Viktor Doychinov

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Work Experience

Postdoctoral Research Fellow **Oct 2015–Sep 2016**

University of Leeds, UK

I work on a project titled "THz Backward Wave Oscillator for Plasma Diagnostics in Nuclear Fusion", in collaboration with researchers at Lancaster University. I am responsible for developing and setting up a fabrication process for rapid realisation and measurement of slow waveguide structures (SWS). In order to do this, I work in a cleanroom environment, using SU-8 photoresist and photolithography methods to implement the different SWS designs. I also participate in their EM evaluation using Ansoft HFSS and am responsible for designing the waveguide holding structures. I am further involved in the 'cold' S-parameter measurements using Vector Network Analyzers. Other duties include communication with collaborators, academics, and technical support staff.

Module Demonstrator **Oct 2015–Nov 2015**

University of Leeds, UK *also Oct 2014–Nov 2014*

I assisted the Module Leader of the Year 3 Module "RF and Microwave Engineering" at the School of Electronic and Electrical Engineering during example and computer laboratory classes. I provided one-to-one help to students, explaining concepts and methods to solve problems. I supported students when they were learning how to use the CAD software package Microwave Office, needed for their course projects.

Data Centre Technician **Jul 2010–Sep 2010**

Telepoint LTD, Sofia, Bulgaria

As part of a Network Operations Centre team my duties involved day-to-day maintenance of a data centre, cable installation and testing, mounting and commissioning telecommunication equipment. Additionally, I worked with client technical support to diagnose and troubleshoot various issues.

Microwave Design Intern **Jul 2008–Aug 2008**

Cosmo Bulgaria Mobile, Sofia

As an intern in the Microwave Design Department of a mobile phone operator my main responsibility was design and documentation of microwave frequency point-to-point telecommunication links. Additional responsibilities included communication with Network Traffic Planning Department to make sure requirements are well understood and met.

Process Management & Quality Assurance Intern **Jul 2007–Oct 2007**

Bulgarian Telecommunications Company, Sofia

During my summer internship as part of the PM & QA department I participated in the drafting and completion of flowcharts and diagrams representing the business processes of the company, developed in accordance to the eTOM framework. I attended work group meetings between Heads of Departments in order to make sure the flowcharts were accurate and true representation of the actual business practices.

Education

PhD Electronic and Electrical Engineering **2011–2015**

University of Leeds *Expected; Thesis submitted August 2015*

Thesis title *Quantum Barrier Devices for Sub-Millimetre Wave Detection*

The aim of my project was to study the use of a class of quantum barrier devices as a non-linear element in sub-harmonic mixers operating at millimetre and sub-millimetre frequencies. The devices were further investigated for their application in amplifiers at the same frequency ranges. To achieve this I performed circuit modelling and simulations using Agilent ADS and Ansoft HFSS, in addition to semiconductor device modelling using Matlab and Python. I also fabricated devices and planar circuits in a cleanroom environment, and designed waveveguide blocks and circuits in SolidWorks for manufacture by conventional mechanical means. Throughout the entire time I worked in close collaboration with academics, technical support staff and fellow research students, to ensure smooth and correct work flow.

Skills gained I strengthened my analytical and modelling skills as a result of my project, and improved my numerical skills. I had opportunities to practise my presentation and communication skills via attending research conferences and networking with other researchers. By approaching the PhD from a project management perspective, I gained good task and time management skills, never missing a deadline. I kept myself up-to-date with current developments in my field through webinars and subscriptions to journals. I made sure to attend training courses in measurements offered by equipment vendors, and managed to become a Certified LabVIEW Associate Developer. Furthermore, through training courses at the University of Leeds and elsewhere I improved my Python and FORTRAN knowledge and applied that to my project in order to streamline and speed up data processing.

MSc Spacecraft Technology & Satellite Communications **2010–2011**

University College London *Awarded with Merit*

Individual Project *Alfvén – Magnetosphere-Ionosphere Connection Explorers*

I performed a detailed design of the communication and power subsystems for the Alfven-MICE mission, and investigated possibilities for the Attitude Control Subsystem, as well as an alternative mission scenario. To achieve this, I had to thoroughly research previous missions and use the specialised mission design software package STK. I used Matlab for data processing and link budget design for the communication subsystem. *Project Grade: 65*

Group Project *Exploring the Early Solar System: Chariklo Fly-by Mission Concept*

- Appointed Team Leader for Flight Dynamics group
- Tasked with designing a suitable trajectory for spacecraft mission under specified restrictions
- Communicated with other Team Leaders and Project Supervisors
- Successfully presented and argued proposed solution at group project viva

Key Modules

- Space Systems Engineering
- Space Design - Electronic Subsystems
- Space Instrumentation & Application
- Satellite Communications
- RF Circuits & Subsystems
- Communications Systems Modelling

BEng Telecommunications **2005–2009**

Technical University–Sofia *Overall Grade: 5.3/6*

Final Year Project *Vehicular traffic state estimation with Gaussian mixture models*

- Project carried out at Lancaster University as an Erasmus Student
- Work consisted of using Matlab to evaluate the performance of Gaussian Mixture Models and their application to the traffic estimation problem
- Results of the project were presented at the INFORMATIK 2009 conference

Other Course Projects

- Design of a parabolic antenna with a feed horn for microwave point-to-point link, using Ansoft HFSS
- Design of a solid-state microwave amplifier operating at 2.45 GHz, using Ansoft Designer

Key Modules

- Mobile Communications
- RF Communications
- Microwave Circuits & Devices
- Semiconductor Devices
- Antenna and Microwave Technology
- Measurement Techniques in Telecommunications

Additional Skills and Competencies

Specialised Software: Proficient user of Keysight ADS, Ansoft HFSS, NI LabVIEW, SolidWorks, OriginPro, Matlab.
OS & Programming: Windows 7, Linux, LaTeX, Python, C, HTML/CSS, JavaScript, FORTRAN
Specialised Equipment: Oscilloscopes, Network Analyzers, Spectrum Analyzers, Signal Generators, Multimeters
Technical Skills: Soldering, Microwave Measurements, Cleanroom Fabrication

Certificates and Awards

Certified LabVIEW Associate Developer, Licence 100-314-277
European Computer Driving Licence, Licence BCS101808401
LFS101x.2: Introduction to Linux, issued by *edX.org*
Recipient of an EPSRC Doctoral Training Grant
Certificate in Basic Statistics for Researchers

Interests and Activities

CodeClub UK: I planned, started, and ran a Code Club at a local primary school, successfully completing the first term of coding projects with a group of 12 children. I am currently running Code Club taster sessions at Leeds Central Library, with the aim of establishing a regular club in 2016. I also delivered an example session to staff during their Staff Development Day in November 2015.
LUU Sci-Fi & Fantasy Society: Served as **Secretary** from March 2013 to March 2014. My responsibilities included ensuring the smooth running of the society, organising regular and one-off events, maintaining files and documentation, communicating with the Student Union and making sure the rest of the Committee Members were kept up-to-date with everything.
LUU Engineers Without Borders–UK: Elected **IT Coordinator** during the inaugural year of the branch, from September 2012 to September 2013. I developed the first iteration of the society's website, and liaised with the EWB's national IT team. I helped with developing the branch by participating in outreach events.
DIY Electronics: Arduino and Raspberry Pi enthusiast. Made an African Pygmy Hedgehog activity monitoring system, and continue to improve it.
Other Interests: Science and Technology, Board and Card Games, Scientific Computing, Origami, Model Making, World History

Languages

Bulgarian: Native
English: Fluent *IELTS Score: 8.5 (2009), CAE Grade: A (2003)*

Conference Publications

D. Steenson, V. Doychinov, L. Li, E. Linfield, and H. Patel, "W-band sub-harmonic mixers based on quantum barrier devices with low local oscillator power requirements," in *Millimeter Waves and THz Technology Workshop (UCMMT), 2013 6th UK, Europe, China*, Sept 2013.

V. Doychinov and D. Steenson, "Quantum barrier devices for efficient sub-harmonic sub-millimeter wave mixing," in *The 5th UK/Europe-China Workshop on Millimeter Waves and Terahertz Technologies*, Sept 2012.

V. Doychinov, D. Steenson, and H. Patel, "Resonant-tunneling diode based reflection amplifier," in *22nd European Workshop on Heterostructure Technology (HETECH)*, Sept 2013.

L. Mihaylova, A. Gning, V. Doychinov, and R. Boel, "Parallelised gaussian mixture filtering for vehicular traffic flow estimation," in *Informatik 2009*, Sept 2009.

References

Available upon request