



# David Sinden

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home: [djps.github.io](https://djps.github.io) github: [djps](https://github.com/djps) linkedin: [sindendavid](https://www.linkedin.com/in/sindendavid) xing: [david\\_sinden](https://www.xing.com/profile/David_Sinden)  
[david.sinden@gmail.com](mailto:david.sinden@gmail.com)  
Bremen, British Citizen with permanent residency in Germany, 27.12.1981

Innovative applied mathematician with a strong track record in scientific computation, with over 15 years' experience working in applied research with a focus on medical interventions, internationally recognised expert on ultrasound simulation for therapy and diagnosis. Looking for new challenges in modelling to support medical device development, open to relocation.

- Formulates realistic yet tractable mathematical models, and deployable, tested and documented simulations. Excellent coding and software development skills developed through clinical/commercial deployment, satisfying ISO 13485/IEC 62304 standards.
- Communication skills refined through working in multi-disciplinary, international teams at the interface of academic research and industry; lecturing and teaching at universities; delivering invited presentations at international conferences. Experienced in leading a managing complex interdisciplinary projects, as well as working in a team.
- 17 peer-reviewed journal papers (over 250 citations), a book chapter, acquisition of grants (over 500,000€), 12 invited presentations, industrial supervisor to three PhD students, an MSc student, and maintainer of widely used open source code, k-wave-python

## Professional Experience

Nov 2019–	<b>Fraunhofer-Institut für Digitale Medizin MEVIS</b> <i>Senior Research Scientist — Modelling &amp; Simulation Group</i> Skills: python, VTK, ultrasound modelling, treatment planning, software development, elastography, uncertainty analysis <ul style="list-style-type: none"><li>• Developed large-scale simulations for microwave and ultrasound ablative therapies by architecting and parallelizing high-performance numerical methods, enabling clinically relevant treatment planning at scale.</li><li>• Engineered fast ultrasound beamforming algorithms and a transcranial acoustic/elastic propagation simulator by leveraging GPU-accelerated signal-processing techniques, delivering real-time imaging performance and improved diagnostic accuracy.</li></ul>	Bremen, Germany
Jun 2014–Nov 2019	<b>National Physical Laboratory</b> <i>Senior Research Scientist — Ultrasound &amp; Underwater Acoustics Group</i> Skills: python, matlab, Finite Element Analysis (COMSOL, FeniCS), ultrasound modelling, signal processing <ul style="list-style-type: none"><li>• Established measurement-based simulation for nonlinear propagation through complex media by integrating empirical measurements into high-fidelity nonlinear computational models, enabling accurate predictions and incorporation into the IEC standard 63587.</li></ul>	Teddington, United Kingdom
Jun 2011– Jun 2014	<b>Institute of Cancer Research/The Royal Marsden Hospital</b> <i>Post Doctoral Research Associate — Therapeutic Ultrasound Group/Joint Department of Physics</i> Skills: python, VTK, ultrasound modelling, treatment planning, software development <ul style="list-style-type: none"><li>• Developed an ultrasound-guided high-intensity focused ultrasound treatment planning system with a multi-element phased-array by integrating real-time ultrasonic imaging and adaptive beamforming control, enabling precise focus steering, dynamic treatment adjustments, and enhanced therapy safety.</li></ul>	Sutton, United Kingdom
Jun 2008– Jun 2011	<b>University College London</b> <i>Post Doctoral Research Associate — Ultrasound Group/Department of Mechanical Engineering</i> Skills: mathematical modelling, Fortran, differential equations <ul style="list-style-type: none"><li>• Investigated the influence of cavitation on therapeutic ultrasound by employing numerical simulations and analytical modeling, enabling accurate prediction of cavitation thresholds and optimization of treatment efficacy and safety.</li></ul>	London, United Kingdom

## Education

2004–2008	<b>PhD - Dynamical Systems</b>	University College London, United Kingdom
2003–2004	<b>MSc - Modern Applications of Mathematics</b>	University of Bath, United Kingdom
2000–2003	<b>BSc - Mathematics with Applied Math./Math. Physics</b>	Imperial College London, United Kingdom

# Auszeichnungen & Wertschätzungsindikatoren

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2020	<b>IEEE IUS Challenge on Ultrasound Beamforming with Deep Learning (CUBDL)</b> Joint first place in international machine learning challenge applied to ultrasound image reconstruction (2020)
2015-	<b>International Expert</b> Member IEC/BSI Technical Committee 87 (Ultrasonics), in an individual capacity, associate IMA, full member IOP
Various	<b>Enhanced Scholarships</b> Enhanced funding for MSc (2004), PhD (2008) and post-doctoral work (2014) from UK funding agency EPSRC

# Skils

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<b>Programming:</b> python, C++, Matlab, OpenCL	<b>Libraries:</b> ITK, VTK, boost, eigen
<b>DevOps:</b> git, svn, github, gitlab, google test, pytest, make, cmake, visual studio	<b>Computation:</b> FEniCS, Comsol
<b>Languages:</b> Englisch (Native), Deutsch (B2.1) with permanent residency	