



Master Thesis/Internship

German Aerospace Center (DLR)
Microwaves and Radar Institute

Topic	Applications Development with the 2-Look TOPS Acquisition Mode Concept	Date of announcement July 1, 2018
Description	<p>SAR acquisitions performed in burst mode allow covering wide areas by switching cyclically the radar beam in elevation. The TOPS mode introduces additionally a steering of the antenna in azimuth in order to equalize different parameters as, e.g., azimuth ambiguities or SNR. The acquisition of SAR images in burst-mode implies an azimuth resolution loss that impairs some applications as, e.g., ground monitoring in along-track direction or the retrieval of the azimuth velocity of moving targets. The two-look TOPS concept overcomes these limitations by acquiring two separated slices of the Doppler spectrum, which, if properly combined, deliver azimuth displacement estimations with even better accuracies than employing whole synthetic aperture radar strategies. The work to be performed is related to the further development of algorithms to exploit the 2-look TOPS mode for geophysical applications and for the estimation of azimuth velocities of vessels employing real SAR data from the TerraSAR-X satellite.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div data-bbox="373 808 767 987" style="text-align: center;"> <p>Sketch of the 2-look TOPS acquisition working mode</p> </div> <div data-bbox="810 741 1086 1021" style="text-align: center;"> <p>2D velocity of a vessel retrieved employing Along-Track Interferometry and the 2-look concept</p> </div> <div data-bbox="1129 674 1390 1010" style="text-align: center;"> <p>Along-track deformation retrieved from a year of 2-look TOPS acquisitions</p> </div> </div> <p>Please send your complete application (cover letter including preferred starting date, curriculum vitae, current enrollment and current transcript of records from your University).</p>	
Starting Date	Immediate	
Duration	6-9 months. 19 working hours/week.	
Required Skills	<p>Student Telecommunications Engineering, Electrical Engineering, Computer Science, Physics, Mathematics</p> <ul style="list-style-type: none"> • Experience with scientific programming languages (e.g., IDL, Python or C) • Good knowledge of English (written and oral) • Knowledge of SAR theory and processing is beneficial 	
Benefits	<p>Room for developing creative tasks and abilities in a dynamic and challenging hi-tech environment. Look forward to a fulfilling job with an employer who appreciates your commitment and supports your personal and professional development. Our unique infrastructure offers you a working environment in which you have unparalleled scope to develop your creative ideas and accomplish your professional objectives. We are striving to increase the proportion of female employees and therefore particularly welcome applications from women. Disabled applicants with equivalent qualifications will be given preferential treatment.</p>	
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