

# Special Session X

## Special Session Basic Information:

<b>专栏题目</b> <b>Session Title</b>	中文：电力电子变换器及其系统的可靠性和稳定性 英文：Stability and reliability of power electronic converters and its connection systems
<b>专栏介绍和征稿主题</b> <b>Introduction and topics</b>	
<p>中文：随着新能源装机容量的快速增长，电力电子变换器得到广泛应用。然而，由于新能源出力的随机性和波动性，电力电子变换器故障率较高。同时，由于电力电子设备的非线性及其与电网的相互作用，宽频振荡问题凸显，影响其接入系统的稳定性。本专题的主要目的是推动学术界和工业界探索提高电力电子变换器可靠性和稳定性的新理论和新方法。具体主题如下：</p> <ol style="list-style-type: none"><li>1. 功率变换器的故障机理、状态监测与热管理。</li><li>2. 功率变换器接入电网的振荡抑制方法。</li><li>3. 功率变换器的设计与控制。</li><li>4. 功率变换器接入系统的稳定性分析。</li><li>5. 人工智能在功率变换器可靠性与稳定性中的应用</li></ol> <p>英文：With the rapid growth of new energy installed capacity, power electronic converters have been widely applied. However, due to the randomness and volatility of new energy output, the failure rate of power converters is high. At the same time, due to the nonlinearity of power electronic equipment and the interaction with the power grid, the problem of wide-frequency oscillation becomes prominent, affecting the stability of the power system. The main purpose of this special topic is to promote the academic and industrial communities to explore new theories and methods to improve the reliability and stability of power electronic converters, including the instability and failure mechanisms of power converters, as well as advance control approaches to enhance reliability and stability of power electronics system. The specific topics are as follows:</p> <ul style="list-style-type: none"><li>• 1.Failure mechanism, condition monitoring and thermal control of power converter.</li><li>• 2.Oscillation suppression methods of power converter integrated system.</li><li>• 3.Design and advance control of power converter.</li><li>• 4.Stability analysis of power converter integrated system.</li><li>• 5.Artificial intelligence in the reliability and stability of power converter</li></ul>	

## Special Session Chair(s):

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### Organizer's Brief Biography

中文：主要从事功率变换器稳定性分析与控制。主持了国家自然科学基金青年项目、重点研发子课题项目、重庆市面上项目等多项项目。已发表 20 余篇论文，其中 SCI 收录 10 余篇，EI 收录 10 余篇。授权发明专利 8 项。

英文：Junliang has demonstrated profound expertise in the field of power electronics stability through outstanding academic and research achievements. In terms of project leadership, he has led four key scientific and technological projects, including the Youth Program of the National Natural Science Foundation of China. On the academic front, he has authored over 20 high-quality papers as the first or corresponding author, with more than 10 indexed by SCI and over 10 by EI. He holds 8 authorized invention patents.



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### Organizer's Brief Biography

中文：主要从事大功率电力电子器件多物理场建模、故障仿真、可靠性评估及其系统应用研究。主持或参与了国家自然科学基金、国家重点研发计划和中国博士后科学基金等 9 项科研项目，获得重庆市科技进步二等奖、中国发明协会创新奖一等奖等。在 IEEE-TPEL、IEEE-JESTPE 等期刊发表论文 30 余篇，拥有 9 项授权发明专利。

英文：Ran mainly focuses on research in multi-physical field modeling, failure simulation, reliability assessment of high-power power electronic devices, and their system applications. He has led or participated in nine research projects funded by the National Natural Science Foundation of China, the National Key R&D Program, and the China Postdoctoral Science Foundation. He received the Second Prize of Chongqing Science and Technology Progress Award, the First Prize of the China Invention Association Innovation Award, and the Second Prize of the China Productivity Promotion Center Association Innovation and Development Award. He has published over 30 papers in journals such as IEEE-TPEL and IEEE-JESTPE, and holds nine authorized invention patents.