Jacobs University Bremen is a private, English-medium campus university which is state-recognized by the State of Bremen**.** We are offering Bachelor, Master or PhD programs in three focus areas: Health, Mobility and Diversity. Our principles are first class research and teaching, international diversity and transdisciplinary cooperation. As an international university we attract highly talented and open-minded students from all over the world. Currently, approximately 1,400 students from 110 nations live and study on our residential campus.

The **Transmission Systems Group** at Jacobs University Bremen invites applications for

2 PhD Positions in Electrical Engineering / Communications with Security focus **(m/f/diverse)**

(66,6% working time; limited for 1.5 and 3 years)

Job ID 19-07

Research Topics:

The PhD students will work on security-related topics, one devoted to physical-layer key generation for wireless and powerline channels, the other focusing on so-called TEMPEST. Physical-layer key generation determines cryptographic keys from symmetric physical channel properties that are not available to an eavesdropper.
We have first promising results for wireless channels and also powerline channels. Those methods are considered to be very important for the upcoming Internet of Things.
Regarding TEMPEST, we will investigate possibilities for attacks based on radiated signals from circuitry, up to the point, where we detect the signal type, possibly even recovering the data. The physcial-layer security project comes with a time limit of 1.5 years that we plan to further extend, the funding for TEMPEST already now covers 3 years.

For both topics, a very good knowledge of physical layer communication is required. The physical-layer security project will also require coding experience, especially LDPC codes. TEMPEST will be based on machine learning, compressive sensing, wavelets and other transforms.

The TEMPEST project is a collaboration with Hochschule Bremen and a company. At Hochschule, there will be a further opening for a PhD position. There, a stronger RF background will be required.

Your qualifications:

- University degree (Master or Diploma) in electrical engineering / communications
- Good knowledge of physical layer transmission methods and channel properties
- LDPC codes or signal processing/machine learning backgrounds, respectively
- MATLAB skills
- Very good command of English, both in written and oral communication
- German language proficiency is required for the TEMPEST project
- Ability to work independently and in a team

JACOBS UNIVERSITY

Your application:

Application documents (CV, complete list of publications, academic records, transcripts (copies) of certificates/degrees, and contact information of two references) will be accepted continuously until the position is filled.

Please send your applications in a single PDF to Prof. Dr.-Ing. Werner Henkel, w.henkel@jacobs-university.de with subject "PhD Positions".

See http://trsys.faculty.jacobs-university.de/ for further information.

In case you would be interested in the TEMPEST topic, but rather in the underlying RF methods and pre-classification, please contact Prof. Dr. Sören Peik at Hochschule Bremen und speik@hs-bremen.de .