# informatik-Kolloquium

Der Fachbereich Informatik der Johannes Kepler Universität Linz[1] lädt in Zusammen-arbeit mit der Österreichischen Gesellschaft für Informatik (ÖGI) zu folgendem Vortrag ein:

## Univ.-Prof. Dr.-Ing. habil. Falko Dressler
## University of Innsbruck

## Industrial Wireless Networks –
## Robust and Interference-Aware Real-Time Communication

## Fr, 22. 06. 2012, 14:00 – 15:00 Uhr
## JKU, MT128 (Science Park I)

**Abstract:**

The key questions for successfully using wireless sensor network technology in industrial environments are robustness and real-time capabilities. We discuss the applicability of IEEE 802.15.4 for application in industrial automation. Based on the specific requirements in this field, we analyzed the weaknesses of the standard protocol and proposed a novel MAC protocol that keeps the original PHY definition in order to work using available IEEE 802.15.4 chipsets. In earlier work, we analytically derived the worst case latency for using the improved protocol version in typical industrial setups. We now also implemented this protocol version in a simulation environment in order to show the typical behavior in the network taking into account typical channel conditions. We performed extensive simulation experiments that show the limitations of the standard protocol and that demonstrate the capabilities of the new protocol in a selected automation scenario. Our protocol variant has been used as a basis for the IEEE 802.15.4e standard. Our ongoing work is now focusing on interferer detection and identification to provide a higher level of robustness to the protocol operation.

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[1] Der Fachbereich (http://informatik.jku.at) besteht aus folgenden Instituten:
Anwendungsorientierte Wissensverarbeitung (FAW), Bioinformatik, Computational Perception, Computergrafik, Computer-Architektur, Formale Modelle und Verifikation, Informationsverarbeitung und Mikroprozessortechnik (FIM), Integrierte Schaltungen, „integriert studieren", Pervasive Computing, Systemsoftware, Systems Engineering und Automation, Telekooperation

**Biography:**

Falko Dressler is a Full Professor of Computer Science and head of the Computer and Communication Systems Group at the Institute of Computer Science, University of Innsbruck. Dr. Dressler received his M.Sc. and Ph.D. degrees from the Dept. of Computer Science, University of Erlangen in 1998 and 2003, respectively. He is an Editor for journals such as Elsevier Ad Hoc Networks, ACM/Springer Wireless Networks (WINET), and Elsevier Nano Communication Networks. He was guest editor of special issues on self-organization, autonomic networking, and bio-inspired communication for IEEE Journal on Selected Areas in Communications (JSAC), Elsevier Ad Hoc Networks, and others. Dr. Dressler was general chair of IEEE/ACM BIONETICS 2007 and IEEE/IFIP WONS 2011, and TPC or poster chair for IEEE VNC, IEEE VTC, and ACM Mobicom. He regularly serves in the TPC of leading networking conferences such as IEEE INFOCOM, IEEE ICC, IEEE Globecom, and IEEE WCNC. Among other, Dr. Dressler wrote the textbook Self-Organization in Sensor and Actor Networks, published by Wiley in 2007. Dr. Dressler is an IEEE Distinguished Lecturer in the fields of inter-vehicular communication, self-organization, and bio-inspired and nano networking. Dr. Dressler is a Senior Member of the IEEE (COMSOC, CS, VTS) as well as a Senior Member of ACM (SIGMOBILE), and member of GI (KuVS). He is actively participating in the IETF standardization. His research activities are focused on adaptive wireless networking and self-organization methods with applications in wireless ad hoc and sensor networks, inter-vehicular communication, bio-inspired and nano networking, and network security.

*Univ. Prof. Dr. Gabriele Kotsis*
*Institute for Integrated Circuits*

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