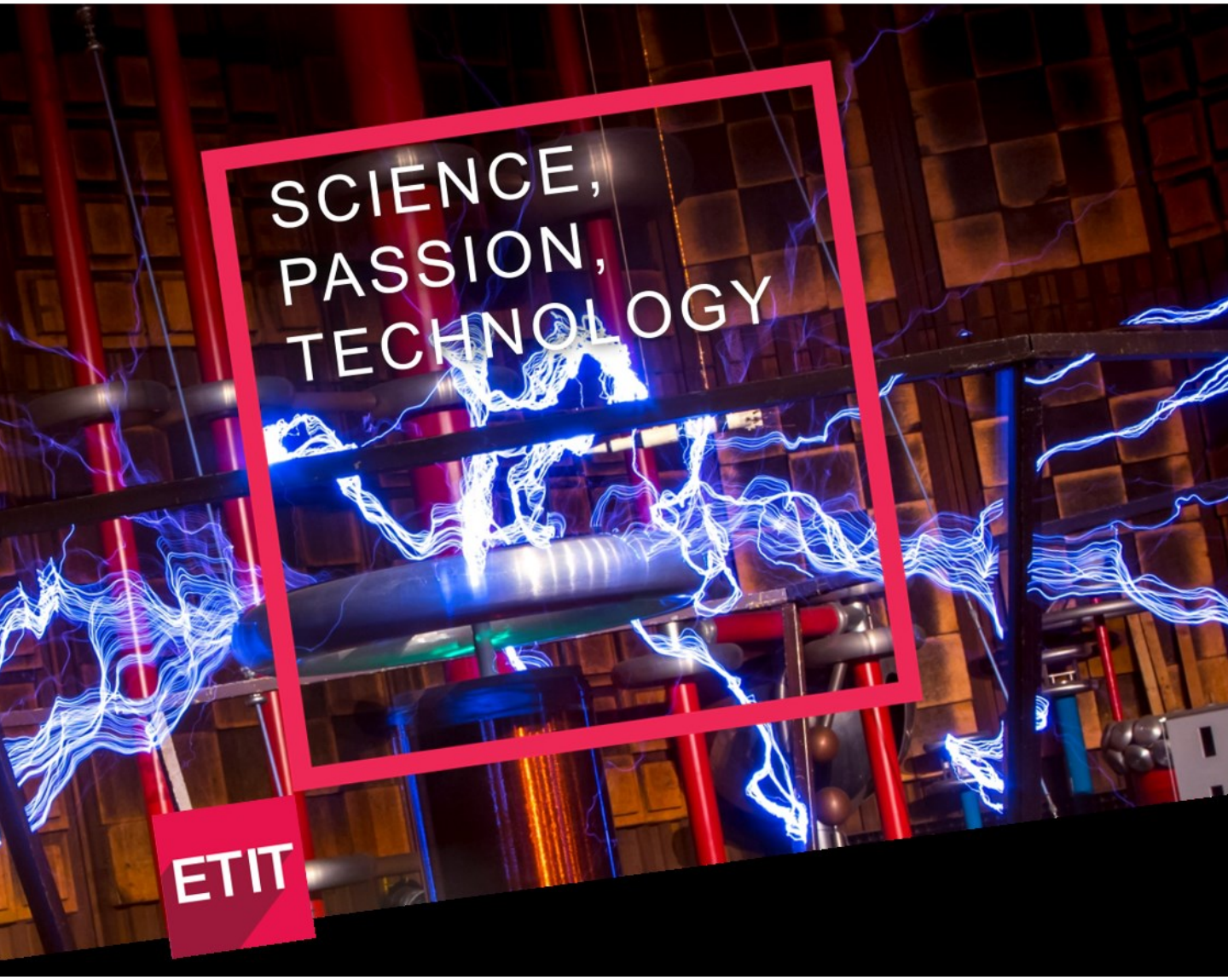


INFORMATION FOR APPLICANTS

Full Professor of Communications Engineering
and Satellite Communications

Faculty of Electrical and Information Engineering
Graz University of Technology, Austria, www.tugraz.at

Graz University of Technology

Graz University of Technology (TU Graz) is the oldest science and technology research and educational institute in Austria. For more than 200 years, it has been an important international center for research and teaching. The university focuses on five fields of expertise:

- Advanced Material Science
- Human & Biotechnology
- Information, Communication & Computing
- Mobility & Production
- Sustainable Systems

The university enjoys intensive collaborations with other national and international research and educational organizations as well as with business and industry worldwide.

Starting from July 1, 2022, TU Graz seeks to appoint a Full Professor of Communications Engineering and Satellite Communications at the Institute of Communication Networks and Satellite Communications (IKS), which is part of the Faculty of Electrical and Information Engineering. The position is tenured according to Section 98 of the Austrian University Act. In this context, we are looking for a person with an outstanding scientific track record who is able to represent the area “Communications Engineering and Satellite Communications” in research and education.

The IKS is Austria’s leading scientific institution in satellite communications which is now active in terms of applied and experimental space research for more than 50 years. Founded in 1969, the focus has been on wave propagation, satellite communications and networks, advanced modulation/synchronization/coding methods, multiple access schemes, free-space optical solutions, interference mitigation and fade countermeasure techniques, the application of space technology, and the development of space-qualified hard- and software. This has been carried out in the framework of ESA programs, COST actions, EU framework programs, as well as research contracts by industry and international operators as prime contractor or partner in international consortia.

About Graz

Graz, the second largest city in Austria, is situated south-east of the Alps and enjoys an almost mediterranean climate and lifestyle. The location in a cultural borderland close to Slovenia, Hungary, and Italy is reflected in Graz' exceptional townscape. The medieval old town is one of the largest and best-preserved in central Europe and was named a UNESCO world heritage site. Its magnificent buildings bear witness to over 850 years of architecture in the city, such as the Landhaus, also home to the Styrian Armoury and its 30,000 weapons and suits of armour, the cathedral and the mausoleum, Schloss Eggenberg and the Grazer Burg with its double-spiral staircase. These ancient edifices merge in unique harmony with state-of-the-art works by internationally renowned architects such as for example the Kunsthaus Graz, Joanneumsviertel, MUMUTH or the greenhouses in the Botanical Gardens.

The rich offerings of Graz to its visitors are reflected by a number of awards: Graz was the "Europe Capital of Culture 2003", is a member of the "UNESCO City of Design" network, and was named the Austrian "Capital of Culinary Delights". Graz is also a young and lively city with more than 50.000 students enrolled into one of the six universities.

Graz is embedded into beautiful and diverse landscapes, with the wine growing region known as "Styrian Tuscany" in the south, a region rich of hot springs and spas in the east, and the Alps in the north and west.

Facts and Figures about Graz:

- Residents (main domicile 01/01/21) – 294,236
- Universities - 6 universities | 2 polytechnics
- Students in Graz - over 50,000
- Total area – 127.5 km² (of which 50 % green area)
- Elevation - 353 m
- Museums – 34

https://www.graztourismus.at/en

Faculty of Electrical and Information Engineering

The research activities at the 12 institutes of the Faculty of Electrical Engineering and Information Technology are trend-setting and leading in Austria in many applied and theoretical areas. High technology from Graz is used in modern locomotives as well as on board of space missions, in weather radar as well as in automotive and medical diagnostic technology. The faculty is significantly involved in European and international research projects, but also in national programs such as COMET competence centers and Christian Doppler laboratories. Modern research and teaching requires interdisciplinary cooperation, as practiced at the faculty, for example in complex field calculations for new sensors and wireless communication systems, in digital signal processing, or in mobile robotics.

ETIT

Power Engineering

Institute of Electric Drives and Machines incl. professorship for Power Electronics
Institute of Electrical Power Systems
Institute of High Voltage Engineering and System Performance
Institute of Electricity Economics and Energy Innovation

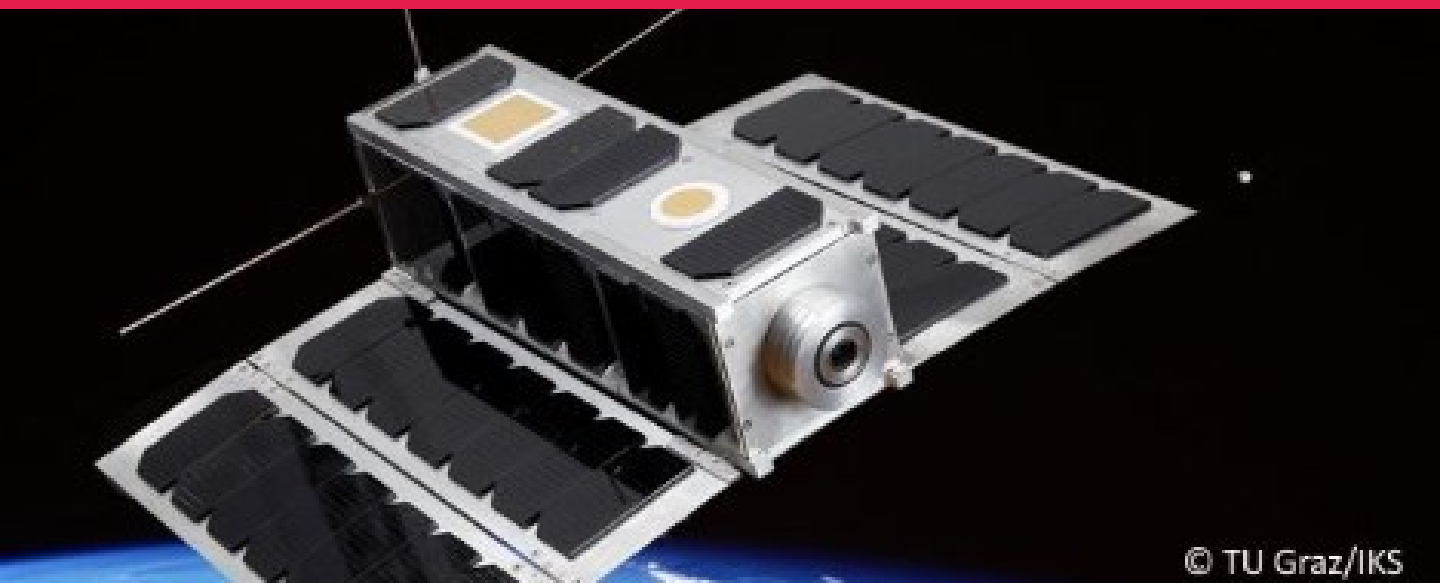
Fundamentals

Institute of Fundamentals and Theory in Electrical Engineering
Institute of Automation and Control incl. Endowed professorship for Automated Driving

Information and Communication Technology

Institute of Electronics incl. Endowed professorship for Robust Electronic Systems
Institute of Communication Networks and Satellite Communications
Institute of Signal Processing and Speech Communication incl. professorships for Intelligent Systems and for Acoustics
Institute of Technical Informatics incl. professorship for Embedded Automotive Systems
Institute of Microwave and Photonic Engineering
Institute of Electrical Measurement and Sensor Systems

Full Professorship: Communications Engineering and Satellite Communications



We are looking for a person with an excellent scientific track record who is able to represent the area "Communications Engineering and Satellite Communications" in research and education. The professorship should focus on research and teaching of theoretical foundations and their application in data transmission. The following topics are of major interest in this context:

- Fundamentals and innovative methods of digital data transmission
- Coding, modulation, adaptation and detection with consideration of wave propagation effects
- Information-theoretical methods, models, and limits
- Simultaneous and cooperative data transmission in communication networks
- Applications of communications engineering where satellite communications is of particular interest, but vehicular systems, 5G/6G networks and other fields of application are also welcome

Besides research, the professor shall teach courses in Bachelor's and Master's degree programmes at the Faculty of Electrical and Information Engineering and beyond: fundamentals of communications engineering, information theory, modelling of transmission channels and communication networks, as well as specialized lectures from the applicant's own research areas.

The successful candidate is also expected to engage in interdisciplinary collaborations. In this respect, the Institute of Space Research of the Austrian Academy of Sciences (www.oeaw.ac.at/iwf) and the Institute of Information and Communication Technologies at Joanneum Research (www.joanneum.at) are of paramount importance; with the headquarter in Graz, the latter is a successful nationally and internationally active research institution owned by the Austrian federal states of Styria, Carinthia and Burgenland. Finally, the Master's degree programme "SpaceTech" is also connected to the IKS, where participants are trained by experts in the fields of space systems and business engineering preparing them to take on key roles and management responsibilities in the international environment of the space industry (www.iks.tugraz.at).

Graz: Vibrant Research Landscape

The IKS institute at TU Graz hosting the professorship enjoys a close collaboration with the Space Research Institute (IWF) of the Austrian Academy of Sciences. IWF has been studying the physics of space plasmas and the atmospheres of planets inside and outside our solar system for 50 years. With about 100 employees from twenty nations, it is one of the largest institutes of the Austrian Academy of Sciences (ÖAW). At the Lustbühel Observatory it operates a satellite laser ranging station, which is one of the best in the world.

The IWF is the only institute in Austria that develops and builds space-qualified instruments on a large scale. The data returned by them are scientifically analyzed and physically interpreted at the institute. IWF's core engineering expertise is in building magnetometers and on-board computers, as well as in laser ranging to satellites and space debris. In terms of science, IWF concentrates on dynamic processes in space plasma physics and on the upper atmospheres of planets and exoplanets, i.e. planets outside our solar system.

Space has been explored with the help of satellites for more than 60 years and still poses many puzzles. Since the beginning of the 1980s, IWF has contributed/is contributing to more than 40 international space missions with over 100 scientific instruments. The institute is currently involved in 23 projects led by the European Space Agency (ESA), NASA or national space agencies in Japan, Russia, China, and South Korea. The missions cover fleets of satellites in near-Earth space, the observation of the Sun, and the exploration of planets such as Mercury, Jupiter, and extrasolar planets.

Beyond space, communications engineering for smart factories and vehicular networks are active research topics in Graz. The Virtual Vehicle research centre (situated on TU Graz campus) and numerous companies such as NxP semiconductors or AVL List GmbH are lead institutions in the ACstyria automotive research cluster. TU Graz operates the smartfactory@tugraz - a research factory where mobile secure factory networks and wireless localization systems play an important role. Also located on TU Graz campus, the Pro2Future research centre carries out research on products and production systems of the future.

Communications Engineering and Satellite Communications Expertise at TU Graz

Besides the IKS which will host the professorship, several additional institutes of TU Graz work on communications, networking, and space technologies and offer a rich ecosystem for collaborations.

Institute of Communication Networks and Satellite Communications (IKS)

The IKS is Austria's leading scientific institution in satellite communications which is now active in applied and experimental space research for more than 50 years. Founded in 1969, the focus has been on wave propagation, satellite communications and networks, advanced modulation/synchronization/coding methods, multiple access schemes, free-space optical solutions, interference mitigation and fade countermeasure techniques, the application of space technology, and the development of space-qualified hard- and software. The following research areas are currently established at the institute:

- Satellite communications
- Microwave propagation and antennas
- Small satellites

www.iks.tugraz.at

Assoc.Prof. Dipl.-Ing. Dr.techn. Wilfried Gappmair

Assoc.Prof. Dipl.-Ing. Dr.techn. Franz Teschl

Dipl.-Ing. Dipl.-Ing. (FH) Dr.techn. Manuela Wenger

Institute of Microwave and Photonic Engineering (IHF)

The IHF was founded in 2010 to cover the research topics in microwave and mm-wave technology. Furthermore, the already existing task groups for photonic engineering and radar systems were integrated into the institute. Meanwhile the institute has five main research groups:

- Antennas and filters
- Microwave- and mm-wave technologies
- RFID technologies
- Photonic engineering
- Radar and microwave propagation

www.ihf.tugraz.at

Univ.-Prof. Dipl.-Ing. Dr.techn. Wolfgang Bösch, MBA

Ao.Univ.-Prof. Dipl.-Ing. Dr.techn. Erich Leitgeb

Assoc.Prof. Dipl.-Ing. Dr.techn. BSc Jasmin Grosinger

Communications Engineering and Satellite Communications Expertise at TU Graz

Institute of Signal Processing and Speech Communication (SPSC)

In 2000, the SPSC Lab was founded as a research and education center in nonlinear signal processing and computational intelligence, algorithm engineering, as well as circuits & systems modeling and design. It covers applications in wireless communications, speech/audio communication, and telecommunications. Research at the SPSC Lab addresses fundamental and applied research problems in five scientific areas:

- Wireless communications
- Audio and acoustics
- Intelligent systems
- Nonlinear signal processing
- Speech communication

www.spsc.tugraz.at

Univ.-Prof. Dipl.-Ing. Dr.techn. Gernot Kubin

Assoc.Prof. Dipl.-Ing. Dr. Klaus Witrisal

Univ.-Prof. Dipl.-Ing. Dr.mont. Franz Pernkopf

Institute of Technical Informatics (ITI)

The ITI offers research and education on modern networked embedded systems (such as Internet of Things and Cyber-Physical Systems) with focus on software, hardware, and networking. A special focus is on low-power wireless mesh networks at the data link and network layers. The institute coordinates the TU Graz LEAD project "Dependable Internet of Things" and operates the D-Cube wireless mesh networking testbed. The four working groups of the institute make significant contributions to improve dependability, real-time properties, safety, security, and efficiency of these systems to enable novel applications:

- Networked embedded systems
- Embedded automotive systems
- Hardware/software co-design
- Industrial informatics

www.iti.tugraz.at

Univ.-Prof. Dipl.-Inform. Dr.sc.ETH Kay Uwe Römer

Assoc.Prof. Dott. Dott. mag. Dr.techn. Carlo Alberto Boano, MSc

Communications Engineering and Satellite Communications Expertise at TU Graz

Institute of Geodesy (IFG)

The IFG was founded in 2015 and covers important topics in geodesy. Research and teaching are related to satellite- and airborne-based techniques and applications, geospatial data analysis, location-based services, environmental monitoring and Earth system modeling. The institute consists of four working groups:

- Navigation
- Remote sensing and photogrammetry
- Geo-information
- Theoretical geodesy and satellite geodesy

www.ifg.tugraz.at

Univ.-Prof. Dr.rer.nat. Dipl.-Forstwirt Mathias Schardt

Ao.Univ.-Prof. Dipl.-Ing. Dr.techn. Manfred Wieser

Univ.-Prof. Dr.-Ing. Torsten Mayer-Gürr

APPLY NOW

to the
Dean of the Faculty of Electrical and Information Engineering
Univ.-Prof. DI Dr. Wolfgang Bösch, MBA
Inffeldgasse 18/EG, 8010 Graz, Austria
E-Mail: dekanat.etit@tugraz.at

Application deadline: September 15, 2021
Hearings are planned between November 29 and December 3, 2021
Contact for questions: Prof. Kay Römer
Application form available at:
https://www.tugraz.at/go/professorships-vacancies


Campus Alte Technik


Campus Inffeldgasse

Graz University of Technology
Technische Universität Graz
Rechbauerstraße 12, 8010 Graz, Austria
www.tugraz.at

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CITY OF GRAZ/*STADT GRAZ*
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- **City of Design**
- **Capital of Culture/*Kulturhauptstadt Europas***
- **Eight higher education institutions, 60,000 students/ *Acht Universitäten und Hochschulen, 60.000 Studierende***

REGION OF STYRIA/*BUNDESLAND STEIERMARK*
- **Science and business location/ *Wissenschafts- und Wirtschaftsstandort***
- **4.9 % regional R&D quota/*4,9 % regionale F&E Quote***

Lunghammer – TU Graz; Graz: Graz Tourismus – Harry Schiffer


Campus Neue Technik


City of Graz/Stadt Graz

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