Babak Ganji, PhD

Associate Professor at University of Kashan, Iran (Feb 2009 to present)

IEEE Senior member

Birthday: September 17, 1977

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Educational Background

Sept. 2002 - Dec. 2008	PhD in Electrical Engineering – Power School of Electrical and Computer Engineering, University of Tehran, Iran Total Passed Units : 24, GPA: 17/20 Comprehensive Exam: 17/20 Dissertation : Electromagnetic and Thermal Modeling of Switched Reluctance Motor with Finite Element Method using ANSYS Supervisor : Prof. Jawad Faiz, Co-advisor : Prof. Rik W. De Doncker, RWTH Aachen University
Sept. 2000 - Jul. 2002	Master of Science in Electrical Engineering – Power School of Electrical and Computer Engineering, University of Tehran, Iran Total Passed Units: 32, GPA: 16.8/20 Thesis Title: Core Losses Modeling of Switched Reluctance Motor Supervisor : Prof. Jawad Faiz
Sept. 1996 - Jul. 2000	Bachelor of Science in Electrical Engineering – Power Faculty of Electrical and Computer Engineering, Isfahan University of Technology, Esfahan, Iran Total Passed Units: 141, GPA: 15.7/20

Favorite Field

Modeling and Design of Electrical Machines

Award

German Academic Exchange Service (DAAD) Research Fellowship for six months in 2006

Academic Experience

- ✓ Jun. 2006 - Dec. 2006 : Visiting Researcher - Institute for Power Electronics and Electrical Drives, RWTH Aachen University, Germany (www.isea.rwth-aachen.de)
- ✓ Feb. 2009 to present : Associate Professor at university of Kashan: (www.kashanu.ac.ir)
  - Teaching:
    - **Undergraduate:** Basic Electrical Engineering, Electrical Machine I, Electrical Machine II, Special Electric Machine.
    - **Graduate:** Electrical Machine Design, Special Electrical Machine Design, General Theory of Electrical Machines
  - Head of the Electrical Engineering Department (Sep. 2011 to Sep. 2012)
  - Head of the Power Department (Sep. 2012 to Sep. 2014)
  - Associate Dean of the Faculty in Undergraduate Studies and Graduation (Sep. 2014 to 2018)
  - Head of the Power Department (Jan. 2026 to present)

Selected Conference Papers:

[1] J. Faiz, B. Ganji, P. Pillay, and C. Yicheng, "Analytical core loss model for switched reluctance motor with experimental verification", Proceeding of the 9th International Conference on Optimization of Electrical and Electronic Equipments (OPTIM 2004), Brasov, Romania, vol. 2, pp. 47-52, 2004.

[2] J. Faiz, B. Ganji, R. De Doncker, and J. Fiedler, "Electromagnetic modeling of switched reluctance motor using FEM," The 32nd Annual Conference of the IEEE Industrial Electronics Society, IECON'06, Paris, France, pp. 1557-1562, 2006.

[3] M. Heidarian and B. Ganji, "A dynamic simulation model based on finite element method for switched reluctance generator," The 23rd International Symposium on Power Electronics, Electrical Drives, Automation and Motion, SPEEDAM'16, Capri, Italy, pp. 1427-32, 2016.

[4] O. Naderi and B. Ganji, "Noise reduction of switched reluctance motors", The 8th IEEE Power Electronics, Drive Systems & Technologies Conference (PEDSTC), Mashhad, Iran, pp. 300-304, 2017.

[5] B. Ganji, Y. Sohrabinasab, and M. Beigi, "Mutual coupling effect on steady state performance of switched reluctance motor," The 25th Iranian Conference on Electrical Engineering (ICEE), Tehran, Iran, pp. 1291-95, 2017.

[6] M. Heidarian and B. Ganji, "Design optimization of switched reluctance generator to maximize efficiency and gen-power ratio," The 17th IEEE International Conference on Environment and Electrical Engineering (IEEE EEEIC), Milan, Italy, pp. 1-5, 2017.

[7] R. Afzali and B. Ganji, "Performance prediction of switched reluctance motor under eccentricity fault," The 17th IEEE International Conference on Environment and Electrical Engineering (IEEE EEEIC), Milan, Italy, pp. 1-6, 2017.

[8] M. Rashidian, B. Ganji, and M. Rahimi, "Mitigation of power fluctuation in variable-speed wind turbine with DFIG," The 17th IEEE International Conference on Environment and Electrical Engineering (IEEE EEEIC), Milan, Italy, pp. 1-5, 2017.

[9] A. Fakhrian, B. Ganji, M. Mohammadi, and H. Samet, "De-rating of transformers under non-sinusoidal loads: modeling and analysis," The 19th IEEE International Conference on Environment and Electrical Engineering (IEEE EEEIC), Genoa, Italy, pp. 1-5, 2019.

[10] A. Zare, B. Ganji, and B. Mirzaeian, "Modeling of linear switched reluctance motors using fuzzy clustering method", The 12th IEEE Power Electronics, Drive Systems & Technologies Conference (PEDSTC), Tabriz, Iran, pp. 1-6, 2021.

[11] M. Golzarzadeh, H. Oraee, and B. Ganji, "Modeling and Analysis of Segmental Translator Permanent Magnet Linear Switched Reluctance Motor," The 32th Iranian Conference on Electrical Engineering (ICEE), Tehran, Iran, pp. 1-6, 2024.

[12] A. M. Dashtizadeh and B. Ganji, "A delta-shape combined pole interior permanent magnet motor with lower permanent magnet cost," The 5th International Conference on Electrical Machines and Drives (ICEMD), Tehran, Iran, pp. 1-6, 2025.

Selected Journal Papers:

[1] R. Aghazadeh, H. Lesani, M. Sanaye-pasand, and B. Ganji, "New technique for frequency and amplitude estimation of power system signals ", *IEE Proceedings Generation, Transmission and Distribution*, vol. 152, no. 3, pp. 435- 440, 2005.

[2] J. Faiz, B. Ganji, C. E. Carstensen, and R. W. De Doncker, "Loss prediction in switched reluctance motors using finite element method," *Euro. Trans. Electr. Power*, vol. 19, pp. 731-748, 2009.

[3] J. Faiz, B. Ganji, C. E. Carstensen, K. Kasper, and R. W. De Doncker, "A temperature rise analysis of switched reluctance motors using finite element method," *IEEE Trans. Magn.*, vol. 45, no. 7, pp. 2927-2934, 2009.

[4] B. Ganji, J. Faiz, K. Kasper, C. E. Carstensen, and R.W. De Doncker, "Core loss model based on finite-element method for switched reluctance motors," *IET Electr. Power Appl.*, vol. 4, no. 7, pp. 569-577, 2010.

[5] B. Ganji, M. Heidarian, and J. Faiz, "Modeling and analysis of switched reluctance generator using finite element method," *Ain Shams Engineering*, vol. 6, no.1, pp. 85-93, 2015.

[6] B. Ganji, Z. Mansourkiaee, and J. Faiz, "A fast general core loss model for switched reluctance machine," *Energy*, vol. 89, pp. 100-105, 2015.

[7] M. Jafari and B. Ganji, "Modification in geometric structure of double-sided axial flux switched reluctance motor for mitigating torque ripple," *Canadian Journal of Electrical and Computer Engineering*, vol. 38, no. 4, pp. 318-322, 2015.

[8] O. Naderi and B. Ganji, "Design optimization of switched reluctance motor for noise reduction", *Engineering Review*, vol. 36, no. 3, pp. 293-301, 2016.

[9] B. Ganji and M. H. Askari, "Analysis and modeling of different topologies for linear switched reluctance motor using finite element method," *Alexandria Engineering Journal*, vol. 55, pp. 2531-38, 2016.

[10] P. Vahedi and B. Ganji, "A switched reluctance motor with lower temperature rise and acoustic noise," Journal of Electrical and Computer Engineering Innovations, vol. 6, no. 1, pp. 43-52, 2018.

[11] Y. Sohrabinasab and B. Ganji, "A comprehensive electromagnetic simulation model for switched reluctance motor operating under multiphase excitation", *Engineering Review*, vol. 39, no. 3, pp. 302-309, 2019.

[12] M. Shiravi, B. Ganji, and A. Shiravi, "Static coil design considerations for the MRI", *IJE TRANSACTIONS C: Aspects*, vol. 32, no. 3, pp. 393-399, 2019.

[13] M. Golzarzadeh and B. Ganji, "Analytical modelling of the linear switched reluctance motor with segmental translator," *IET Electr. Power Appl.*, vol. 13, no. 4, pp. 527-537, 2019.

[14] S. M. H. Mirzaei, B. Ganji, and S. A. Taher, "Performance improvement of distribution networks using the demand response resources", *IET Gener. Transm. Distrib.*, vol. 13, no. 18, pp. 4171-4179, 2019.

[15] M. Seyedi, S. A. Taher, B. Ganji, and J. M. Guerrero, "A hybrid islanding detection technique for inverter-based distributed generator units," *Int Trans Electr Energ Syst.*, vol. 29, no. 11, 2019.

[16] P. Vahedi, B. Ganji, and E. Afjei, "Multi-layer switched reluctance motors: performance prediction and torque ripple reduction," *Int Trans Electr Energ Syst.*, vol. 30, no. 2, 2020.

[17] P. Vahedi, B. Ganji, and E. Afjei, "A multi-physics simulation model based on finite element method for the multi-layer switched reluctance motor," Iranian Journal of Electrical and Electronic Engineering, vol. 16, no. 4, pp. 494-504, 2020.

[18] A. Zare and B. Ganji, "Instantaneous thrust control of the linear switched reluctance motors with segmental translator," *Scientia Iranica Journal*, vol. 27, no. 6, pp. 3140-49, 2020.

[19] P. Vahedi, B. Ganji, and E. Afjei, "A lumped thermal model for the multi-layer switched reluctance motor," *IET Electr. Power Appl.*, vol. 14, no. 10, pp. 1873-85, 2020.

[20] E. Kiani, B. Ganji, and S. A. Taher, "Model predictive control of switched reluctance generator based on z-source converter for wind power applications," *Int Trans Electr Energ Syst.*, vol. 30, no. 11, article number: e12578, 2020.

[21] P. Vahedi and B. Ganji, "A simple magnetic equivalent circuit model for switched reluctance machine," *Electrical Engineering*, vol. 132, no. 2, pp. 1307-20, 2021.

[22] M. Seyedi, S. A. Taher, B. Ganji, and J. Guerrero, "A hybrid islanding detection method based on the rates of changes in voltage and active power for the multi-inverter systems," *IEEE Trans. Smart Grid*, vol. 12, no. 4, pp. 2800-11, 2021.

[23] S. Nasr, B. Ganji, and M. Moallem "Design optimization of the delta-shape interior permanent magnet synchronous motor for electric vehicle application," *Journal of Electrical and Computer Engineering Innovations*, vol. 11, no. 2, pp. 291-300, 2023.

[24] M. Golzarzadeh, H. Oraee, and B. Ganji, "Lumped parameter thermal model for segmental translator linear switched reluctance motor," *IET Electr. Power Appl.*, vol. 17, no. 12, pp. 1548-61, 2023.

[25] P. Vahedi, B. Ganji, and E. Afjei, "Design optimization of the multi-layer switched reluctance motor to minimize torque ripple and maximize average torque," *AUT Journal of Electrical Engineering*, vol. 56, no. 1, pp. 95-112, 2024.

[26] M. Akhlaqi, B. Ganji, and P. Vahedi, "Analytical modelling of the linear transverse flux permanent magnet motor with magnetic equivalent circuit method," *IET Electr. Power Appl.*, vol. 18, no. 10, pp. 1266-78, 2024.

[27] M. Shiravi and B. Ganji, "Introducing a new shimming method based on combination of axial and radial Halbach arrays to have a uniform flux density for a low-field portable MRI system," *Scientia Iranica Journal*, vol. 31, no. 21, pp. 1971-80, 2024.

[28] M. Golzarzadeh, H. Oraee, and B. Ganji, "Design and optimization of segmental translator linear switched reluctance motor," *Journal of Applied Research in Electrical Engineering*, vol. 3, no. 2, pp. 222-31, 2024.

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[30] M. Golzarzadeh, H. Oraee, and B. Ganji, "Design and optimization of segmental translator linear switched reluctance motor," *Scientia Iranica Journal*, in press.

[31] S. Nasr, B. Ganji, and M. Moallem, "Design and optimization of the delta-shape interior permanent magnet synchronous motor for electric vehicle application," *Scientia Iranica Journal*, in press.

[32] M. Golzarzadeh, Z. Nasiri-Gheidari, H. Oraee, and B. Ganji, "Integrated analytical modeling to predict performance characteristics of linear switched reluctance motor," *Scientia Iranica Journal*, in press.