Dr. Xiaodong Li

Lecturer, Technische Universität München, Germany

Selected Academic Experience

2026.1 **The 2nd Workshop on Advanced Materials Frontiers, Hong Kong Polytechnic University, Hong Kong**.
Invited Talk: REBCO coated conductors: enabling the next generation of fusion reactors.

2025.9 **17th European Conference on Applied Superconductivity, Porto, Portugal**.
Session Chair: HTS Conductors and Magnets for Fusion.
Oral presentation: High-temperature superconducting magnets for Stellarators.

2025.8 **2nd International Workshop on Energy and Power Systems, Munich, Germany. Program Chair**.
Oral presentation: Nuclear Powered Propulsion Systems for Space Exploration.

2024.9 **Applied Superconductivity Conference, Salt Palace Convention Center, Salt Lake City, USA**.
Oral presentation: Electro-thermal-mechanical behaviour of HTS REBCO coated conductor central solenoid coils for ultra-high-field thermonuclear fusion reactors.

2024.6 **The 11th Workshop on Mechanical and Electromagnetic Properties of Composite Superconductors, National High Magnetic Field Laboratory, Florida State University, USA**.
Oral presentation: REBCO coated conductors for high-field fusion: state-of-the-art, challenges and perspectives.

04.2023-06.2023 **As a visiting research scholar in the School of Engineering, King's College London (KCL), United Kingdom**.
Projects: Modelling strategies for high temperature superconductors: a comparison between finite element methods and integral methods, cooperating with Dr. Mark Ainslie.

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06.2022 **The 3rd International School on Numerical Modelling for Applied Superconductivity, École Polytechnique Fédérale de Lausanne (EPFL), Switzerland**.
Courses: Superconducting materials and applications, Numerical modelling of applied superconductivity, Ultra-high field magnets, Hybrid HTS-LTS coils, Mechanics in HTS magnets, Stability and Quench of Superconductivity, AC Losses, MRI magnets, etc.

06.2022 **The 8th International Workshop on Numerical Modelling of High Temperature Superconductors, Nancy, France**.
Oral presentation: Thermomagnetic instability induced mechanical response in fully magnetized high temperature superconducting bulk during pulse field magnetization.

11.2021 **The 12th International Workshop on Processing and Applications of Superconducting Bulk Materials, Shanghai, China**.
Oral presentation: Thermal-hydraulic analysis of the cooling system in a high temperature superconducting axial flux motor.

09.2021 **The 15th European Conference on Applied Superconductivity (EUCAS2021), Moscow, Russia**.
Oral presentation: Current-carrying capability and magnetic behavior of the HTS twisted stacked-tape conductor cable for the compact fusion reactor.

11.2020 **The Applied Superconductivity Conference (ASC2020), Tampa, America**.
Oral presentation: An idea of employing a superconducting cylindrical linear induction pump for the nuclear power system.

07.2018 **High Technology Management Summer School, Samara University, Russia**.
Courses: Project Management, Intellectual Property Management, Marketing of High-Technology products, Development of entrepreneurial thinking, Leadership, teamwork and motivation, customer development, etc.
Achievement: Won the first price in teamwork competition with other three students from Spain, Iran and Indonesia.

Selected Academic Involvement

- Member of **IOP (Institute of Physics).**
- Member of **IEEE (Institute of Electrical and Electronics Engineers).**
- Member of **EUROfusion Consortium for the Development of Fusion Energy.**
- Guest Scientist of **National Institute of Fusion Science, Japan.**
- Early Career Editorial Board Member of ≪**Superconductivity**≫ **(IF: 5.6, Q1).**

Selected Publication List

[1] **Xiaodong Li**, Mark Ainslie, Dongbin Song, Wenjiang Yang, and Rafael Macián-Juan,"REBCO coated conductors: enabling the next generation of tokamak reactors",*Superconductor Science and Technology*, vol. 38, no. 3, 2025, article no. 033001.

[2] **Xiaodong Li**, Jinggang Qin, Wenjiang Yang, and Rafael Macián-Juan,"Elaboration of a 100-kA Class HTS REBCO Rutherford Cable for High-Field Applications",*IEEE Transactions on Applied Superconductivity*, vol. 35, no. 5, Aug. 2025, article no. 6603005.

[3] **Xiaodong Li**."Development of the high-temperature-superconducting REBCO coated conductor magnet system for ultra-high-field thermonuclear fusion power plants.",*Technische Universität München (2023) 1700448*.

[4] **Xiaodong Li**, Veit Große, Dongbin Song, Wenjiang Yang and Rafael Macián-Juan,"Electromechanical behaviour of REBCO coated conductor toroidal field coils for ultra-high-field magnetic-confinement plasma devices",*J. Phys. D: Appl. Phys.* , vol. 56, no. 4, 2023, article no. 045001.

[5] **Xiaodong Li**, Chunyu Liu, Xiaolie Wang, Wenjiang Yang and Rafael Macián-Juan,"An idea of employing a superconducting cylindrical linear induction pump for the nuclear power system",*Nuclear Engineering and Design*, vol. 381, 2021, article no. 111318.

[6] **Xiaodong Li**, Mark Ainslie, Dongbin Song, Wenjiang Yang, and Rafael Macián-Juan,"AC Loss Reduction in REBCO Coated Conductor Cables using the Hexagonal Arrangement Method",*IEEE Transactions on Applied Superconductivity, vol. 34, no. 5, 2024, article no. 5901505.*

[7] **Xiaodong Li**, Wenjiang Yang, Huiming Zhang and Rafael Macián-Juan,"Numerical Study of AC Loss Characteristics in a Three-Phase Superconducting Induction Pump",*IEEE Transactions on Applied Superconductivity*, vol. 31, no. 5, 2021, article no. 5900205.

[8] **Xiaodong Li**, Yue Wu, Wenjiang Yang and Rafael Macián-Juan,"Magneto-hydrodynamic Characteristics of Molten Salts in a Model-based High Temperature Superconducting Conductor Pump",*Physica C: Superconductivity and its applications*, vol. 597, 2022, article no. 1354061.

[9] **Xiaodong Li**, Dongbin Song,Yue Wu, Yingzhen Liu, Wenjiang Yang and Rafael Macián-Juan,"Current-Carrying Capability and Magnetic Behavior of the HTS Twisted Stacked-Tape Conductor Cable for the Compact Fusion Reactor",*IEEE Transactions on Applied Superconductivity*, vol. 32, no. 4, 2022, article no. 4200205.

[10] **Xiaodong Li**, Wenjiang Yang, Jiahui Zhu and Huiming Zhang,"Experiments and simulation of electromagnetic properties in an HTS knitted tape stack",*IEEE Transactions on Applied Superconductivity*, vol. 29, no. 5, 2019, article no. 5900105.

[11] Yushen Zhou, Chuan Li, Ming Zhang, Bo Rao, Zehua Liu, Ziqing Meng, **Xiaodong Li***, and Rafael Macián-Juan,"Electromechanical behaviour of pulse-field magnets in field-reversed fusion neutron sources",*J. Phys. D: Appl. Phys.* vol. 59, no. 6, 2026, article no. 065002.

[12] Ziqing Meng, Yinshun Wang, Zehua Liu, **Xiaodong Li*** and Rafael Macián-Juan,"Trapped Field in Topological Stacked Gourd-Shaped HTS Loops under Field-Cooling Magnetization",*IEEE Transactions on Applied Superconductivity*, vol. 36, no. 5, 2026, article no. 4605306.

[13] Zehua Liu, Jingyang Li, Zichuan Guo, Guanyu Xiao, Huan Jin, **Xiaodong Li***, Jinggang Qin and Rafael Macián-Juan,"Bending behavior of a CORC cable assembled REBCO coil for high-field applications",*Superconductor Science and Technology*, vol. 39, no. 4, 2026, article no. 045002.

[14] Yue Wu, **Xiaodong Li**, Rodney A. Badcock, Nicholas J. Long, Naoyuki Amemiya, Jin Fang, and Zhenan Jiang "AC Loss Simulation in HTS Coil Windings Coupled with an Iron Core",*IEEE Transactions on Applied Superconductivity*, vol. 32, no. 6, 2022, article no. 4701505.

[15] Chunyu Liu, **Xiaodong Li**, Run Luo and Rafael Macián-Juan,"Thermal Hydraulics Analysis of the Distribution Zone in Small Modular Dual Fluid Reactor",*Metals*, vol. 10, no. 8, 2020, article no. 1065.

[16] Dongbin Song, Wenjiang Yang, **Xiaodong Li**, Jiahui Zhu, Mingliang Bai and Yu Liu "An electrometric method with real-time transport AC loss measurement in superconducting tapes based on compensation theory",*Journal of Superconductivity and Novel Magnetism*, vol. 35, 2022, article no. 2725–2730.

[17] Mingliang Bai, Wenjiang Yang, **Xiaodong Li**, Juzhuang Yan, Ruopu Zhang and Zibing Qu "Performance analysis of MW-class parallel hybrid-electric regional aircraft using predictive energy management strategy",*Green Energy and Intelligent Transportation*, vol. 5, no. 4, 2026, article no. 100361.

[18] Ziqing Meng, Yinshun Wang, Yanchen Shi, Lingfeng Zhu, Ye He, **Xiaodong Li** and Rafael Macián-Juan"Study on Current Distribution of HTS Gourd-Loop Energized by Field Cooling",*IEEE Transactions on Applied Superconductivity*, vol. 35, no. 5, 2025, article no. 4901305.

[19] Juzhuang Yan, Wenjiang Yang, Dongbin Song and **Xiaodong Li**"Numerical Study of Quasi-Static and Dynamic Levitation Forces for HTS Tape Stacks under Simplified Methods using H and T-A formulation",*IEEE Transactions on Applied Superconductivity*, vol. 32, no. 5, 2022, article no. 3602409.

[20] Qi Wang, Chunyu Liu, Run Luo, **Xiaodong Li** and Rafael Macián-Juan "Thermo-economic analysis and optimization of the very high temperature gas-cooled reactor-based nuclear hydrogen production system using copper-chlorine cycle",*International Journal of Hydrogen Energy*, vol. 46, no. 7, 2021.

[21] Rujing Liu, Wenjiang Yang, Dongbin Song, Jiahui Zhu and **Xiaodong Li**"Effect of Dynamic resistance on AC loss in stacked superconducting tapes.",*IEEE Transactions on Applied Superconductivity*, vol. 30, no. 4, 2020, article 5900305.

[22] Yue Wu, Jin Fang, Bin Liu, Lichao Nie and **Xiaodong Li**"Design and Performance Analyses of Multi-pole HTS Maglev Guideways for the Electromagnetic Launch.",*IEEE Transactions on Applied Superconductivity*, vol. 31, no. 8, 2021, article no. 3601505.

[23] Chaoxin Liu, Wenjiang Yang, Long Yu, Yu Ji and **Xiaodong Li**"Testing and comparison of levitation forces and rotational friction in different superconducting tape stacks.",*Journal of Superconductivity and Novel Magnetism*, vol. 33, no. 10, 2020.

[24] Juntong Hu, Wenjiang Yang, Difan Zhou, Peng Zhao and **Xiaodong Li**"Analysis of critical current inhomogeneity in r-z plane of GdBCO superconducting bulk and simulation of flux jumps during pulsed field magnetization.",*Superconductor Science and Technology*, vol. 36, no. 5, 2023, article no. 055004.