Curriculum vitae

Personal information

Full name:	Jabir Ali Ouassou		
Date of birth:	1990–12–19	Sex:	Male
Nationality:	Norwegian		
Languages:	Norwegian (native), English (fluent), French (intermediate), Korean (beginner), Arabic (beginner), Russian (beginner).		
Researcher profiles:	Google Scholar: Jabir Ali Ouassou GitHub: jabirali ORCID: 0000-0002-3725-0885		

Employment

Year	Description
2023–	Associate Professor. Department of Computer Science, Electrical Engineering and Mathematical Sciences, Western Norway University of Applied Sciences, Norway.
2021–2023	Postdoctoral Fellow. Center for Quantum Spintronics, NTNU, Norway.
2019–2021	Research Scientist. Department of Gas Technology, SINTEF Energy Research, Norway.
2008–2009	Summer jobs as a Linux system administrator. Norwegian Mapping Authority, Norway.

Education

Year	Description
2015–2019	PhD: “Manipulating superconductivity in magnetic nanostructures in and out of equilibrium”. Center for Quantum Spintronics, NTNU, Norway.
2010–2015	MSc: “Density of states and critical temperature in superconductor/ferromagnet structures with spin-orbit coupling”. Department of Physics, NTNU, Norway.
2013–2014	One-year exchange program. Department of Physics, KAIST, South-Korea.
2009–2010	One-year study program. Department of Chemistry, NTNU, Norway.

Awards

Year	Description
2020	Yara’s Birkeland Prize – a 100,000 NOK national award for the best PhD thesis in Physics.
2009	National finalist in the Chemistry Olympiad for high school students in Norway.

Track record

As of June 2023, I have a career length of 4 years since my PhD defense and have in that time accrued an **h-index of 11** and an **i10-index of 13**. As can be seen from my complete academic track record, my publication record includes over 20 peer-reviewed journal papers in addition to conference papers, technical reports, a book chapter, and open-source scientific software.

Teaching experience

Year	Description
2023	Lecturer for the master-level course "Quantum Theory of Solids". Duties included weekly lectures, preparing lecture notes and assignments, and creating and grading the exam.
2022	Occasional substitute lecturer for the bachelor-level physics courses "Quantum Mechanics I" and "Quantum Mechanics II".
2015–2016	Lab assistant in the introductory electronics courses "Measurement techniques" and "Instrumentation" for 3rd-year students at NTNU as part of my PhD teaching duties.
2013	Teaching assistant in "Introduction to quantum physics", a compulsory course for 2nd-year students of physics at NTNU. I also wrote a 50-page compendium that summarizes the curriculum, which is sold and distributed by Nabla – a student association at NTNU.
2011–2015	Teaching assistant in various mathematics courses at NTNU: "Calculus I", "Basic Calculus II", and "Statistics with applications".
2010	Lab assistant in the course "General chemistry" for 1st-year chemistry students.

Supervision experience

Year	Description
2022–2023	Main supervisor for a master student in physics. Thesis: "Paramagnetic Meissner effect and non-equilibrium vortices in superconductor/normal-metal structures." Grade: A.
2019–2021	Co-supervisor for three Summer Researchers at SINTEF Energy Research. I was the *de facto* main supervisor for programming-related aspects of their projects while another supervisor took the lead on the domain-specific aspects.

Other pedagogical experiences

Year	Description
2023	Completed NTNU's "Development of a pedagogical portfolio" seminar, which is a 20-hour module from the university pedagogics program "Uniped".
2022	Completed NTNU's "PhD supervision seminar", which is a three-day seminar that prepares research staff at NTNU to supervise PhD candidates.
2022	Internal examiner for (i) an MSc thesis on the physics of curved nanostructures and (ii) a PhD course on molecular beam epitaxy.
2020	External examiner for (i) an MSc thesis on unconventional superconductivity and (ii) a PhD course on the quasiclassical theory of superconductivity.
2012	Completed NTNU's "Læringsassistentopplæringskurs" (LAOS seminar), a 20-hour pedagogical training seminar offered to teaching assistants.

Project management experience

Year	Description
2020–2021	Co-management of the 1.5-year project "Hydrogen4EU" at SINTEF Energy Research. My duties included: Breaking down the project description into a list of actionable tasks, and drafting an initial budget based on this list and our available funding (>1M€); Organizing bi-weekly meetings with the research team to follow up their progress and budget usage, adjusting the project budget accordingly, and communicating progress and delays to the main project manager; Assisting with preparing official reports to the consortium.

Grant application experience

Year	Description
2021	Independent grant application to the Research Council of Norway. The proposed project "Novel Phenomena in Superconductor/Ferroelectric Hybrids" was not funded – but received the assessment "Excellent" (6/7) on all points.
2019	Co-author on a successful application for internal funding at SINTEF for "Integrate" (née GET), a project to foster collaboration across the Departments of Gas Technology, Energy Systems, and Thermal Energy on interdisciplinary energy system modeling.

Other relevant experiences

Year	Description
2022	Main organizer of the "QuSpin Idea Forum" at the Center for Quantum Spintronics. This is a biweekly meeting for PhDs and PostDocs to discuss research challenges that they are struggling with, gather feedback on ideas for new papers, as well as a platform for sharing theoretical methods, software libraries, etc. that may be of common interest.
2021–	Member of "Norsk Fysisk Selskap" (NFS) – a Norwegian network for physicists.
2019	Main organizer of a half-day internal workshop at SINTEF Energy Research as part of the GET project. This included inviting speakers from the Departments of Gas Technology, Energy Systems, and Thermal Energy to share their research on the topic of energy systems modeling, as part of preparations for an internal application for research funding.
2016–	Referee for the American Physical Society. This includes refereeing manuscripts for the journals "Physical Review Letters", "Physical Review B", and "Physical Review Applied".
2017–2018	Member of the "Council for the PhD study program in Physics and in Biophysics" at NTNU. Duties included assessing and approving research proposals from new candidates, as well as being involved in decision-making relevant to the PhD study programme.
2010–2015	Active member of "Programvareverkstedet" (PVV) – NTNU's computer club.

Peer-reviewed journal papers

1. **J.A. Ouassou**, A. Brataas, and J. Linder. "dc Josephson effect in altermagnets." ***Physical Review Letters*** 131, 076003 (2023).
DOI: 10.1103/PhysRevLett.131.076003

2. E.W. Hodt, **J.A. Ouassou**, and J. Linder. "Transient dynamics and quantum phase diagram for the square lattice Rashba-Hubbard model at arbitrary hole doping." ***Physical Review B*** 107, 224427 (2023).
DOI: 10.1103/PhysRevB.107.224427

3. C. González-Ruano, D. Caso, **J.A. Ouassou**, C. Tiusan, Y. Lu, J. Linder, and F.G. Aliev. "Observation of magnetic state dependent thermoelectricity in superconducting spin valves." ***Physical Review Letters*** 130, 237001 (2023).
DOI: 10.1103/PhysRevLett.130.237001

4. **J.A. Ouassou**, C. González-Ruano, D. Caso, F.G. Aliev, and J. Linder. "Complete magnetic control over the superconducting thermoelectric effect." ***Physical Review B*** 106, 094514 (2022).
DOI: 10.1103/PhysRevB.106.094514

5. G.S. Seck, E. Hache, J. Sabathier, F. Guedes, G.A. Reigstad, J. Straus, O. Wolfgang, **J.A. Ouassou**, M. Askeland, I. Hjorth, H.I. Skjelbred, L.E. Andersson, S. Douguet, M. Villavicencio, J. Trüby, J. Brauer, and C. Cabot. "Hydrogen and the decarbonization of the energy system in Europe in 2050: A detailed model-based analysis." ***Renewable and Sustainable Energy Reviews*** 167, 112779 (2022).
DOI: 10.1016/j.rser.2022.112779

6. J. Straus, **J.A. Ouassou**, O. Wolfgang, G.A. Reigstad. "Introducing global learning in regional energy system models." ***Energy Strategy Reviews*** 38, 100763 (2021).
DOI: 10.1016/j.esr.2021.100763

7. J. Straus, **J.A. Ouassou**, B.R. Knudsen, and R. Anantharaman. "Constrained adaptive sampling for domain reduction in surrogate model generation." ***AIChE Journal*** 67, e17357 (2021).
DOI: 10.1002/AIC.17357

8. **J.A. Ouassou**, J. Straus, M. Fodstad, G. Reigstad, and O. Wolfgang. "Applying endogenous learning models in energy system optimization." ***Energies*** 14, 4819 (2021).
DOI: 10.3390/En14164819

9. K.Y. Lervåg, H.L. Skarsvåg, E. Aursand, **J.A. Ouassou**, M. Hammer, G. Reigstad, Å. Ervik, E.H. Fyhn, M.A. Gjennestad, P. Aursand, and Ø. Wilhelmsen. "A combined fluid-dynamic and thermodynamic model to predict the onset of rapid phase transitions in LNG spills." ***Journal of Loss Prevention in the Process Industries*** 69, 104354 (2021).
DOI: 10.1016/J.JLP.2020.104354

10. **J.A. Ouassou**, W. Belzig, and J. Linder. "Prediction of a paramagnetic Meissner effect in voltage-biased superconductor–normal-metal bilayers." ***Physical Review Letters*** 124, 047001 (2020).
DOI: 10.1103/PhysRevLett.124.047001

11. S. Roussanaly, **J.A. Ouassou**, R. Anantharaman, and M. Haaf. "Impact of uncertainties on the design and cost of CCS from a waste-to-energy plant." ***Frontiers in Energy Research*** 8, 17 (2020).
DOI: 10.3389/FENRG.2020.00017

12. **J.A. Ouassou** and J. Linder. "Voltage control of superconducting exchange interaction and anomalous Josephson effect." ***Physical Review B*** 99, 214513 (2019).
DOI: 10.1103/PhysRevB.99.214513

13. **J.A. Ouassou**, J.W.A. Robinson, and J. Linder. "Controlling spin supercurrents via nonequilibrium spin injection." ***Scientific Reports*** 9, 12731 (2019).
DOI: 10.1038/S41598-019-48945-0

14. M. Amundsen, **J.A. Ouassou**, and J. Linder. "Field-free nucleation of antivortices and giant vortices in nonsuperconducting materials." ***Physical Review Letters*** 120, 207001 (2018).
DOI: 10.1103/PhysRevLett.120.207001

15. **J.A. Ouassou**, T.D. Vethaak, and J. Linder. "Voltage-induced thin-film superconductivity in high magnetic fields." ***Physical Review B*** 98, 144509 (2018).
DOI: 10.1103/PhysRevB.98.144509

16. N. Banerjee, **J.A. Ouassou**, Y. Zhu, N.A. Stelmashenko, J. Linder, and M.G. Blamire. "Controlling the superconducting transition by spin-orbit coupling." ***Physical Review B*** 97, 184521 (2018).
DOI: 10.1103/PhysRevB.97.184521

17. K. Lahabi, M. Amundsen, **J.A. Ouassou**, E. Beukers, M. Pleijster, J. Linder, P. Alkemade, and J. Aarts. "Controlling supercurrents and their spatial distribution in ferromagnets." ***Nature Communications*** 8, 2056 (2017).
DOI:10.1038/S41467-017-02236-2

18. A. Pal, **J.A. Ouassou**, M. Eschrig, J. Linder, and M.G. Blamire, "Spectroscopic evidence of odd frequency superconducting order." ***Scientific Reports*** 7, 40604 (2017).
DOI: 10.1038/SRep40604

19. **J.A. Ouassou**, A. Pal, M. Blamire, M. Eschrig, and J. Linder. "Triplet Cooper pairs induced in diffusive *s*-wave superconductors interfaced with strongly spin-polarized magnetic insulators or half metallic ferromagnets." ***Scientific Reports*** 7, 1932 (2017).
DOI: 10.1038/S41598-017-01330-1

20. M. Amundsen, **J.A. Ouassou**, and J. Linder. "Analytically determined topological phase diagram of the proximity-induced gap in diffusive *n*-terminal Josephson junctions." ***Scientific Reports*** 7, 40578 (2017).
DOI: 10.1038/SRep40578

21. **J.A. Ouassou**, S.H. Jacobsen, and J. Linder. "Conservation of spin supercurrents in superconductors." ***Physical Review B*** 96, 094505 (2017).
DOI: 10.1103/PhysRevB.96.094505

22. **J.A. Ouassou** and J. Linder. "Spin-switch Josephson junctions with magnetically tunable $\sin(\delta\varphi/n)$ current-phase relation." ***Physical Review B*** 96, 064516 (2017).
DOI: 10.1103/PhysRevB.96.064516

23. J. Linder, M. Amundsen, and **J.A. Ouassou**. "Microwave control of the superconducting proximity effect and minigap in magnetic and normal metals." ***Scientific Reports*** 6, 38739 (2016).
DOI: 10.1038/SRep38739

24. **J.A. Ouassou**, A. Di Bernardo, J.W.A. Robinson, and J. Linder. "Electric control of superconducting transition through a spin-orbit coupled interface." ***Scientific Reports*** 6, 29312 (2016).
DOI: 10.1038/SRep29312

25. S.H. Jacobsen, **J.A. Ouassou**, and J. Linder. "Critical temperature and tunneling spectroscopy of superconductor-ferromagnet hybrids with intrinsic Rashba-Dresselhaus spin-orbit coupling." ***Physical Review B*** 92, 024510 (2015).
DOI: 10.1103/PhysRevB.92.024510

Peer-reviewed conference papers

1. R.M. Montañés, L. Riboldi, S. Roussanaly, **J.A. Ouassou**, S.G. Subraveti, and R. Anantharaman. "Techno-economic assessment of the hybrid adsorption-membrane concept for post-combustion CO_2 capture from industry flue gases." Proceedings of the ***16th Greenhouse Gas Control Technologies Conference*** (GHGT-16) (2022).
URL: https://ssrn.com/abstract=4282863

2. A. Reyes-Lúa, S. Roussanaly, R. Anantharaman, **J.A. Ouassou**, C. Fu, D. Kim, and S.O. Gardarsdottir. "Clustering of CO_2 capture within a multi-source industrial site: Effect on investment and operating cost." Proceedings of the ***16th Greenhouse Gas Control Technologies Conference*** (GHGT-16) (2022).
DOI: 10.2139/ssrn.4286223

3. G.A. Reigstad, J. Straus, O. Wolfgang, **J.A. Ouassou**, G.S. Seck, E. Hache, and M. Villavicencio. "CCS in the European Energy Transition to Climate Neutrality." Short Papers from the ***11th International Trondheim CCS Conference*** (TCCS-11) (2021).
HDL: 11250/2787338.

Books and book chapters

1. **J.A. Ouassou**. "Manipulating Superconductivity in Magnetic Nanostructures in and out of Equilibrium." Doctoral dissertation (NTNU, 2019).
HDL: 11250/2591114

2. S.H. Jacobsen, **J.A. Ouassou**, and J. Linder. "Superconducting Order in Magnetic Heterostructures." In: Advanced Magnetic and Optical Materials (John Wiley & Sons, 2016).
ISBN: 978-1-119-24191-1
DOI: 10.1002/9781119241966

3. **J.A. Ouassou**. "Density of States and Critical Temperature in Superconductor/Ferromagnet Structures with Spin-Orbit Coupling." Master thesis (NTNU, 2015).
HDL: 11250/2352094

4. **J.A. Ouassou**. "Full Proximity Effect in Spin-Textured Superconductor/Ferromagnet Bilayers." Project thesis (NTNU, 2014).
URL: https://pvv.ntnu.no/~jabirali/academic/project.pdf

5. **J.A. Ouassou**. "Kvantemekanikk." Compendium in the course *Innføring i kvantefysikk* (NTNU, 2013). Sold by *Nabla*, the association for students of Applied Physics and Mathematics at NTNU.

Technical reports and documentation

1. J. Trueby, S. Douguet, M. Villavicencio, G.S. Seck, E. Hache, J. Sabathier, G.A. Reigstad, O. Wolfgang, J. Straus, **J.A. Ouassou**, M.J. Moelnvik, F. Delprat-Jannaud, A. Gery, J. Brauer, C. Cabot, C. Cartry, C. Moreux, C. Barnet, F. Guedes, M. Fodstad, L.E. Andersson, M. Askeland, H.I. Skjelbred, I. Hjorth, B.R. Knudsen, and S. Jaehnert. "Hydrogen4EU: Charting pathways to enable net zero." Online (2021).
URL: http://www.hydrogen4eu.com.

2. **J.A. Ouassou**, J. Straus, B.R. Knudsen, R. Anantharaman. "Consumet user manual." Online (2021).
URL: https://github.com/act-elegancy/consumet/blob/master/doc/manual.pdf

3. **J.A. Ouassou**. "GENEUS Documentation." Online (2018).
URL: https://jabirali.github.io/geneus/html/page/index.html

Open-source scientific software

1. **Consumet** (2019).
Program that combines adaptive sampling with statistical model selection algorithms to automate the generation of *surrogate models* that efficiently approximate the results of full-physical simulators.
URL: https://github.com/act-elegancy/consumet

2. **GENEUS** (2018).
Solver for the self-consistent non-equilibrium non-linear Usadel equation developed as part of my PhD. GENEUS can model devices with superconductors, ferromagnets, spin-orbit coupling, spin-flip/spin-orbit scattering, orbital depairing, strongly polarized magnetic interfaces, charge and spin accumulation, etc.
URL: https://github.com/jabirali/geneus

Invited talks

1. "Voltage-induced superconductivity in high magnetic fields." Guest lecture during a visit to the University of Oslo. Oslo, Norway (2022).

2. "Manipulating superconductivity in magnetic nanostructures." Lecture at *Det Norske Videnskaps-Akademi* when receiving the Birkeland Prize. Oslo, Norway (2021).
URL: https://youtu.be/2l_kG6On6P4

3. "Introduction to version control with Git." Webinar for PrISMa project partners. Online (2020).

4. "Superconducting spintronics in double-barrier Josephson junctions." Invited talk at the workshop *Coherent Superconducting Hybrids and Related Materials*. Les Arcs, France (2018).

5. "Nonequilibrium phenomena in superconducting structures." Guest lecture during a research visit to the University of Konstanz. Konstanz, Germany (2018).

6. "Voltage-induced superconductivity in high magnetic fields." Invited talk at the *QuSpin Annual Workshop.* Trondheim, Norway (2018).

7. "Seminar: Intro til programmering i Matlab." St. Olavs Hospital, Trondheim, Norway (2013).

8. "PVV seminar: Versjonskontroll med Git." Programvareverkstedet, Trondheim, Norway (2011).

Outreach

1. K.Y. Lervåg, H.L. Skarsvåg, E. Aursand, **J.A. Ouassou**, M. Hammer, G. Reigstad, Å. Ervik, E.H. Fyhn, M.A. Gjennestad, P. Aursand, Ø. Wilhelmsen, "A combined fluid-dynamic and thermodynamic model to predict the onset of rapid phase transitions in LNG spills." *Fire and Blast Information Group Newsletter* (*2021)*.
URL: https://www.fabig.com/publications-and-videos/technical-newsletters/newsletter-issue-080

2. **J.A. Ouassou,** K.Y. Lervåg, and G.A. Reigstad. "PredictRPT WebGUI." (2020). Interactive web application for calculating the time and location of vapor explosions in LNG spills. This was an effort to make the safety-critical findings of one of our publications more accessible to industry.
URL: https://predictrpt.herokuapp.com

3. J. Straus, **J.A. Ouassou**, and R. Anantharaman. "Consumet: Constructor of surrogate models and metamodels." Popular science summary of one of our publications at SINTEFblog (2019).
URL: https://blog.sintef.com/sintefenergy/ccs/consumet-constructor-surrogate-models-metamodels

4. **J.A. Ouassou.** "Superledning i magnetiske nanostrukturer." Guest lecture at *Norske Fysikkstudenters Konferanse*, an event for bachelor- and master-level students from all over Norway organized by a national association for physics students (NoFFo). Trondheim, Norway (2019).

5. "NTNU predicts DC voltage bias can stabilize SC under field." Interview of **J.A. Ouassou** by journalist Klaus Neumann. Superconductor Week 32(9), 14 (2018).