

Jili Xie

EDUCATION

University of Bologna (UniBo)

11/2024-Present

PhD Electrical Engineering (CSC)

Courses: *E-mobility, Smart Grids for Smart Cities: the Potential of Local Energy Communities, Superconducting technologies for energy transition, MATLAB Course on Artificial Intelligence Algorithms and Machine Learning Techniques, OpenSource programming tools for scientific purposes, Aerospace and Climate Change, Graph and Network Optimization, etc.*

Extra-curricular training: *Summer School on 'Electrical Machines and Drives for Green Transportation systems'.*

Research project: *Impact of Oil Cooling on the Reliability of Electric Traction Hairpin Motors.*

1. *This experiment designed an accelerated aging scheme under two types of oil mist media (ATF oil and synthetic ester oil), targeting the spring-shaped structure composed of PAI enameled wire, NKN liner, and aluminum wire winding, with aging tests conducted in a 190°C high-temperature environment across four time nodes: 0 hours, 7 days, 2 months, and 3 months, preparing 20 samples per combination to ensure statistical reliability, and employing multi-dimensional performance evaluations encompassing electrical aspects (dielectric properties, insulation resistance, PDIV, AC withstand voltage, and breakdown voltage), thermal aspects (DSC and TGA), chemical aspects (FTIR), and mechanical aspects (DMA) to analyze the influence of oil mist types on the degradation trends and mechanisms of the insulation system.*
2. *Based on the streamer inception criterion, research was conducted on PDIV modeling for the phase-to-phase insulation system of hairpin (form-wound) motors used in more electric aircraft, with a focus on analyzing the effects of air gaps (0 μm , 150 μm , and 300 μm) and low-pressure conditions (5 mbar to 1000 mbar) on PDIV, and predicting PDIV values using the Schumann inception criterion ($K=5.98$). The comparison of curves between experimental and simulated results demonstrates error analysis, and a comparison with Paschen's law reveals the voltage stress characteristics of the phase-to-phase insulation as the most critical component.*
3. *By constructing a phase-to-ground insulation model for hairpin motors, the PDIV values of insulation materials were measured using a PDIV testing system under conditions of 25°C and 180°C. Combining finite element electric field simulation and the Schumann streamer discharge inception criterion, the model constant $K=4.60$ was calibrated with experimental data, and this constant was applied to predict PDIV values, which were compared with experimental data to verify the simulation accuracy and calculate the prediction error.*

Supervisor: Prof. Andrea Cavallini (IEEE Fellow)

University of Bologna (UniBo)

09/2019-03/2022

Master of Science in Electrical Energy Engineering

Core Courses: *Electromagnetic Compatibility, Advanced Electromagnetic and Circuit Modeling, High Voltage Engineering and HVDC Technology, Electrical Assets Management, Predictive Maintenance for Electrical Infrastructures, etc.*

Harbin University of Science and Technology (HUST)

09/2015-06/2019

Bachelor's Degree in Electrical Engineering and Automation

Overall GPA: 3.5/5.0 (85%)

Core Courses: *Dielectric Physics, Cable Materials, Power Cable, Electrical Insulation Testing Technology, Principle of Cable Technology, Cable Testing Technology, etc.*



PUBLICATIONS & PATENTS

Papers:

- *Xie J, Zhang M, Luo H. Study on the Dislocation Defects of the Stress Cone in 10kV Cable Joints Based on Electro-Thermo-Mechanical Multi-physics Coupled Fields, the 6th International Conference on Power and Energy Technology (ICPET 2024), Beijing, China.*
- *Xie J, Gao J. Testing for Non-metallic Ceramic Materials Based on Air-coupling Ultrasonic Wave. Bulletin of the Chinese Ceramic Society, 2018,37(06):1989-1994. (In Chinese)*
- *Xie J, Ma H. Application of Improved APO Algorithm in Vulnerability Assessment and Reconstruction of Microgrid, 2017 3rd International Conference on Environmental Science and Material Application (ESMA2017), Chongqing, China.*
- *Wang L, Mao M, Xie J. Accurate Solar PV Power Prediction Interval Method Based on Frequency-Domain Decomposition and LSTM Model. Energy; Volume 262, Part B,2023. (IF=9, JCR1)*

Patents:

- *Jili Xie. A low voltage AC contactor. Chinese Patent CN201721251636.9. (May 2018)*
- *Jili Xie. A voltage converter. Chinese Patent CN201721249770.5. (May 2018)*

RESEARCH EXPERIENCES

Research on Simulation of the Electrical-Thermal Field of DC/ AC Cable Terminal under Damp Defects

04/2023-01/2024

Tsinghua University

Researcher

Advisor: Associated Professor Chuanyang Li

- Established the cable terminal model with the water layer at different locations;
- Simulated the electrical and temperature fields of the water layer at different locations of AC cable;

Study on the Air-Coupled Ultrasonic On-line Monitoring Method of the Bonding Characteristics of the Layered Composite

05/2017-05/2018

Researcher

Advisor: Professor Junguo Gao

- Established the mathematical model of air-coupled ultrasonic incident on non-metallic ceramic materials and the finite element model of air-coupled ultrasonic detection of non-metallic ceramic materials ;
- Studied the propagation characteristics of air-coupled ultrasonic waves in non-metallic ceramic materials through the joint simulation of Matlab and ANSYS.

PROFESSIONAL EXPERIENCES

Siemens (China) Co., Ltd.

02/2019-08/2019

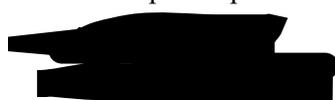
Intern, Siemens Transformer Division

- Participated in the research project of “Design and Implementation of Power Transformer Condition Monitoring Platform”;
- Designed a sensor monitoring network architecture to complete the data acquisition of monitoring parameters;
- Established a mathematical model of common transformer failures and utilised simulink to simulate the local discharge model of transformers and winding temperature hot spot models.

ZF (China) Investment Co., Ltd.

08/2018-01/2019

Intern, Research and Development Department

- Participated in the research project of “DSP Development and Design of Frequency Conversion Speed Regulation System”;
 - Systematically learned the application of Altium designer circuit design simulation software, simulation analysis of frequency conversion speed regulation system based on PLECS, operation of DSP development platform CCS.
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TBEA Shandong Luneng Taishan Cable Co., Ltd. Cable Research Institute

06/2018-08/2018

Intern, Cable Research Institute

- Simulated the flow process of polyethylene during soft joint extrusion using Polyflow fluid simulation software;
- Calculate the electric field distribution of the silicon rubber integral prefabricated cable joint under different temperature gradients using the COMSOL Multiphysics coupling software.

ACADEMIC SKILLS

- Experienced in software: COMSOL, MATLAB, ANSYS
- Skilled in experimental equipment: XRD, FTIR, SEM

EXTRACURRICULAR ACTIVITIES

- *Second prize* of academic scholarship, HUST 09/2018-02/2019
- *Third prize* of academic scholarship, HUST 02/2018-09/2018
- *Second prize* of academic scholarship, HUST 09/2017-02/2018
- *Third prize* of academic scholarship, HUST 02/2017-09/2017
- *Second prize* of academic scholarship, HUST 09/2016-02/2017
- *Second prize* of academic scholarship, HUST 02/2016-07/2016
- *Second prize* of the 4th Science and Technology Innovation Works Competition, HUST 04/2018
- *Second prize* of the 5th College Students Physics Competition, HUST 04/2017
- *First prize* of the Mathematical Modelling Competition, HUST 06/2016

LANGUAGE ABILITY

- English: IELTS: overall 7 (listening: 6.5 reading: 8.5 writing: 6.5 speaking: 5.5) 01/2019

