Deutsches Zentrum
für Luft- und Raumfahrt
German Aerospace Center

Linder Höhe
D-51147 Köln
Telephone: +49 (0)2203 601-0
Internet: http://www.dlr.de

DAAD Deutscher Akademischer Austauschdienst
German Academic Exchange Service

Kennedyallee 50 – D-53175 Bonn
Telephone: +49 (0)228 882-0
Telefax: +49 (0)228 882 448
E-mail: dlr-daad-program@daad.de
Internet: http://www.daad.de/dlr

DLR – DAAD Fellowships

Fellowship No. 396

Research Area : Space

Research Topic: **Analysis of dual and fully polarimetric SAR dat for scattering characterization**

DLR Institute: **Microwaves and Radar Institute**

Position: Postdoctoral Fellow

Openings: 1

Job Specification:

Fully polarimetric SAR systems allow complete backscattering characterization of scatterers. It alternatively transmits two polarizations and receives in orthogonal dual polarizations. A dual-polarimetric SAR system only transmits one polarization and uses dual polarizations as coherent receiving. Compared to the fully polarimetric SAR, a dual-pol system has advantages on imaging swath width, system complexity, power consumption, and data volume. The general dual-pol SAR system consists of the conventional dual-pol systems (HH/HV and VH/VV) and the system named compact polarimetry which transmits an arbitrary elliptical polarization wave. The commonly considered compact polarimetric modes are the linear pi/4 mode and the circular mode. In fact, we have numerous possibilities of compact polarimetric modes in the polarization vector space. However, limited studies can be found for the analysis of this general compact polarimetric data.
The link between fully and compact polarimetric SAR measurements for scatterers characterization should be investigated in detail and carefully, with the purpose to develop proper compact polarimetric-based scattering models and target decomposition algorithms to improve the application performances of the dual-pol data. Compact polarimetric measurements are dependent of the transmit wave, which results in that many methods were developed under a specific mode, lacking flexibility for the analysis of general compact polarimetric imagery. Thus, unified analysis, feature extraction methods and applications should be developed, such that a convenient framework can be provided for

various compact polarimetric modes to analyze object properties under a same standard. Analysis of the optimal compact polarimetric mode is beneficial for the design and effective use of the future dual-pol imaging modes to meet the mission objectives.

Required Qualification:

- Ph.D degree in Information and Communication Engineering, Computer Science, Mathematics.
- Proficient on multiple platforms (Linux, Mac, Windows) with skilled programming experiences.
- Experiences in compact polarimetry-based target decomposition, statistical modelling, image processing, and machine learning algorithms.
- Good knowledge of English (speaking and writing)

Advantageous Skills:

- Field work experiences

English competence: See requirements on www.daad.de/dlr

Earliest Start Date: September 1st, 2019

Application Deadline: July 1th, 2019

Further Information: http://www.dlr.de
http://www.daad.de/dlr