

Special Session XII

Special Session Basic Information:

专栏题目
Session Title

中文：电动汽车电机驱动系统创新
英文：Innovation in Motor Drive Systems for Electric Vehicles

专栏介绍和征稿主题
Introduction and topics

中文：交通运输对于社会经济发展至关重要，它为全球城市运转与商业活动提供了基础支撑。然而，交通运输领域仍有很大比例依赖内燃机汽车，这不仅导致温室气体排放增加，还造成了严重的空气污染。此外，交通运输领域已超越工业领域，成为全球最大的能源消耗部门。电动汽车的出现为这一全球性难题提供了极具前景的解决方案。因此，电动汽车动力总成的优化成为关键研究方向，而电机驱动系统作为动力总成的核心组成部分，其性能提升尤为重要。电动汽车的快速发展对电机驱动系统的性能提出了更高要求，这推动了电机材料、设计方法、拓扑结构及制造工艺的革新，旨在实现电机的高紧凑性、高效率、高功率密度与高可靠性。另一方面，电机驱动系统在更关键应用场景中的部署，也对控制方法提出了更高要求，亟需具备鲁棒性与有效性的先进控制策略。

本专题研讨会旨在汇集电动汽车电机驱动系统领域的最新理论与技术成果，助力该领域的创新发展。欢迎有关优化设计方法、新型分析与建模技术、先进控制策略及新型变换器拓扑结构的研究成果。拟征稿的主题包括但不限于：

- 主题 A: 电动汽车电机优化设计方法
- 主题 B: 电动汽车电机新型分析与建模技术
- 主题 C: 电动汽车电机驱动系统先进控制策略
- 主题 D: 电动汽车电机驱动系统新型变换器拓扑结构
- 主题 E: 其他相关主题，如电动汽车电机领域的文献综述、故障诊断、位置估计及工业应用研究。

英文：Transport and vehicular travel are essential for socio-economic growth, as they enable the operation of cities and businesses globally. However, large percentages of the transport sector still rely on internal combustion engine vehicles, causing an increase in greenhouse gases and air pollution. Additionally, the transport sector became the largest energy consumer after the industrial sector. The appearance of electric vehicles offers a promising solution to this global problem. As a result, optimization of the electric vehicle powertrain is a key area, and the motor drive system is a major component of the powertrain. The rapid development of electric vehicles has brought higher requirements on the performance of motor drive systems. This has contributed to the advancement of materials, design methods, topologies, and manufacturing processes for electric machines, which are aimed at high compactness, high efficiency, high power density, and high reliability. On the other hand, the employment of motor drive systems in more critical applications demands more advanced control methods with robustness and effectiveness.

This special session is aimed to collect the latest theoretical and technological ideas for better development of motor drive systems in Electric Vehicles applications. Optimization design methods, new analyzing and modeling methods, advanced control strategies, and novel converter topologies are strongly welcomed. Topics of interest for publication include, but are not limited to:

- Topic A: Optimization design methods of motors for Electric Vehicles
- Topic B: New analyzing and modeling methods of motors for Electric Vehicles
- Topic C: Advanced control strategies of motor drive systems in Electric Vehicles
- Topic D: Novel converter topologies of motor drive systems in Electric Vehicles
- Other related topics, such as literature review, fault diagnosis, position estimation, and industrial applications of motors for Electric Vehicles.

Special Session Chair(s):

	姓名	葛乐飞
	Name	Lefei Ge
	称谓	副教授
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Organizer's Brief Biography

中文：葛乐飞（IEEE 会员）于 2020 年获得德国亚琛工业大学电气工程专业工程博士学位。现任国际 SCI 期刊《Electrical Engineering》、《International Journal of Circuit Theory and Applications》和《IEEE Open Journal of the Industrial Electronics Society》（IF=5.2）的编委，也是 IET Power Applications 的客座编辑，担任七个顶级国际会议分会场的主席。作为第一作者在 IEEE Trans 系列的国际期刊上发表了 17 篇论文，谷歌引用共 1069 次，其中 2 篇论文被选为 ESI 高被引论文。他作为第一发明人申请了 35 项发明专利（过去 5 年授权 17 项），专利转化金额 140 万元，并参与了 4 项团体标准的编写。此外，他还入选了斯坦福大学（美国）和国际权威学术出版商爱思唯尔联合发布的“2025 年全球 2% 科学家”名单。他长期致力于电机优化设计与控制领域的研究工作，研究方向涵盖多电飞机、高铁系统、新能源发电及电动汽车等多个领域，在本专题的研究方面拥有丰富经验。

英文：Lefei Ge (Member, IEEE), received the Dr.-Ing. degree in electrical engineering from RWTH Aachen University, Aachen, Germany, in 2020. He serves as an editorial board member of international SCI journals Electrical Engineering, International Journal of Circuit Theory and Applications, and IEEE Open Journal of the Industrial Electronics Society (IF=5.2), as well as a guest editor of IET Power Applications. And he was the chairperson of the sub venues of seven top international conferences. He has published 17 papers in top international journals of the IEEE Trans series as the first author, with a total of 1069 Google citations, among which 2 paper was selected as an ESI highly cited paper. He has published two monographs as the first author, which have be published in the E.ON Energy Research Center in Germany in 2022 and the National Defense Industry Press in China in 2025. He has applied for 35 invention patents as the first inventor (17 authorized in the past 5 years), with a patent transformation amount of 1.4 million yuan, and participated in the compilation of 4 group standards. Additionally, he was selected into the list of Top 2% Scientists Worldwide 2025 jointly released by Stanford University (USA) and the international authoritative academic publisher Elsevier. He has been engaged in motor optimization design and control for a long time, involving fields such as multi electric aircraft, high-speed rail systems, new energy generation, and electric vehicles, having rich experience in researching this special issue.

	姓名	肖殿勋
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Organizer's Brief Biography

中文：肖殿勋博士是香港科技大学（广州）可持续能源与环境研究所助理教授。他专注于交通电气化和机器人系统。他的研究包括电动汽车、更多电动飞机和机器人的高性能电能转换技术。他撰写了 50 多篇同行评审文章，其中包括 14 篇具有第一作者或相应作者身份的顶级期刊文章。他担任《IEEE 交通电气化学报》（CAS/JCR Q1 期刊）副主编、中国电工学会电动汽车特别委员会成员、2023 年幼儿保育和教育专题主席、IEEE 交通电气会议出版物-跟踪主席，以及 IEEE IECON、ISIE、ICEMS 和 ICIT 等多个国际声誉会议的会议/特刊主席。2023 年，他被评为为世界前 2% 科学家。

英文：Dr. Dianxun Xiao is an Assistant Professor in Sustainable Energy and Environment Thrust at Hong Kong University of Science and Technology (Guangzhou). He focuses on transportation electrification and robotic systems. His research includes high-performance power energy conversion technologies for electric vehicles, more electric aircraft, and robotics. He has authored more than 50 peer-reviewed articles, including 14 top journal articles with the first or corresponding authorship. He serves as the Associate Editor for IEEE Transactions on Transportation Electrification (CAS/JCR Q1 Journal), a Member of the Special Committee on Electric Vehicles in China Electrotechnical Society, Topic Chair for ECCE 2023, Publication-track Chair for IEEE Transportation Electrification Conference, and Session/Special Issue Chairs for several international reputational conferences, such as IEEE IECON, ISIE, ICEMS, and ICIT. He was recognized as the World's Top 2% Scientists in 2023.



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Organizer's Brief Biography

中文：张国强，教授，博士生导师，IEEE Senior Member。从事交流电机驱动控制技术、无位置传感器控制、效率优化控制、无电解电容驱动控制等科研工作。获中国电工技术学会青年科技奖（首届）、IEEE 交通电气化汇刊年度优秀论文一、二等奖、中国科协优秀科技论文、IEEE IES EMTC 年度优秀论文、ICEMS 国际会议优秀论文（2019, 2022, 2023）等。担任黑龙江省可持续能源变换与控制技术重点实验室副主任、IEEE Transactions on Energy Conversion 期刊副主编、中国电源学会青年工作委员会副主任委员、中国电工技术学会青年工作委员会委员、中国电工技术学会电控系统与装置专业委员会委员、中国自动化学会电气自动化专业委员会委员、PCIM Asia Conference 技术委员会委员、IEEE Transactions 和 IET 多个期刊审稿人。

英文：Guoqiang Zhang, Professor and Ph.D. Supervisor, IEEE Senior Member. He has long been engaged in research on AC motor drive control technology, sensorless control, efficiency optimization control, and electrolytic capacitor-less drive control. He received the China Electrotechnical Society Young Scientist Award (First Session), First and Second Prizes of Annual Excellent Paper of IEEE Transactions on Transportation Electrification, Excellent Scientific Paper of the China Association for Science and Technology, Annual Excellent Paper of IEEE IES EMTC, and Excellent Paper Awards at the ICEMS International Conference (2019, 2022, 2023). He currently holds multiple academic positions: Deputy Director of the Heilongjiang Provincial Key Laboratory of Sustainable Energy Conversion and Control Technology, Associate Editor of IEEE Transactions on Energy Conversion, Deputy Director of the Youth Working Committee of the China Power Supply Society, Member of the Youth Working Committee of the China Electrotechnical Society, Member of the Professional Committee on Electronic Control Systems and Devices of the China Electrotechnical Society, Member of the Professional Committee on Electrical Automation of the Chinese Association of Automation, Member of the Technical Committee of PCIM Asia Conference, and Reviewer for multiple journals of IEEE Transactions and IET.



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Organizer's Brief Biography

中文：于思洋，工学博士，副教授，博士研究生导师，主要研究方向包括：特种电机的设计与分析、电气传动与电机控制、风力发电等。主持国家自然科学基金项目 1 项、省部级科技项目 3 项，沈阳市中青年人才项目 1 项；参与国家自然科学基金项目 5 项，其中重点项目 3 项，省部级科技项目 3 项，省部级人才项目 2 项。发表论文 60 余篇，其中 SCI/EI 检索期刊论文 40 余篇；授权发明专利 8 项。获教育部科技进步二等奖 1 项、中国电工技术学会科技进步一等奖和三等奖各 1 项，辽宁省研究生教学成果特等奖 1 项。国家及省部级项目评审专家，国内外重要刊物评审专家，参与编著中国电机工程学会专业发展报告 1 部、参与制定行业标准 1 部。

英文：Siyang Yu, Doctor of Engineering, Associate Professor, Ph.D. Supervisor. His research focuses on the design and analysis of special motors, electric drives and motor control, wind power generation, etc. He has presided over 1 National Natural Science Foundation of China (NSFC) project, 3 provincial/municipal-level scientific research projects, and 1 Shenyang Young Talent Program. As a participant, he contributed to 5 NSFC projects (including 3 Key Programs), 3 provincial/municipal-level scientific research projects, and 2 provincial/municipal-level talent programs. He has published over 60 academic papers, including 40+ SCI/EI-indexed journal articles, and holds 8 granted invention patents. His achievements include 1 Second Prize of Science and Technology Progress from the Ministry of Education, 1 First Prize and 1 Third Prize of Science and Technology Progress from the China Electrotechnical Society (CES), and 1 Special Prize of Liaoning Provincial Graduate Education Achievement. Dr. Yu serves as a reviewer for national and provincial/municipal-level research projects and key international/domestic journals. He has co-authored 1 professional development report of the China Electrotechnical Society and participated in the formulation of 1 industrial standard.



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Organizer’s Brief Biography

中文：秦伟，东南大学电气工程学院至善博士后、南通海洋高等研究院助理研究员。主要从事磁路理论与磁场调制理论方向的研究。主持国家自然科学基金青年项目、博士后基金面上资助，入选国家资助博士后研究人员计划 B 档、江苏省青年科技人才托举工程，作为项目骨干参与国家自然科学基金重大项目及其课题、原创探索计划项目及其延续资助、联合基金项目、面上项目。以第一作者/第二作者共发表 SCI/EI 论文 16 篇，授权中国发明专利 14 件，授权美国发明专利 4 件。

英文：Wei Qin, Zhishan Postdoctoral Fellow at the School of Electrical Engineering, Southeast University, and Assistant Researcher at Nantong Institute of Marine Science and Technology. He is mainly engaged in research on magnetic circuit theory and magnetic field modulation theory. He has presided over the National Natural Science Foundation of China (NSFC) Young Scientists Fund Project and the China Postdoctoral Science Foundation General Program. He was selected into Class B of the National Funded Postdoctoral Researchers Program and the Jiangsu Provincial Young Science and Technology Talents Support Program. As a core team member, he has participated in multiple NSFC projects, including Major Projects, Original Exploration Program Projects and their follow-up funding projects, Joint Fund Projects, and General Programs. He has published 16 SCI/EI-indexed papers as the first or second author, and holds 14 authorized Chinese invention patents and 4 authorized US invention patents.