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Five new professors join IST Austria

IST Austria President Thomas Henzinger presents successful young researchers | Appointments in neuroscience, physics, mathematics, and computer science

Today President Thomas A. Henzinger announced the names of five new professors: the neuroscientist **Maximilian Jösch**, the mathematician **Julian Fischer**, the computer scientist **Dan Alistarh**, and the physicists **Peter Krogstrup** and **Maksym Serbyn** will join the Institute of Science and Technology Austria (IST Austria) as Assistant Professors, bringing the number of the faculty to 45. Jösch, Krogstrup and Fischer will start their research at IST Austria on January 1, 2017, Serbyn on July 1, 2017, and Alistarh on September 1, 2017. Henzinger welcomed the new professors: "These appointments are an indicator for the great attraction that IST Austria has for extraordinarily promising young scientists. I am very happy that they will join us at this stage of their career because they will further broaden our research portfolio. At IST Austria they can expect an environment that will enable them to contribute outstanding results to their fields of research." Following the recent promotion of the plant scientist Eva Benkova and the computer scientist Krzysztof Pietrzak to tenured professors, this brings the number of faculty to 45, among them 21 tenured Professors and 24 Assistant Professors including the newcomers. The 45 members of the IST Austria faculty come from 22 countries.

Maximilian Jösch, an Austrian and Chilean citizen born in 1980, is a neuroscientist in the field of Systems Neuroscience and Neuroethology. He studied Biochemistry at the Eberhards-Karls-Universität in Tübingen, Germany, and performed his predoctoral studies from 2005-2009 at the Max Planck Institute of Neurobiology in Munich, Germany. After receiving his PhD he worked as a postdoctoral fellow at Harvard University in Cambridge, MA, USA. In 2010 he was awarded an HFSP Long-term Fellowship to fund his postdoctoral research.

A core interest of his research is to understand the fundamental principles of how neuronal circuits create behavior. As a graduate student he studied neuronal substrates of motion vision and established whole-cell recordings in the visual interneurons of the fruit fly *Drosophila melanogaster*. In his postdoctoral work he switched to the rodent retina and discovered a neuronal circuit for color vision that relies on the interaction of rods and cone photoreceptors. In order to map the synaptic connectivity of neurons in the brain he helped develop a new microscopy technique called ARTEMIS (Assisted reconstruction technique

for electron-microscopic interrogation of structure).

Born in 1989, **Julian Fischer** is a German mathematician working in the fields of applied analysis, the theory of partial differential equations, and numerical analysis. He completed his undergraduate studies in Mathematics at the Friedrich-Alexander University of Erlangen-Nurnberg. For his doctoral studies he stayed in Erlangen, solving several longstanding open problems related to non-negativity preserving fourth-order parabolic equations. In 2013/14 he became research assistant at the University of Zurich and later at the Max Planck Institute for Mathematics in the Sciences, Leipzig. Fischer is the youngest faculty appointment at IST Austria so far.

His research centers on the rigorous theoretical and also numerical analysis of partial differential equations motivated by problems in the applied sciences. At the moment he works on *a posteriori* modeling error estimates in continuum mechanics which use the information provided by the solution to a simplified model in order to obtain significantly improved bounds for the error. Another line of research is stochastic homogenization. In recent work, he also established growth estimates on the homogenization corrector with optimal stochastic moments in case of linear elliptic PDEs and slow decorrelation of the underlying random field.

Dan Alistarh is a 33-year-old Romanian theoretical computer scientist studying the theory and practical applications of large-scale distributed systems. He obtained a double B.Sc. degree in Computer Science and Mathematics from the Jacobs University Bremen, Germany in 2007. For his PhD studies, he joined the Ecole Polytechnique Fédérale de Lausanne (EPFL) and then moved to the Massachusetts Institute of Technology in 2012. Since 2014 he has been a researcher at Microsoft Research Cambridge and a Morgan Fellow of the Downing College at the University of Cambridge.

His interests include distributed algorithms, concurrent data structures, and optimization for large-scale data analytics. The focus of his thesis work was on a better understanding of the power and limitations of computing in a concurrent, distributed setting. More specifically, he analyzed the complexity of implementing concurrent data structures in asynchronous shared memory systems. His work since his PhD is marked by a shift towards practical theory, yielding real world algorithms and methodologies that have solid proofs and performance analyses.

Peter Krogstrup is a Danish material scientist born in 1973. Following a career as a musician, he did his undergraduate studies at the University of Copenhagen, Denmark, from 2004 to 2009. During this time he was also a part time research assistant at SunFlake A/S, a spin-off solar cell company. For his graduate studies he moved to the Niels Bohr Institute of the University of Copenhagen. Since May 2013 he has been Assistant Professor at the Center for Quantum Devices of the Niels Bohr Institute. In 2016 Krogstrup was awarded an ERC Starting Grant.

His main field of research is the synthesis of low-dimensional materials for novel quantum state detection and applications. During his PhD he studied the growth of self-catalyzed GaAs based semiconductor nanowires on silicon substrates in a molecular beam epitaxy system. Later on he investigated the synthesis of superconductor/semiconductor nanostructures for topologically protected quantum computing applications. Recently he also started to work on two-dimensional growth of epitaxial semiconductor-metal hybrid materials.

Maksym Serbyn is a Ukrainian theoretical condensed matter physicist born in 1986. He studied Physics at the Moscow Institute of Physics and Technology (MIPT) from 2003 to 2009. Later he moved to the Massachusetts Institute of Technology (MIT) for his graduate studies in Physics. Since 2014 he has been a Betty and Gordon Moor postdoctoral fellow at the University of California, Berkeley where he continued to work on many body quantum dynamics with the aim to develop a universal theoretical understanding of non-equilibrium dynamics in many-body systems.

For his Master's thesis he developed a theory of the fluctuation-induced Nernst effect for a two-dimensional superconductor in a perpendicular magnetic field. His PhD studies were dedicated to the study of quantum spin liquid, an anti-ferromagnetic state of matter which fails to order because of quantum fluctuations. He is perhaps best known for his work on many-body localization (MBL) systems. Together with co-workers he introduced the description of MBL as a new type of integrable quantum systems with an extensive number of locally conserved quantities.

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IST Austria

The Institute of Science and Technology (IST Austria) is a PhD granting research institution located in Klosterneuburg, 18 km from the center of Vienna, Austria. Inaugurated in 2009, the Institute is dedicated to basic research in the natural and mathematical sciences. IST Austria employs professors on a tenure-track system, postdoctoral fellows, and doctoral students at its international graduate school. While dedicated to the principle of curiosity-driven research, the Institute owns the rights to all scientific discoveries and is committed to promote their use. The first president of IST Austria is Thomas A. Henzinger, a leading computer scientist and former professor at the University of California, Berkeley, and the EPFL in Lausanne, Switzerland. www.ist.ac.at