

# Laurence Stant | Curriculum Vitæ

16 Usk Way, Didcot, OX11 7SQ, United Kingdom

☎ +44 (0)7754 393379 | ✉ laurence.stant@diamond.ac.uk



## Education

### University of Surrey, NPL

*PhD in Microwave Engineering*

Measurement Uncertainty in Nonlinear Behavioural Models of Microwave and Millimetre-Wave Amplifiers.

**Guildford, UK**

*2014–2019*

### University of Surrey

*BSc.(Hons) Physics with Nuclear Astrophysics, Upper Second Class*

Industrial placement at National Instruments UK and Ireland.

**Guildford, UK**

*2010–2014*

## Experience

### Diamond Light Source Ltd.

*RF Engineer*

Member of the group responsible for continuous operation of the RF systems supporting a 3 GeV synchrotron (8 inductive output tubes (IOTs) @ 60 kW) and injector accelerators (two 3 GHz klystrons @ 20 MW, one 60 kW IOT). Developing and commissioning new FPGA digital low-level RF control systems, RF cavities (normal- and super-conducting). Procurement, installation and commissioning of 80 kW solid-state power amplifiers.

**Harwell, UK**

*Apr 2018–Present*

### National Institute for Standards and Technology (NIST)

*Guest Researcher*

Nonlinear microwave characterisation and further development of a software uncertainty framework.

**Boulder, CO, USA**

*Apr 2017–May 2017*

### Satellite Applications Catapult

*Satellite Engineering Intern*

Full mechanical, electronic and firmware design and development of a picosatellite kit for educational purposes. Delivery of two-day course at British embassy in Warsaw during UKTI trip to Poland in December 2014.

**Harwell, UK**

*Aug 2014–Oct 2014*

### Diamond Light Source Ltd.

*Beamline Scientist Intern*

Development of a closed-cycle humidity chamber for the I22 beamline. I also added EPICS control system integration to an existing pressure cell controlled using LabVIEW, including prototyping interfaces using EDM.

**Harwell, UK**

*July 2013–Sept 2013*

### National Instruments UK and Ireland

*Applications Engineer Intern*

Providing technical support and advice to customers throughout the UK in embedded systems design and automated test, using LabVIEW and other National Instruments products. First intern to obtain CLD certification, write keynote demonstration and present at NIDays conference. I have used this experience to assist controls engineers when visiting science facilities such as HFML in the Netherlands and ISIS at RAL.

**Newbury, UK**

*July 2012–June 2013*

### Met Office

*Instrumentation Scientist Intern*

Design of a cavity icing system for a state-of-the-art ice nuclei counter, using LabVIEW as control software. I also discovered a manufacturing issue in the proposed main drift chamber and worked on a new design for the remainder of my tenure.

**Exeter, UK**

*July 2011–Sept 2011*

## Certifications and Courses

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**National Physical Laboratory:** Level 1 Instrumentation & Sensors Course

**National Instruments:** Certified LabVIEW Developer (expired 2016)

**Coursera:** The Data Scientist's Toolbox

**Radio Society of Great Britain:** Full amateur license

## Organisations

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**IET:** Full Member, working towards CEng

**IEEE:** Full Member, Microwave Theory and Techniques Society

**Radio Society of Great Britain:** Registered assessor, and former club callsign holder

## Languages

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**English:** Native

**French:** Basic

**German:** Basic

## Skills

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Electronic engineering, practical problem solving, technical writing and presenting, teamwork, RF design and simulation, programming (Python, Javascript, C++, VB.NET, R, VHDL), Linux systems administration,  $\text{\LaTeX}$ , web development, equipment maintenance and repair, power distribution, fabrication and prototyping, research, embedded systems, basic FPGA and SDR programming.

## Interests

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Open source hardware and software, STEM outreach, internet-of-things, amateur radio, live music and events, sailing, high-power model rocketry, real ale/home-brewing, steam railways.

## References

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**Dr. Chris Christou:**

*RF Group Leader*

Diamond Light Source

Harwell Science and Innovation Campus

Fermi Avenue, Didcot, OX11 0DE

Email: [chris.christou@diamond.ac.uk](mailto:chris.christou@diamond.ac.uk)

Telephone: +44 (0)1235 448072

**Prof. Nick Ridler:**

*Head of Science, EETL Dept.*

National Physical Laboratory

Hampton Road, Teddington, TW11 0LW

Email: [nick.ridler@npl.co.uk](mailto:nick.ridler@npl.co.uk)

Telephone: +44 (0)2089 773222

## Publications

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H. Votsi, L. Stant, C. Matei, M. Salter, C. Li, N. Ridler, and P. Aaen, "An interferometric characterisation technique for extreme impedance microwave devices," in *94th Automatic Radio Frequency Techniques Group (ARFTG) Microwave Measurement Symposium*, San Antonio, TX, USA, Jan. 2020.

C. Christou, P. Gu, P. Marten, S. Pande, A. Rankin, D. Spink, L. Stant, and A. Tropp, "Overview of superconducting RF cavity reliability at Diamond Light Source," in *19th Int. Conf. RF Superconductivity (SRF'19)*, Dresden, Germany, Jun. 2019.

L. Stant, M. Salter, N. Ridler, D. Williams, and P. Aaen, "Propagating measurement uncertainty to microwave amplifier nonlinear behavioral models," *IEEE Trans. Microw. Theory Techn.*, Nov. 2018.

M. Salter, L. Stant, K. Buisman, and T. Nielsen, "An inter-laboratory comparison of NVNA measurements," in *2018 Integrated Nonlinear Microwave and Millimetre-wave Circuits Workshop (INMMiC)*, Brive-La-Gaillarde, France, Jul. 2018.

L. T. Stant and T. M. Cobb, "Leveraging internet of things developments for rapid prototyping of synoptic displays," in *Proc. 12th International Workshop on Personal Computers and Particle Accelerator Controls (PCaPAC'18)*, Hsinchu City, Taiwan, Nov. 2018.

L. Stant, P. Aaen, and N. Ridler, "Evaluating residual errors in waveguide VNAs from microwave to submillimetre-wave frequencies," *IET Microwaves Antennas Propag.*, vol. 11, no. 3, pp. 324–329, Feb. 2017.

L. Stant, P. Aaen, and N. Ridler, "Comparing methods for evaluating measurement uncertainty given in the JCGM 'evaluation of measurement data' documents," *Measurement*, vol. 94, pp. 847–851, Dec. 2016.

L. Stant, N. Ridler, and P. Aaen, "Evaluating residual errors in waveguide network analysers from microwave to submillimetre-wave frequencies," in *IET Colloquium on Millimetre-Wave and Terahertz Engineering & Technology 2016*. Institution of Engineering and Technology, Mar. 2016.