

Alexander Spracklen
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Dear Recruiting Manager,

I am writing to apply for the position of Principal Systems Engineer. Please find enclosed my CV for your consideration. Since October 2017 I have been a Systems Engineer at Leonardo and I believe that the skills I have developed during this time would make me a valuable member of the team.

Since joining the company I have been involved in a number of projects that have given me exposure to a diverse variety of system engineering roles. In my current position I wrote the Calibration Mode Control Document for the ECRS Mk II radar system, a project that gave me valuable understanding of the hardware side of the radar system. In this work I gained experience in not only designing different calibration schemes but also in interpreting and documenting how performance specifications create requirements on the different hardware components in the system.

Since joining Leonardo a substantial proportion of my time has been simulating multi-channel antennas and algorithms and I believe this experience to be a valuable asset given the increasingly multi-channel nature of radar systems. In this work I built an application that would produce synthetic data and allow the performance of different STAP algorithms to be benchmarked. This model provided an end-to-end radar simulation from clutter generation through to automated target detection. This model has been used in producing real-world performance specifications.

In my current role I am designing the Counter-Stealth Mode for the next generation of radar technology. This work involves a wide-range of different skills all of which I believe would be useful in the principal systems engineer role. Firstly, I have been involved in defining how this mode should be used and what performance specifications it should meet. Secondly, I have identified, implemented and validated novel signal processing techniques that will increase the performance of the mode. Thirdly, I have been working with team members to design software and/or firmware solutions that can efficiently implement the desired techniques. Finally, my role has been understanding and documenting how to fit these techniques together into a mode that can meet the performance specifications.

The opportunity to work on the next generation of radar technology is one that appeals to me greatly. I believe the technical skills I have developed throughout my PhD and my time at Leonardo have give me the ability to tackle the challenges that face the Tempest Programme. Thank you for your time and consideration.

Yours faithfully,
Alexander Spracklen

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I am a Systems Engineer at Leonardo MW. I have a PhD from Heriot-Watt University and a first class Masters degree in theoretical physics from the University of St. Andrews. My education and career in industry have given me a wide range of technical and analytical skills, along with extensive experience in teamwork and presenting technical information in a clear and concise manner. I am looking forward to the opportunity to apply these abilities in developing a next-generation radar system.

CAREER

Systems Engineer with Leonardo MW (Oct 2017-present)

EDUCATION

Heriot-Watt University, UK (2013 - 2017)

PhD in Theoretical Physics (Thesis: Investigation of Lattice Dynamics using Waveguide Arrays).
Winner of the Heriot-Watt Engineering and Physical Sciences 2nd year postgraduate research prize.

The University of St. Andrews, UK (2008 - 2013)

Masters (1st Class Honours with Distinction) in Theoretical Physics.
Recipient of final year theoretical physics class medal and the prize for best final year project.

The Gordon Schools, Huntly, Aberdeenshire, UK (2002 - 2008)

Recipient of School Dux for academic excellence.
3 Advanced Highers: Chemistry (A), Maths (A), Physics (A)

EXPERIENCE

Leonardo MW- Systems Engineer (Oct 2017-present)

- Developed GUI-based STAP model. Model has been used in several advanced research projects and in developing performance specifications for real-world radar systems.
- Wrote Calibration Mode Control Document. Developed experience of defining requirements for hardware components and using DOORS Requirement Management tool.
- Developing next-generation radar mode utilising advanced signal processing techniques.

Heriot-Watt University - PhD (Sept 2013 - Sept 2017)

- Thesis involved extensive technical work including both paper based analytical work and the development of numerical codes in Mathematica and Matlab.
- Joint first author of a number of well-cited papers that have been published in high profile scientific journals.
- Extensive experience as a teaching assistant with work including leading tutorials and 1-to-1 teaching. Substantial outreach work at science festivals and in schools.

University of St. Andrews – Summer internship (June 2012 – Sept 2012)

- Successfully applied to the prestigious Carnegie Foundation for funding.

SKILLS

Team work

- During my PhD worked in close collaboration with an international scientific team and gained extensive knowledge in the planning, maintaining and organising of a project.
- Heavily involved in analysing experimental data from international collaborators and helping them to diagnose and solve problems arising from the experimental setup.

Modelling and analytical work

- During PhD and industry work have gained extensive experience in numerical modelling and data analysis.
- Substantial experience in developing mathematical models to describe physical phenomena and experimental results.
- Experience of developing algorithms and simulations using Matlab.

Communication

- Have experience writing and maintaining technical documents using Doors and Dimensions software tools.
- Have given a number of technical talks describing my doctoral work at a variety of domestic and international conferences.
- Have designed and presented numerous posters on my work to a wide range of audiences.

PUBLICATIONS

● Eastham, P.R., **Spracklen, A.** and Keeling, J., 2013. Lindblad theory of dynamical decoherence of quantum-dot excitons. *Physical Review B*, 87(19), p.195306.

● Mukherjee, S., **Spracklen, A.**, Choudhury, D., Goldman, N., Öhberg, P., Andersson, E. and Thomson, R.R., 2015. Observation of a localized flat-band state in a photonic Lieb lattice. *Physical Review Letters*, 114(24), p.245504.

● Mukherjee, S., **Spracklen, A.**, Choudhury, D., Goldman, N., Öhberg, P., Andersson, E. and Thomson, R.R., 2015. Modulation-assisted tunneling in laser-fabricated photonic Wannier–Stark ladders. *New Journal of Physics*, 17(11), p.115002.

● Mukherjee, S., Valiente, M., Goldman, N., **Spracklen, A.**, Andersson, E., Öhberg, P. and Thomson, R.R., 2016. Observation of pair tunneling and coherent destruction of tunneling in arrays of optical waveguides. *Physical Review A*, 94(5), p.053853.

● Mukherjee, S., **Spracklen, A.**, Valiente, M., Andersson, E., Öhberg, P., Goldman, N. and Thomson, R.R., 2017. Experimental observation of anomalous topological edge modes in a slowly driven photonic lattice. *Nature Communications*, 8.