# Laurence Stant | Curriculum Vitæ

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## Education

**University of Surrey, NPL** **Guildford, UK**
*PhD in Microwave Engineering* *2014–2019*
Measurement Uncertainty in Nonlinear Behavioural Models of Microwave and Millimetre-Wave Amplifiers.

**University of Surrey** **Guildford, UK**
*BSc.(Hons) Physics with Nuclear Astrophysics, Upper Second Class* *2010–2014*
Industrial placement at National Instruments UK and Ireland.

## Experience

**Diamond Light Source Ltd.** **Harwell, UK**
*Senior Diagnostics Engineer* *Oct 2021–Present*
Design and development of electron beam position monitor systems, real-time RF feedback systems and MicroTCA hardware for the next generation of the UK's synchrotron particle accelerator.

**Diamond Light Source Ltd.** **Harwell, UK**
*RF Engineer* *Apr 2018–Oct 2021*
Member of the group responsible for continuous operation of the multi-megawatt RF systems supporting a 3 GeV synchrotron. Developing and commissioning new FPGA digital low-level RF control systems, RF cavities (normal- and super-conducting). Specification, installation and commissioning of 80 kW solid-state power amplifiers and their PLC interlock control systems.

**National Institute for Standards and Technology (NIST)** **Boulder, CO, USA**
*Guest Researcher* *Apr 2017–May 2017*
Nonlinear calibration artefact characterisation and further development of a software uncertainty framework.

**Satellite Applications Catapult** **Harwell, UK**
*Satellite Engineering Intern* *Aug 2014–Oct 2014*
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.

**Diamond Light Source Ltd.** **Harwell, UK**
*Beamline Scientist Intern* *July 2013–Sept 2013*
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.

**National Instruments UK and Ireland** **Newbury, UK**
*Applications Engineer Intern* *July 2012–June 2013*
Providing technical support and advice to customers in embedded systems design and automated test. I have used this experience to assist controls engineers at HFML in the Netherlands and ISIS at RAL, UK.

**Met Office** **Exeter, UK**
*Instrumentation Scientist Intern* *July 2011–Sept 2011*
Design of a cavity icing system for a novel airborne ice nuclei counter, using LabVIEW as control software.

## Certifications and Courses

**Association for Project Management**: APM Project Fundamentals Qualification (PFQ)

**Siemens PLC**: TIA Portal Programming 1 Course (TIA-PRO1)

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

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

**IPAF**: Category 3B (cherry picker) license (expired)

**PLC Dojo (Udemy)**: PLC Fundamentals, Applied Logic

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

## Organisations

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

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

## Languages

**English**: Native

**French**: Basic

**German**: Basic

## Skills

Electronic engineering, practical problem solving, technical writing and presenting, teamwork, RF design and simulation, PLC control systems (Siemens, Allen-Bradley, Koyo DirectLOGIC), programming (Python, Javascript, C, C++, VB.NET, R, VHDL), Linux systems administration, LaTeX, web development, equipment maintenance and repair, power distribution, fabrication and prototyping, research, embedded systems, basic FPGA and SDR programming.

## Interests

Open source hardware and software, STEM outreach, internet-of-things, amateur radio, live music and events, sailing, high-power model rocketry, preserved railways and signalling control systems.

## References

**Dr. Lorraine Bobb**:
*Diagnostics Group Leader*
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**Prof. Nick Ridler**:
*Head of Science, EETL Dept.*
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## Publications

L. Stant, M. G. Abbott, L. Bobb, C. Bloomer, E. Perez-Juarez, and A. Rose, "Beam position monitoring using MicroTCA for Diamond-II," in *11th DESY MicroTCA Workshop*, Hamburg, Germany, Dec. 2022.

L. Stant *et al.*, "Diamond-II electron beam position monitor development," in *Proc. 11th Int. Beam Instr. Conf. (IBIC'22)*, Krakow, Poland, Sep. 2022.

R. Walker *et al.*, "Diamond-II technical design report," https://www.diamond.ac.uk/Diamond-II.html, Diamond Light Source, Tech. Rep., Aug. 2022.

L. Stant, M. Salter, and D. Singh, *Metrology for 5G and emerging wireless technologies*. The Institution of Engineering and Technology, Nov. 2021, ch. Nonlinear measurements for 5G devices and the associated uncertainties.

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.