# Two KIT Researchers on Their Way to the Top

**Stefanie Speidel and Elena Pancera Are Supported by the Margarete von Wrangell Program**

*Stefanie Speidel (left) and Elena Pancera (right) are working on their postdoctoral lecture qualification. (Photo: Gabi Zachmann, KIT)*

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**Two young KIT scientists, whose research focuses on applications in medical engineering, have been granted a Margarete von Wrangell scholarship for postdoctoral lecture qualification. At the Institute of Anthropomatics, the information scientist Dr. Stefanie Speidel develops a system to assist surgeons in operations. At the Institut für Hochfrequenztechnik und Elektronik (IHE), the engineer Dr. Elena Pancera develops new methods based on ultra wideband technology for medical and diagnostic applications and the wireless monitoring of the vital functions of patients.**

With its Margarete von Wrangell program, the state of Baden-Württemberg supports excellent female scientists on their way towards postdoctoral lecture qualification. The positions of both scientists will be funded first by the Ministry of Science, Research, and the Arts and by the European Social Funds (ESF) for three years. Then, funding will be provided by KIT for another two years.

In her research project “Computer-supported Assistance System in Minimally Invasive Surgery”, the 32-year-old Dr. Stefanie Speidel develops technical support systems integrated specifically in the operation process. Similar to a navigation system when driving a car, the operator is guided to a hidden tumor or informed about the location of an artery that should not be damaged by his instrument. Speidel’s research work is aimed at giving the surgeon precisely the information that is needed at the moment. The head of the group “Surgical Assistance Systems” at the Institute of Anthropomatics uses intelligent information filters for this purpose.

So far, assistance systems have frequently displayed too much or insufficient information. “Similar to a human assistant who anticipates the next operation step by looking on the images and reacts to what is seen, a computer-based assistance system shall interact with the surgeon in an intelligent way,” explains the scientist. Speidel studied at KIT, at the Universidad de Malaga in Spain, and at the Royal Institute of Technology, Stockholm. She also wrote her Ph. D. thesis at the KIT Department of Informatics.

Ultra wideband technology (UWB) is in the focus of research of Dr. Elena Pancera. “As UWB allows for the transmission of very large amounts of data and a high resolution, this radio technology can be used in medical diagnostics among others,” explains the engineer born at Verona in 1981. For example, it is possible to detect water accumulations and cancer lumps in the body and to monitor the vital signs of patients in a wireless manner. A major advantage compared to other diagnostic methods is the absence of radiation. “UWB does not ionize”, underlines the scientist. Pancera studied electrical engineering at Padua and was awarded her doctorate at KIT. At the IHE, the 29-year-old scientist heads the junior research group “Ultra Wideband Medical Diagnostics“. For her doctorate she was the first woman to be granted the Carl Freudenberg award in 2009.

According to Pancera, the Margarete von Wrangell program is a big chance to encourage women to start a university career. She attaches high value to the promotion of competences by special training apart from financial support. The program launched in 1997 is named after Margarete von Wrangell, who was the first female ordinary professor in Germany in 1923.

**Karlsruhe Institute of Technology (KIT) is a public corporation and state institution of Baden-Württemberg, Germany. It fulfills the mission of a university and the mission of a national research center of the Helmholtz Association. KIT focuses on a knowledge triangle that links the tasks of research, teaching, and innovation.**

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