Professor Simon Hands FLSW – Curriculum Vitæ

Current Position Professor of Physics, Swansea University
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Education

June 1983:	B.A. (Hons.) 1st class in Physics and Theoretical Physics, University of Cambridge.
Sep 1986:	Ph.D. in Theoretical Physics, Edinburgh University Supervisors: Professor D.J. Wallace, Professor P.W. Higgs.

Career to Date

Oct 2020:	Head of Department of Physics, Swansea University
Oct 2015-Sep 2016:	Royal Society Leverhulme Trust Senior Research Fellow
Mar-Dec 2014:	Deputy Head, College of Science, Swansea University
Apr 2013:	Elected Fellow of the Learned Society of Wales
Nov 2011:	Director of Research, College of Science, Swansea University
Oct 2009:	Physics Programme Director, Swansea University
Oct 2003:	Personal Chair, U.W. Swansea
Oct 2002-Sep 2005:	PPARC Senior Research Fellow, U.W. Swansea
Oct 1997:	Senior Lecturer (97), then Reader (00), U.W. Swansea
Oct 1993-Apr 1998:	PPARC Advanced Fellow, Dept. of Physics, U.W. Swansea
Apr 1992-Sep 1993:	CERN Fellow, Theory Division, CERN, Geneva
Oct 1991:	SERC Advanced Fellow, University of Glasgow
Sep 1990:	PDRA, Dept. of Physics and Astronomy, University of Glasgow
Aug 1988:	PDRA, Dept. of Physics, University of Illinois at Urbana-Champaign
Oct 1986:	PDRA, Dept. of Theoretical Physics, University of Oxford

Standing Committees

Organising Committee for the UK Theory Institute (1996-99)
PPARC's Project Peer Review Panel (formerly PPESP) (1999-2002)
Project Management Committee of ALICE UK (2000-05)
UK CERN Fellowships Panel (2007-10, as **chair**)
STFC Particle Physics Grant Panel (Theory) (2009-17, **chair** from 2011)
STFC Computing Advisory Panel (2009-13)
The Scientific Board of the European Centre for Theoretical Nuclear Physics and Related Areas (ECT*), Trento, Italy (2008-12, **chair** from 2010)
International Advisory Committee for the annual *Extreme QCD* workshop (2008-14)
Project Board of the *DiRAC* HPC computing facility (from 2010, **co-chair** from 2017)
Editorial Board of *European Journal of Physics A* (2010-17)
Extern Examiner in Mathematical Physics, Maynooth University, Ireland (2013-17)

Ad Hoc Panels

The particle physics panel of PPARC Long Term Science Review prepared for CSR2000
PPARC Fellowship Panel (2001), and STFC Fellowship Panel (2008 and 09)
Panel report *Forefront Questions in Nuclear Science and the Role of High Performance Computing* for US Department of Energy (2009)
Comparative Review of university theory for US Department of Energy, (2012 and 2013)
Joint EPSRC/STFC panel defining remits in Theoretical and Mathematical Physics (2013)
STFC Review of Particle Physics Phenomenology (2015)
PPAN subpanel for STFC Balance of Programme Review (2016)
High Energy Physics Review Panel for Academy of Finland (2017)
STFC MoHE Newton Fund Malaysia Panel (2018)
STFC Review of Consolidated Grant Scheme (2019)

Main Research Grants

Jan 1994: PPARC Research Grant of 500 cpu hours on Cray Y-MP at DRAL
Lattice Studies of QCD and QED.

Oct 1997: local coordinator for EU TMR network, value €132k
Finite Temperature Phase Transitions in Particle Physics

Apr 1998: UK Fundamental Physics Consortium (PI Stephen Hawking, Cambridge)
JREI bid brings SGI Origin 2000 computer to Swansea, £140k.

Oct 1999: Leverhulme Trust grant for £71k (PI Sarben Sarkar, KCL)
Non-abelian Gauge Interactions in Strongly Correlated Electron Systems

Apr 2000: Co-Investigator on PPARC HPC grant for £360k
UKQCD's Exploitation of and Familiarisation with APE Technology

Oct 2002: PPARC Senior Research Fellowship, £106k

Aug 2004: Visiting PPARC Fellowship, £13k (Seyong Kim, Sejong University, S. Korea)

Jul 2007: Principal Organiser of 6-month programme *Strong Fields, Integrability & Strings*, Isaac Newton Institute for Mathematical Sciences, Cambridge.

Nov 2009: PI for UKQCD STFC High Performance Computing capital award, £6.8M

Nov 2011: EU Marie Curie award *QCD Spectral Function from both Euclidean Light Cone Transverse Lattice QCD* for £108k to support fellow Dipankar Chakrabarti

Oct 2015: Royal Society Leverhulme Trust Senior Research Fellowship
Numerical tools for Critical Physics in 3d Theories of Fermions, £46k

Apr 2019: DiRAC RAC *Spontaneous Symmetry Breaking in the 3d Thirring Model*
1M core hours on Cambridge DI facility

I have been co-investigator on all main grants awarded to Swansea Theoretical Particle Physics Group (originally a PPARC Rolling Grant, currently a STFC Consolidated Grant)

Miscellaneous

One of six winners of a bottle of vintage champagne from the Minister of Science, William Waldegrave, for an A4 description of the Higgs Boson (1993). On 12/7/12 I participated in Peter's first televised post-discovery interview (https://youtu.be/HYOsRPlW6Ng).
The American Physical Society has named me as an Outstanding Reviewer for 2021 for my work on behalf of *Physical Review*.

Conference Organisation
Strings, Gauge Fields and Duality, Swansea (2004)
Lattice 2005, Trinity College Dublin (2005)
Extreme QCD, Swansea (2005) and Plymouth (2016)
Exploring QCD: Deconfinement, Extreme Environments & Holography, Cambridge (2007)
New Frontiers in Graphene Physics, ECT* Trento (2010)
Strong & Electroweak Matter, Swansea (2012)
Strangeness in Quark Matter, Birmingham (2013)
DiRAC Science Day, Swansea (2018)
Relativistic Fermions in Flatland: theory and application, ECT* Trento, (2020 → 2021)

Research Students
I have supervised 8 PhD students (7 Physics, 1 Computer Science), 1 MPhil and 2 MSc students to completion. I am regularly invited to examine Ph.D. candidates within the UK, and have also examined theses from Denmark, Finland and Germany.
In 2006 I co-ordinated a Doctoral Training Programme *Computational Techniques in Strongly Interacting Systems*, ECT* Trento
I am Swansea lead in an STFC-supported Bristol-Cardiff-Swansea *Centre for Doctoral Training in Data Intensive Science*, training 24 PGR students.

Principal Publications since 2005

with C. Allton, M. Döring, S. Ejiri, O. Kaczmarek, F. Karsch, E. Laermann and K. Redlich, *Thermodynamics of Two Flavor QCD to Sixth Order in Quark Chemical Potential*, Phys. Rev. **D71**:054508 (2005).

with G. Aarts, C. Allton, J Foley, S. Kim, *Spectral Functions at Small Energies and the Electrical Conductivity in Hot, Quenched Lattice QCD*, Phys. Rev. Lett. **99**:022002 (2007)

with W.Armour, C.G. Strouthos, *Quantum Critical Behaviour in a Graphene-like Model*, Phys. Rev. **B78**:165423 (2008); *Monte Carlo Simulation of the Semimetal-Insulator Phase Transition in Monolayer Graphene*, Phys. Rev. **B81**:125105 (2010)

with S. Kim, J.I. Skullerud, *A Quarkyonic Phase in Dense Two Color Matter?* Phys. Rev. **D81**:091502 (2010)

with S. Cotter, P. Giudice, J.I. Skullerud, *Towards the Phase Diagram of Dense Two-Color Matter*, Phys. Rev. **D87** 034507 (2013).

with A. Amato, G. Aarts, C. Allton, P. Giudice and J.I. Skullerud, *Electrical Conductivity of the Quark-Gluon Plasma across the Deconfinement Transition*, Phys. Rev. Lett. **111** 172001 (2013); *Electrical Conductivity and Charge Diffusion in Thermal QCD from the Lattice*, JHEP**02**(2015) 186.

Towards Critical Physics in 2+1d with U(2N)-Invariant Fermions, JHEP**1611** (2016) 015.

Critical Flavor Number in the 2+1d Thirring Model, Phys. Rev.**D99** (2019) 034504.

I have published 93 papers in refereed journals, averaging 56+ cites per paper, and a further 79 non-refereed publications/conference proceedings. According to INSPIRES my publications have accrued 6100+ citations with h=37.