxide Heterointerfaces

27. Mai 2010/MF
Prof. Dr. Subra Suresh
Massachussetts Institute of Technology, USA
Materials Science Aproaches for Life Sciences and Human Health

03. März 2011/FKF
Prof. Dr. Michael Grätzel
EPFL, Lausanne, Schweiz
The advent of mesoscopic solar cells

14. Oktober 2011/IS
Prof. Dr. Martin Nowak
Harvard University, USA
Evolution of cooperation

26. September 2012/IS
Prof. Dr. Robert Wood
School of Engineering and Applied Sciences Harvard University
Progress on biologically-inspired microrobots

05. Dezember 2012/FKF
Prof. Dr. Clare P. Grey
Department of Chemistry, University of Cambridge, UK & Department of Chemistry, Stony Brook University, USA
Following Function in Real Time: New NMR, MRI and Diffraction Methods for Studying Structure and Dynamics in Batteries and Supercapacitors

08. Mai 2013/FKF
Dr. Ivan Božovi
Brookhaven National Laboratory, USA
Interface Science

10. Oktober 2013/IS
Prof. Dr. Paul Chaikin
Department of Physics, New York University
Some Small Steps toward Artificial Life

22. Mai 2014/IS
Professor A. L. Greer
Department of Materials Science & Metallurgy University of Cambridge
The Glassy State properties and applications exploiting non-crystallinity: golf, frozen frogs, memory

09. März 2015/IS
Vijay Kumar, Ph.D.
UPS Foundation Professor School of Engineering and Applied Science University of Pennsylvania
Aerial Robot Swarms

20. Mai 2015/FKF
Professor Wolfgang Ketterle, Massachusetts Institute of Technology, Cambridge
Ultracold atoms as quantum simulators for new materials – synthetic magnetic fields and topological phases

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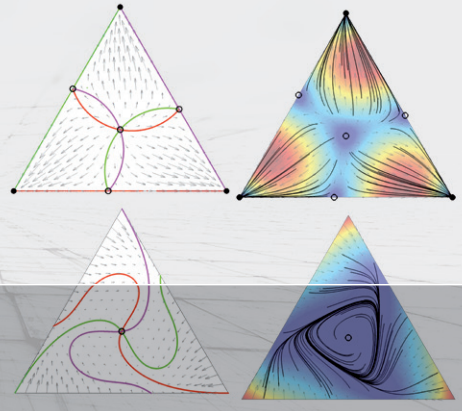


Max Planck Lecture

On the Nonlinear Dynamics of Collective Decision-Making in Nature and Design

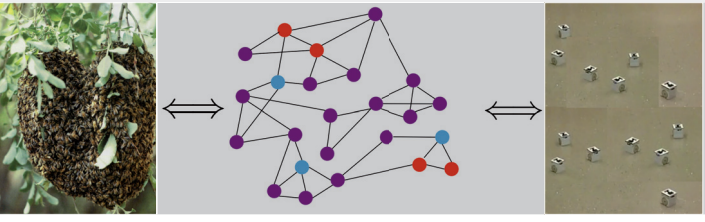
Naomi Ehrich Leonard
Princeton University, Princeton, NJ USA

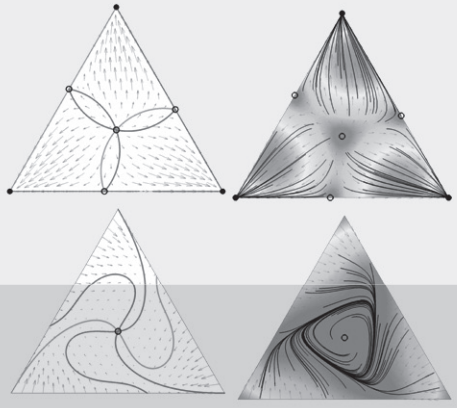
06. Juni 2016
14:00 Uhr, Hörsaal (2D5)
Eingang Heisenbergstraße 1

Max-Planck-Institute
Stuttgart

MAX-PLANCK-GESELLSCHAFT

On the Nonlinear Dynamics of Collective Decision-Making in Nature and Design





06. Juni 2016

13:30 Uhr Kaffee / Coffee
Foyer Heisenbergstr. 1

14:00 Uhr Vortrag / Lecture
Großer Hörsaal (2 D5)

Gastgeber:
Max-Planck-Institut für Intelligente Systeme
Heisenbergstr. 3 | 70569 Stuttgart

Naomi Ehrich Leonard

Princeton University, Princeton, NJ USA

The successful deployment of complex, multi-agent systems requires well-designed, agent-level control strategies that accommodate sensing, communication, and computational limitations on individual agents. Indeed, many applications demand system-level dynamics to be robust to disturbance and adaptive in the face of changes in the environment. Remarkably, animal groups, from bird flocks to fish schools, exhibit just such robust and adaptive behaviors, even as individual animals have their own limitations. To better understand and leverage the parallels between networks in nature and design, a principled examination of collective dynamics is warranted. I will describe an analytical framework based on nonlinear dynamical systems theory for the realization of collective decision-making that allows for the rigorous study of the mechanisms of observed collective animal behavior together with the design of distributed strategies for collective dynamics with provable performance.

Naomi Ehrich Leonard is the Edwin S. Wilsey Professor of Mechanical and Aerospace Engineering and an associated faculty member of the Program in Applied and Computational Mathematics at Princeton University. She is Director of Princeton's Council on Science and Technology and an affiliated faculty member of the Princeton Neuroscience Institute and Program on Quantitative and Computational Biology. Her research and teaching are in control and dynamical systems with current interests in coordinated control of multi-agent systems, mobile sensor networks,collective animal behavior, human decision dynamics, and intersections with dance.