Dr Guang-Jin Li

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Nationality: Chinese

Date of birth: 07/Mar./1984

Gender: Male

Working experience

Lecturer in Electrical Machines (09/2013 - present)

Electrical machines & drives (EMD) group, Department of Electronic And Electrical Engineering, University of Sheffield, UK.

Research associate in electrical engineering (06/2012-09/2013)

Subject: "*Design and modelling of fault-tolerant modular machines for wind turbine application*"

Under the supervision of: Prof. Zi-Qiang Zhu, EMD group, University of Sheffield, UK.

Industrial partner: Siemens Wind Power.

Research associate in electrical engineering (09/2011 - 04/2012)

Subject: "*Faulty modelling and tests for a hybrid excitation switched flux permanent magnet machine*"

Under the supervision of: Pr. Mohamed Gabsi and Dr. Emmanuel Hoang (associate professor), laboratory of Systèmes et Applications des Technologies de l'Information et de l'Energie (SATIE), Ecole Normale Supérieure (ENS) de Cachan, Paris, France.

Industrial partners: Safran Power, Division of Hipano-Suiza and Messier-Bugatti firms.

Teaching experiences

- Fellow of The Higher Education Academy (HEA), date of recognition: 10/Aug./2015.
- PhD supervisor, 3 PhD students are currently under supervision.
- Lecturer, UG module "Machine Design" from 02/2014 and MSc module "Permanent Magnet Machines and Actuators" from 10/2014.
- Teaching Assistant, 3 hours lecture in the design of electrical machines at the ENS Cachan, France, in 2011. Level of students: second year research master in Electrical Engineering.
- Teaching Assistant, 213 hours practical work in electrical engineering at the Conservatoire National des Arts et Métiers (CNAM) in Paris from 2008 to 2011. Level of students: first year professional master in Electrical Engineering.

Education and training

PhD in Electrical Engineering (09/2008 - 08/2011)

Subject: "*Contribution to the Design of Electrical Machines with Passive Rotor for Critical Applications: Combined Thermal-Electromagnetic Analysis for Driving Cycles, Study in Degraded Modes*." **(**http://tel.archives-ouvertes.fr/tel-00620713/fr/**)**

Under the supervision of: Pr. Mohamed Gabsi and Dr. Emmanuel Hoang (associate professor), laboratory of SATIE, ENS Cachan, France.

Industrial partners: Safran Power, Division of Hipano-Suiza and Messier-Bugatti firms.

Research Master Degree in electrical engineering of University of Paris SUD, ENS Cachan and Supelec (10/2007 - 07/2008).

Internship of Research Master in Laboratory of Electrical Engineering of Paris (LGEP), under the supervision of Dr. Mickaël Hilairet (associate professor) (01/2008 - 06/2008).

Subject: "*Design of a hybrid current controller for switched reluctance machines*."

Bachelor Degree in electrical engineering in the school of electrical engineering of Wuhan University, China (09/2003 – 06/2007).

Scientific production (2008 – present)

- **14** published international journals, **11** published international conferences, **1** European patent.

Esteem factor

- Committee member of UK Magnetic Society, Member of IEEE.
- Session chairman of ICEMS2013, IEEE ICIT2015.

Areas of expertise

- Design and control of switched reluctance motors (SRM) and permanent magnet motors;
- Modelling of coupled phenomena (electromagnetic-faulty-thermal) for critical applications;
- Fault-tolerance of redundant or multi-phase machines taking into account the faults: short-circuit, open-circuit and overheated.
- Analytical and numerical, static and transient modelling (2D and 3D) of electrical machine during driving cycle. The temperature measurement and analysis.
- Control of electrical machines under *d*Space, real time simulation using MATLAB/Simulink.

Languages

Chinese (mother tongue); English (advanced)**;** French **(**advanced).

Software utilized

Vector field, ANSYS (2D and 3D electromagnetic and transient thermal models), **FEMM**.

MATLAB/Simulink and *d*Space, C language.

Corel-DRAW, Auto-CAD, WORD, EXCEL, Power point.

II. List of publications

14, published international journals

1. **G. J. Li**, B. Ren, Z. Q. Zhu, Y. X. Li, and J. Ma, "Cogging torque mitigation of modular permanent magnet machines," *IEEE Trans. Magnetics.*, 07/09/2015 (Accepted).
2. **G. J. Li**, Z. Q. Zhu, and G. W. Jewell, "Performance investigation of hybrid excited switched flux PM machines using frozen permeability method," *IET Electric Power Appl.*, 2015 (Accepted).
3. Y.X. Li, Q. F. Lu, Z.Q. Zhu, L.J. Wu, **G.J. Li**, and D. Wu, "Analytical synthesis of air-gap field distribution in permanent magnet machines with rotor eccentricity by superposition method," *IEEE Trans. Mag.*, 2015 (In press).
4. **G. J. Li**, and Z. Q. Zhu, "Analytical modelling of modular and unequal tooth width surface-mounted permanent magnet machines," *IEEE Trans. Mag.*, vol.51, no.9, pp. 1-9, Jul. 2015.
5. **G. J. Li**, Z. Q. Zhu, M. Foster, D. Stone and H. L. Zhan, "Modular permanent magnet machines with alternate teeth having tooth tips," *IEEE Trans. Ind. Electron.*, Apr. 2015.
6. **G. J. Li**, S. Hlioui, J. Ojeda, E. Hoang, M. Lecrivain, M. Gabsi, and Z. Q. Zhu, "Modelling of short-circuit in hybrid excitation flux-switching permanent magnet motor," *IEEE Trans. Energy Convers.*, vol.29, no.3, pp.567-575, Sept. 2014.
7. **G. J. Li**, Z. Q. Zhu, W. Q. Chu, M. Foster, and D. Stone, "Influence of flux gaps on electromagnetic performance of novel modular pm machines," *IEEE Trans. Energy Convers.*, vol.29, no.3, pp.716-726, Sept. 2014.
8. X. B. Liang, **G. J. Li**, J. Ojeda, M. Gabsi and Z. Ren, "Comparative study of classical and mutually coupled switched reluctance motor using multi-physics FE Modelling," *IEEE Trans. Ind. Electron.*, vol.61, no.9, pp.5066-5074, Sept. 2014.
9. **G. J. Li**, Z. Q. Zhu, M. Foster, and D. Stone, "Comparative studies of modular and unequal tooth pm machines either with or without tooth tips," *IEEE Trans. Mag.*, vol.50, no.7, pp.1-10, Jul. 2014.
10. X. Ojeda, M. G. Simões, **G. J. Li**, and M. Gabsi, "Design of a flux switching electrical generator for wind turbine systems," *IEEE Trans. Ind. Appl.*, vol.48, no.6, pp.1808-1816, Nov.-Dec. 2012.
11. **G. J. Li**, X. Ojeda, S. Hlioui, E. Hoang, M. Lecrivain and M. Gabsi, "Modification in rotor pole geometry of mutually coupled switched reluctance machine for torque ripple mitigating," *IEEE Trans. Mag.*, vol.48, no.6, pp.2025-2034, Jun. 2012.
12. **G. J. Li**, X. Ojeda, E. Hoang, M. Gabsi and M. Lecrivain, "Thermal-electromagnetic analysis for driving cycles of embedded flux-switching permanent magnet motors," *IEEE Trans. Vehicular Technol.*, vol.61, no.1, pp.140-151, Jan. 2012.
13. **G. J. Li**, X. Ojeda, E. Hoang and M. Gabsi, "Thermal-electromagnetic analysis of a fault-tolerant dual star flux-switching permanent magnet motor for critical applications," *IET Elec. Power Appl.*, vol. 5, no. 6, pp.503-513, Jul. 2011.
14. **G. J. Li**, X. Ojeda, E. Hoang, M. Gabsi and M. Lecrivain, "Comparative studies between classical and mutually coupled switched reluctance motors using thermal-electromagnetic analysis for driving cycles," *IEEE Trans. Mag.*, vol.47, no.4, pp.839-847, Apr. 2011.

1, European patent

1. **G. J. Li**, Z. Q. Zhu, and A. S. Thomas, "Modular dual 3-phase SPM machines for wind turbine application," Application been filled. Official file No. **102013206572.8**, Filing date: **12.04.2013**

11, published international conferences

1. X. Y. Ma, **G. J. Li**, G. Jewell, and Z. Q. Zhu, "Comparative study of short-pitched and fully-pitched SRMs supplied by sine wave currents," ICIT 2015, Seville, Spain, 16-20 Mar. 2015.
2. P. Taras, **G. J. Li**, and Z. Q. Zhu, "Comparative study of alternative modular switched flux permanent magnet machines," ICIT 2015, Seville, Spain, 16-20 Mar. 2015.
3. A. S. Thomas, Z. Q. Zhu, and **G. J. Li**," Electromagnetic loss investigation and mitigation in switched flux permanent magnet machines," *ICEM 2014*, Berlin, Germany, 2-5 Sept. 2014.
4. A. S. Thomas, Z. Q. Zhu, and **G. J. Li**," Thermal modelling of switched flux permanent magnet machines," *ICEM 2014*, Berlin, Germany, 2-5 Sept. 2014.
5. X. B. Liang, **G. J. Li**, J. Ojeda, M. Gabsi and Z. Ren, "Comparative study of vibration and acoustic noise between classical and mutually coupled switched reluctance motors," *ICEM 2012*, Marseille, France, September 2012.
6. **G. J. Li**, X. Ojeda, E. Hoang, and M. Gabsi, "Double and single layers flux-switching permanent magnet motors: fault tolerant model for critical applications," *ICEMS 2011*, Beijing, China**,** August 2011.
7. B. Chareyron, J. Ojeda, **G. J. Li**, S. Hlioui, M. Gabsi and Y. D. Li, "Model and control of a hybrid excitation flux switching machine for torque ripple reduction," *ELECTRIMACS 2011*, Cergy-Pontoise, France**,** June 2011.
8. **G. J. Li**, X. Ojeda, E. Hoang, M. Gabsi, and C. Balpe, "Design of double salient interior permanent magnet machine based on mutually coupled reluctance machine for increasing the torque density and flux-weakening capability," *IEEE Annual Conference ISIE 2010*, Bari, Italy, July 2010.
9. X. Ojeda, **G. J. Li** and M. Gabsi, "Fault diagnosis using vibration measurements of a flux-switching permanent magnet motor," *IEEE Annual Conference ISIE 2010*, Bari, Italy**,** July 2010.
10. **G. J. Li**, X. Ojeda, S. Hlioui, E. Hoang, M. Gabsi and C. Balpe, "Comparative study of switched reluctance motor performances for two current distributions and excitation modes*," IEEE Annual Conference IECON 2009*, Porto, Portugal, November 2009.
11. **G. J. Li**, X. Ojeda, E. Hoang, M. Lecrivain and M. Gabsi, "A new method of current density distribution for switched reluctance machine to increase average output torque," *PCIM 2009,* Shanghai, China, June 2009**.**