

KIT is Granted Humboldt Professorship for Excellent Physicist

Wolfgang Wernsdorfer Studies Molecular Nanomagnets for Use as Processors in Future Quantum Computers – Germany’s Highest Award for Researchers from Abroad



Wolfgang Wernsdorfer studies fundamentals of molecular quantum computers. (Photo: Eric Lichtenscheidt)

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Karlsruhe Institute of Technology (KIT) makes an internationally renowned experimental physicist move to Germany: Wolfgang Wernsdorfer was chosen for a Humboldt professorship. With this award, the Alexander von Humboldt Foundation honors internationally leading scientists that have been working abroad so far. With funds totaling up to EUR 5 million, the Humboldt professorship is Germany’s highest award for international scientists. Wernsdorfer, a renowned expert for nanomagnets, will now continue his research at KIT’s Physikalisches Institut. The Humboldt professorship will be awarded in Berlin in May 2016.

“We are extremely happy about the selection of Dr. Wolfgang Wernsdorfer for a Humboldt professorship,” the President of KIT, Professor Holger Hanselka, says. “The decision of the Alexander von Humboldt Foundation in favor of Mr. Wernsdorfer, an internationally renowned expert in electronics, spin physics, and quantum computing, also is an honor for KIT and an appreciation of our strengths in research.”

Presently, Dr. Wolfgang Wernsdorfer is working at the Institut NÉEL of the Centre National de la Recherche Scientifique (CNRS) in Gre-

noble / France. He has specialized in molecular quantum spintronics, an area of experimental solid-state physics at the interface to chemistry and materials sciences. Wernsdorfer is among the leading experts worldwide for molecular nanomagnets and their use in quantum computer systems. Already as a doctoral student at the Low-temperature Laboratory in Grenoble did he develop a nano-squid, a pioneering instrument to measure extremely small magnetic fields, by means of which he studied magnetic properties of individual nanostructures and molecules. Wernsdorfer found that molecular magnets behave according to the laws of quantum mechanics. Based on this finding, he was able to build electronic circuits with single molecules, in which electric current can be controlled by the magnetization of the molecule.

It is one of his defined new goals to integrate extremely small and quick molecular quantum processors into the highly advanced microelectronic chip technology. The challenge mainly lies in connecting Wernsdorfer's new switch elements based on magnetizable molecules with the so-called CMOS technology that is based on semiconductor components. In case of success, molecular nanomagnets coupled to semiconductor transistors might be used in future quantum computers.

Wolfgang Wernsdorfer was born in 1966 in Germany and started to study physics at the University of Würzburg after he had passed vocational training to become an electrician and higher vocational school. He completed his studies at the renowned École Normale Supérieure in Lyon / France. In 1993, he became a doctoral researcher at the Low Temperature Laboratory and the Laboratoire de Magnetism in Grenoble, France – two of the institutes that formed today's Institut NEEL where he has held the position of Directeur de recherche 1ère classe since 2008. Wernsdorfer was granted a number of high-ranking honors and awards, such as the Agilent Europhysics Prize, the Olivier Kahn International Award, an ERC Advanced Grant, and the Prix Spécial of the Société Française de Physique. Now, he has received a call for a W3 professorship at the Physikalisches Institut (PHI) of KIT, where he wishes to establish a center for molecular quantum spintronics in cooperation with organic chemistry working groups of the KIT Institute of Nanotechnology (INT) and the KIT Institute for Theoretical Solid-state Physics.

About the Alexander von Humboldt Professorship

The Alexander von Humboldt Professorship, Germany's highest international research award may total up to EUR 5 million. With this professorship, the Alexander von Humboldt Foundation honors lead-

ing researchers in all disciplines worldwide, who have been working abroad so far. Under this professorship, these scientists are to conduct cutting-edge long-term research at German universities. The prize money is to cover the first five years of research in Germany and financed by the Federal Ministry of Education and Research. The Humboldt professorship provides German universities with the opportunity to attract excellent international researchers and to strengthen their profile in worldwide competition. The award is associated with the obligation to offer the new Humboldt professors a long-term perspective for research in Germany.

In total, ten Humboldt professorships were chosen for 2016. A first selection round took place in April this year. In the second round, six researchers from France, the United Kingdom, Switzerland, and the USA were selected. They now start appointment negotiations with the German universities that proposed them for this award.

More information may be obtained at <http://www.humboldt-professur.de/en/>.

Karlsruhe Institute of Technology (KIT) is a public corporation pursuing the tasks of a Baden-Wuerttemberg state university and of a national research center of the Helmholtz Association. The KIT mission combines the three core tasks of research, higher education, and innovation. With about 9,400 employees and 24,500 students, KIT is one of the big institutions of research and higher education in natural sciences and engineering in Europe.

Since 2010, the KIT has been certified as a family-friendly university.

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