
CURRICULUM VITAE

PERSONAL INFORMATION

PROFESSOR GERT AARTS FLSW
Department of Physics – College of Science – Swansea University

PROFESSIONAL EXPERIENCE

Permanent position at the Physics Department of Swansea University since September 2004, as

Director, UKRI Centre for Doctoral Training in Artificial Intelligence, Machine Learning & Advanced Computing (AIMLAC)	since 2019
Head of the Particle Physics and Cosmology Theory (PPCT) group	since 2017
Royal Society Wolfson Research Merit Award holder	2013 – 2018
Leverhulme Research Fellow	2013 – 2015
Professor	since 2011
Lecturer/Senior Lecturer/Reader	2004 – 2011
PPARC/STFC Advanced Fellow	2004 – 2009

Postdoctoral research positions

Physics Department, The Ohio State University, United States	2001 – 2004
Institute for Theoretical Physics, Heidelberg University, Germany	1999 – 2001

EDUCATION

<i>Ph.D. studies in Theoretical Physics</i> , Utrecht University, the Netherlands	1995 – 1999
<i>Undergraduate physics</i> , Utrecht University, the Netherlands, <i>cum laude</i>	1990 – 1995

AWARD

Fellow of the Learned Society of Wales	since 2019
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RESEARCH INTERESTS

Theoretical particle physics, high-energy physics, in particular Quantum Chromodynamics (QCD) under extreme conditions, QCD phase diagram, sign problem at nonzero density, lattice QCD, machine learning, high-performance computing, quantum dynamics out of equilibrium, ...

PANEL MEMBERSHIP, ADVISORY PANELS

- Chair (2017-2020) and member (2016-2017) of Scientific Board, European Centre for Theoretical Studies in Nuclear Physics and Related Areas (ECT*), Trento, Italy
- Member, STFC Particle Physics Grants Panel (Theory) (2020-2023)
- Chair of the Research Board of the EU Marie Skłodowska-Curie ITN Europlex (since 2019)

- Member, Royal Society Newton International Fellowships Committee (2018-2023)
- Member, Joint Scientific Council FAIR/GSI (2018-2022)
- Working group leader, EU COST network THOR (2016-2020)
- Member, STFC Skills and Engagement Advisory Board (2017-2018)
- Member, Ken Wilson Lattice Award evaluation panel (2017-2018)
- Member, Royal Society Newton Research Fellows Enhancement Award Panel (2017)
- Chair, Institutional Review of Research Performance, Department of Physics, National University of Ireland Galway (2015-2016)
- Chair, British Council/Newton Fund Panel for Science and Engineering: Research and Institutional Links (2013-2016)
- Member, STFC Advanced Fellowship panel (2010-2012) interview panel (2014)
- Member, International Advisory Committees of the Conference Series: *Strong and Electroweak Matter* (since 2013), *SIGN* (founding member), *XQCD* (since 2015), *Lattice* 2013 & 2019

GRANTS AND AWARDS AS PI

- UKRI Centre for Doctoral Training in Artificial Intelligence, Machine Learning & Advanced Computing, Director of consortium cdt-aimlac.org, 2019-2028, £5.5M
- STFC Consolidated Grant, theory group grant for the Swansea-Plymouth Consortium:
 - *The Universe at Extreme Scales*, 2020-2023, £1,256,963
 - *Fields, Strings and Lattices: From the Inflationary Universe to High-Energy Colliders*, 2017-2020, £985,332
- Royal Society Wolfson Research Merit Award, *An exploration of the strong interaction under extreme conditions*, 2013-2018
- Leverhulme Research Fellow, *Exploring the strong interaction under extreme conditions*, 2013-2015, £44,245
- STFC Visiting Researcher Grant, *How hot will it get? Heavy quarks in the quark-gluon plasma*, host for Prof Seyong Kim, Sejong University, Seoul, Korea, 2011-2012, £8,200
- Royal Society International Travel Grant, *Can complex Langevin dynamics evade the sign problem?*, conference support *XXVII International Symposium on Lattice Field Theory (Lattice 2009)*, Beijing, China, 2009, £2,000
- Royal Society International Incoming Short Visit, *Strongly interacting matter under extreme conditions*, host for Prof Seyong Kim, Sejong University, Seoul, Korea, 2007, £1,500
- Royal Society Research Grant, *Dynamics of strongly interacting matter in expanding geometries: to thermalize or not to thermalize*, equipment grant for a computer cluster, 2006, £7,500
- PPARC Advanced Fellowship, *Nonequilibrium quantum fields: from the early Universe to heavy ion collisions*, 2004-2009, £205,800
- Ohio State University Postdoctoral Fellowship, 2001-2002

GRANTS AS CO-I

- EU Marie Skłodowska-Curie Innovative Training Network: EUROPLEX, Di Renzo (PI), Aarts, Allton, Lucini et al, 2018-present
- DiRAC STFC High Performance Computing Grants, Allton (PI), Aarts et al, 2012-present

- PRACE High Performance Computing Grants, Allton (PI), Aarts et al, 2012-present
- STFC Consolidated Grant, *New ideas in gauge, string and lattice theory*, Shore (PI), Aarts et al, 2014-2017, £1,053,685
- STFC Consolidated Grant, *Gauge and string theories in the LHC era*, Shore (PI), Aarts et al, 2011-2014, £1,057,866
- STFC High Performance Computing Grant, *Computing resources and software support for the UKQCD physics programme*, Hands (PI), Aarts et al, 2009-2013, £1,200,000
- STFC Rolling Grant, *Quantum field theory: new ideas in strings, lattice and LHC physics*, Shore (PI), Aarts et al, 2008-2013, £2,409,466
- EPSRC HPC Grant, *Software development for UKQCD*, Hands (PI), Aarts et al, 2007-2009, £15,626
- PPARC Rolling Grant, *Supersymmetric gauge theories, strings and lattice field theories*, Shore (PI), Aarts et al, 2005-2010, £1,046,526

RESEARCH COLLABORATION

- Founding Member of SIGN workshop series (Italy 2009, Germany 2012, 2014, Hungary 2015, USA 2017, Germany 2018, Denmark 2019, main organiser in 2009 and 2014)
- Founding Member of FASTSUM collaboration, in the field of high-performance computing and lattice QCD, with members in Ireland, Italy, Denmark and South Korea, since 2011

CONFERENCES, WORKSHOPS AND SCHOOLS ORGANISED

- *Dublin 2020 - EuroPLEx progress workshop*, online workshop, 30 November-3 December 2020
- *High-energy physics at ultra-cold temperatures*, ECT* workshop, Trento, Italy, 10-14 June 2019
- *THOR meets THOR*, COST THOR workshop, Lisboa, 11-14 June 2018
- *QCD under extreme conditions*, ECT* Doctoral Training Programme, Trento, Italy, 28 May-22 June 2018
- *Hadrons under extreme conditions*, COST THOR workshop, Swansea, 12-14 September 2017
- *34th International Symposium on Lattice Field Theory*, Southampton, 24-30 July 2016
- *Heavy quarks: a continuing probe of the strong interaction*, Royal Society International Scientific seminar at Chicheley Hall, 28-29 January 2015
- *SIGN 2014*, international EMMI workshop at GSI, Darmstadt, Germany, 18-21 February 2014
- 10th International Conference on *Strong and Electroweak Matter (SEWM2012)*, Swansea University, 9-13 July 2012
- *Gauge Field Dynamics In and Out of Equilibrium*, six-week programme at the Institute for Nuclear Theory (INT), Seattle, USA, 5 March-13 April 2012
- *Sign Problems and Complex Actions*, ECT* workshop, Trento, Italy, 2-6 March 2009
- *A passion for lattices and fields*, a day in honour of Prof. Jan Smit, University of Amsterdam, the Netherlands, 26 August 2008
- *Extreme QCD*, international workshop at Swansea University, 2-5 August 2005. Editor (with Hands) of the Proceedings.

POSTGRADUATE STUDENT SUPERVISION

- Dimitrios Bachtis *Machine learning for dense matter*, with Lucini, 2019-2022 (ongoing)
 - Dawid Stasiak, *Baryons under extreme conditions*, with Burns, 2019-2022 (ongoing)
 - Sam Ofler, *Extreme QCD and machine learning*, 2017-2021 (ongoing)
 - Felipe Attanasio, *A study of QCD at finite density using complex Langevin dynamics*, 2014-2017 (completed)
 - Kristi Praki, *Topics in matter under extreme conditions*, 2012-2016 (completed)
 - Lorenzo Bongiovanni, *Numerical methods for the sign problem in lattice field theory*, 2012-2015 (completed)
 - Frank James, *Complex Langevin dynamics as a cure for the sign problem*, 2008-2012 (completed)
 - Nathan Laurie, *Nonequilibrium quantum field dynamics from the two-particle irreducible effective action*, 2004-2008 (completed)
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POSTDOCTORAL COLLABORATION, SWANLAT (ALL STFC FUNDED)

- Ryan Bignell, *Hot and dense QCD*, 2020-2022
 - Aleksandr Nikolaev, *Hot and dense QCD*, 2018-2020
 - Jonas Glesaaen, *Hot and dense QCD*, 2016-2018
 - Benjamin Jäger, *Hot and dense QCD*, 2013-2016
 - Pietro Giudice, *Hot and dense QCD*, 2010-2013
 - Justin Foley, *Spectral functions in hot QCD*, 2005-2007
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PROFESSIONAL SERVICES

Referee for Physical Review Letters, Physical Review C, D & X, Journal of High Energy Physics, Nuclear Physics A & B, Physics Letters B, European Physical Journal A & C, Brazilian Journal of Physics, International Journal of Modern Physics B, . . .

Grant application referee for PPARC, STFC, EPSRC, Royal Society, European Commission's Marie Curie Fellowships, PRACE, Deutsche Forschungsgemeinschaft, Austrian Science Fund, Swiss National Science Foundation, Cyprus Research Promotion Foundation, U.S. National Science Foundation, U.S. Department of Energy, Natural Sciences and Engineering Research Council of Canada, Academic Review Committee of the Chinese University of Hong Kong, . . .

PUBLICATIONS AND PRESENTATIONS

134 publications (61 published in refereed journals, 73 published in proceedings), with over 5300 citations and an h-index of 44, see inspirehep.net

For presentations, see pyweb.swan.ac.uk/~aarts/papers.html for details