

Harold Ruiz (PhD, FHEA, MPhys, MSc, BSc)

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Relevant Experience

- United Kingdom**

- Since 2015/09** *Associate Professor in Electrical Machines and Power Systems.*
University of Leicester, School of Engineering, Leicester, United Kingdom
Director of Electrical, Electronics, Software, and Communications Engineering
- 2014/01 – 2015/09** *University of Cambridge*, Department of Engineering, Cambridge, United Kingdom.
EPSRC Research Associate. Electrical Engineering Division.

- Overseas**

- 2013/01 – 2013/12** *Associate Professor.* School of Engineering, **University of La Sabana**, Colombia.
- 2013/01 – 2013/12** *Associate Professor.* School of Engineering, **Freedom University**, Bogotá, Colombia.
- 2013/10 – 2014/01** *Assistant Professor*, School of Physics, **University of Antioquia**, Colombia.
- 2012/08 – 2012/11** *Postdoctoral Stay, Visiting Researcher.* The Materials Science Institute of Aragón, **Spanish National Research Council (CSIC)**, and the University of Zaragoza, Spain.
- 2012/05 – 2012/08** *Postdoctoral Stay, Visiting Researcher.* Center for Advanced Power Systems, **Florida State University**, Tallahassee, USA.
- 2010/09 – 2012/08** *Senior Technical Officer.* The Materials Science Institute of Aragón, **Spanish National Research Council (CSIC)**, and the University of Zaragoza, Spain.
- 2006/10 – 2007/09** *Fixed-Term Lecturer.* Department of Computational and Electrical Engineering, **The Cooperative University of Colombia**, Bogotá-Colombia.
- 2005/07 – 2005/07** *Fixed-Term Lecturer.* Electromagnetism Holiday Course (108 hours). Dept. of Chemical Engineering, **National University of Colombia**. Bogotá-Colombia.

Leadership and Citizenship Roles at the Higher Education Sector

- 2020 -** Director of Electrical, Electronics, Software, and Communications Engineering Programmes at University of Leicester, UK.
- 2020 -** Senior Tutor & Member of the Learning and Teaching Committee. Lead of Second Year UG tutors, School of Engineering, University of Leicester, UK.
- 2019 -** Board Member of the University Ethics Committee and School of Engineering Ethics Officer, University of Leicester, UK.
- 2017-2019** Curriculum Transformation Leader and Coordinator of the Learning and Teaching Experimental Facilities at the School of Engineering of the University of Leicester, UK.
- 2017-2019** Seminars chair at the School of Engineering of the University of Leicester, UK.
- 2017-2018** Energy Theme Lead and head of the Electrical Power Research Group at the School of Engineering, University of Leicester, UK.
- 2013** Engineering Physics Lead at the School of Engineering of the Freedom University, Bogota, Colombia.

Education

2015/10 – 2017/06	FHEA-PGCAPP , Fellow of the Higher Education Academy with Postgraduate Certificate in Academic and Professional Practice, The Higher Education Academy (Fellow) , United Kingdom.
2012/05 – 2015/09	Postdoctoral Research Positions , at University of Cambridge (UK), Florida State University (USA), and University of Zaragoza (Spain),.
2008/11 – 2012/04	Ph.D. Physics, Materials Science and Electrical Engineering on Applied Superconductivity, Cum Laude and European Doctor (Highest awards in Spain), University of Zaragoza , Zaragoza, Spain.
2008/01 – 2008/10	MSc. Physical Technologies , Bank Santander Research Fellowship, 1 st Class. University of Zaragoza , Zaragoza, Spain.
2005/06 – 2007/06	MSc. Physics , University Research Fellowship, 1 st Class. National University of Colombia , Bogotá, Colombia.
2000/02 – 2004/04	BSc. Physics , University Scholarship, 1 st Class. University Francisco José de Caldas , Bogotá, Colombia.

Grants Experience in the last 5 years

2020/01 – 2023/01	(PI) ~£303k FEC, EPSRC Project No. EP/S025707/1 , <i>Superconducting Ferromagnetic Metamaterials Enabling the Development of Resilient High Voltage / High Current Transmission Systems</i> . Project start date: 06 January 2020. Project end date: 05 January 2023
2020/06 – 2024/03	(PI) ~£86k, EPSRC-DTP Studentship programme , <i>One PhD offer at the College of Science and Engineering, University of Leicester, Leicester, UK</i> . Project start date: 21 September 2020. Project end date: 20 March 2024
2020/10 – 2024/10	(Partner) ~£300k, COST European Cooperation in Science & Technology , <i>Action CA19108 - High-Temperature SuperConductivity for AcceLerating the Energy Transition (Hi-Scale)</i> . Project start date: 08 October 2020. Project end date: 07 October 2024
2021/06 – 2021/09	(PI) ~£16k, UKRI CoA Fund , <i>Further support on the EPSRC Project No. EP/S025707/1 to support the HR costs associated to the Postdoctoral Research Associate during the stated period. UoL code RW13G0003</i> . Project start date: 01 June 2021. Project end date: 30 September 2021
2017/10 – 2021/04	(PI) ~£70k FEC, CSE – PhD Studentship offer , <i>College of Science and Engineering, University of Leicester, Leicester, UK. Phd graduated: Dr. Eng. Umar Fareed</i> . Project start date: 01 October 2016. Project end date: 01 May 2021
2019/04 – 2021/01	(PI) ~£169k FEC, British Council Newton Fund, Project No. 413871894 , <i>Boosting solar energy capacity of Indonesia without compromising protected areas: an integrated GIS tailoring solar energy resource and local information (SolarBoost)</i> . <i>For further information please visit our project website at solarboost.tech</i> . Project start date: 15 April 2019. Project end date: 31 December 2020

Publications in the last five years (conference contributions are not listed)

Up to March 2022, I hold **1 published book**, **1 book chapter**, have about **50 papers in peer-reviewed journals**, **20+ contributions at conference proceedings**, and served as **guest editor and referee of multiple journals**. I am the leading researcher in more than 80% of my journal publications, 16 of them appearing as first author, and most of the others as the recognizable group leader (last author). For more details, please visit my [ORCID](https://orcid.org/0000-0002-6100-1918). Below. Only publications from the last 5 years are presented

- 2022 **Scientific Reports** 12, 7030. M. Kapolka & **H. S. Ruiz**. Maximum Reduction of Energy Losses in Multicore MgB₂ Wires by Metastructured Soft-Ferromagnetic Coatings
- 2022 **IEEE Transactions on Applied Superconductivity** 32(4), 6200305. M. Kapolka, M. Clegg & **H. S. Ruiz**. Optimum filament positions within a MgB₂ wire resulting in maximum reduction of AC losses.
- 2022 **IEEE Transactions on Applied Superconductivity** 32(6), 6600906. M. Clegg, M. Kapolka & **H. S. Ruiz**. Impact of the magneto angular dependence of the critical current density in CORC cables.
- 2022 **IEEE Transactions on Applied Superconductivity** 32(4), 8200205. M. U. Fareed, M. Kapolka, B. C. Robert, M. Clegg & **H. S. Ruiz**. 3D FEM Modelling of CORC Commercial Cables with Bean's like magnetization currents and its AC-Losses Behaviour.
- 2022 **IOP Conference Series: Materials Science and Engineering, Advances in Cryogenic Engineering (Accepted, Ref. M3Po1A-03, 11 January 2022)**. M. Clegg, M. U. Fareed, M. Kapolka & **H. S. Ruiz**. Computational Modelling of Russia's First 2G-HTS Triaxial Cable. *Latest version available at* <https://arxiv.org/abs/2201.08892>
- 2021 **IOP Conference Series: Materials Science and Engineering, Advances in Cryogenic Engineering (Accepted, 01 December 2021, Ref. M3Po1A-04)**. M. U. Fareed, M. Kapolka, B. C. Robert, M. Clegg, & **H. S. Ruiz**. 3D Modelling and Validation of the Optimal Pitch in Commercial CORC Cables. *Latest version available at* <https://arxiv.org/abs/2111.06834>
- 2021 **Materials** 2021, 14(20) 6204. M. U. Fareed & **H. S. Ruiz**. Critical State Theory For The Magnetic Coupling Between Soft Ferromagnetic Materials And Type-II Superconductors
- 2020 **Energy Reports** 6, 3249-3263. **H. S. Ruiz**, A. Sunarso, K. Inrahim-Bathis, S. A. Murti, and I. Budiarto. GIS-AHP Multi-Decision-Criteria-Analysis for the Optimal Location of Solar Energy Plants at Indonesia.
- 2020 **Sustainability** 12(15), 6283. A. Sunarso, K. Inrahim-Bathis, S. A. Murti, I. Budiarto, and **H. S. Ruiz**. GIS-based Assessment of Technical and Economic Feasibility of Utility-Scale Solar PV Plants: Case Study in west Kalimantan Province.
- 2020 **Journal of Superconductivity and Novel Magnetism** 33(3), 591-597. Z. Zhong, X. Zhang, **H. S. Ruiz**, B. Shen, T. A. Coombs. Normal Zone propagation Velocity and Minimum Quench Energy on Stainless Steel Double-Layered Superconducting Wires under External Magnetic Fields.
- 2019 **Materials** 12(17), 2679. B.C. Robert, M. Fareed, and **H.S. Ruiz**. How to Choose the Superconducting Material Law for the Modelling of 2G-HTS coils.
- 2019 **IOP Engineering Research Express** 1(1), 015037. B.C. Robert, M. Fareed, and **H.S. Ruiz**. Flux front dynamics and energy losses of magnetically anisotropic 2G-HTS pancake coils under prospective winding deformations.
- 2019 **Journal of Applied Physics** 126, 123902. B.C. Robert, M. Fareed, and **H.S. Ruiz**. Local Electromagnetic Properties and Hysteresis Losses in Uniformly and Non-Uniformly wound Superconducting Racetrack Coils.
- 2019 **IEEE Transactions on Applied Superconductivity** 29, 5900705. M. Fareed, B. Robert, **H.S. Ruiz**. Electric field and energy losses in rounded superconducting / ferromagnetic heterostructures in self-field conditions.
- 2018 **Scientific Reports** 8, 1342. M. Baghdadi, **H. S. Ruiz**, and T. A. Coombs. Nature of the low magnetization decay on stacks of second-generation superconducting tapes under crossed and rotating magnetic field experiments.
- 2018 **Superconductor Science and Technology** 31, 035006. B. C. Robert and **H. S. Ruiz**. Magnetic characteristics and AC losses of DC Type-II Superconductors under oscillating magnetic fields.
- 2018 **Physica C: Superconductivity and its Applications** 544, 55. Z. Zhong, M. Chudy, **H. S. Ruiz**, M. Baghdadi, X. Zhang, and T. Coombs. Corrigendum to Physica C: Superconductivity and its Applications 536, 18-25 Critical current studies of a HTS rectangular coil,
- 2018 **IEEE Transactions on Applied Superconductivity** 28(4), 8200805. B. C. Robert and **H. S. Ruiz**. Magnetization profiles of AC type-II superconducting wires exposed to DC magnetic fields.

- 2018 IEEE Transactions on Applied Superconductivity 28(4), 8200905.** B. C. Robert and **H. S. Ruiz**. Electromagnetic response of DC type-II superconducting wires under oscillating magnetic excitations.
- 2017 Physica C: Superconductivity and its Applications 536, 18-25.** Z. Zhong, M. Chudy, **H. S. Ruiz**, X. Zhang, and T. Coombs. Critical current studies of a HTS rectangular coil.
- 2017 IEEE Transactions on Applied Superconductivity 27(4), 5201905.** Z. Huang, **H. S. Ruiz**, W. Wang, Z. Jin, and T. A. Coombs. HTS Motor performance evaluation by different pulsed field magnetization strategies.
- 2017 Physica C: Supercond. and its Applications 534, 73-81.** Z. Huang, **H. S. Ruiz**, and T.A. Coombs. Magnetization Strategies and the Field Poles Composition in a Bulk-type Superconducting Motor.
- 2017 International Journal of Electrical Power and Energy Systems 87, 136.** X. Zhang, **H. S. Ruiz**, J. Geng, and T. A. Coombs. Optimal Location and Minimum Number of Superconducting Fault Current Limiters for the Protection of Power Grids.
- 2017 Superconductor Science and Technology 30, 025010.** X. Zhang, Z. Zhong, **H. S. Ruiz**, J. Geng, and T. A. Coombs, General approach for the determination of the magneto-angular dependence of the critical current of YBCO coated conductors.

Supervised Postgraduate Researchers

Up to May 2022, I have supervised/mentored **3 Postdoctoral Researchers, 8 PhD students, and 8 MSc students at the University Of Leicester (UOL) and the University of Cambridge (UCAM)**. Below only the names of the supervised Postdocs and PhD students are mentioned

UOL	Eng. Matthew Clegg.	PhD to Graduate in 2024.	Lead supervisor
UOL	Eng. Benjamin Orton.	PhD to Graduate in 2022.	Co-supervisor
UOL	Dr. Muhammad Fareed	Postdoctoral Researcher 2022	PI & supervisor
UOL	Dr. Milan Kapolka	Postdoctoral Researcher 2020-2022	PI & supervisor
UOL	Dr. Ibrahim Bathis	Postdoctoral Researcher 2019-2020	PI & supervisor
UOL	Dr. Muhammad Fareed	PhD Graduated in 2021.	Lead supervisor
UOL	Dr. Ali Akay	PhD Graduated in 2021.	Co-supervisor
UOL	Dr. Bright Robert.	PhD Graduated in 2020.	Lead supervisor
UOL	Dr. Waleed Hassam	PhD Graduated in 2019.	Co-supervisor
UOL	Dr. Awat Mulla	PhD Graduated in 2019.	Co-supervisor
UCAM	Dr. Mehdi Baghdadi.	PhD Graduated in 2016.	Co-supervisor
UCAM	Dr. Zhaoyang Zhong.	PhD Graduated in 2015.	Co-supervisor
UCAM	Dr. Zhen Huang.	PhD Graduated in 2015.	Co-supervisor

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