Yuanzhu Chang

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ACADEMIC BACKGROUND

- **Postdoctoral Fellow** Aug. 2020—Present
  Project: Development of industrial level wind park and DFIG models for steady state and transient studies.
  Supervisors: Prof. Ilhan Kcoar (*IEEE Senior Member*) and Prof. Jean Mahseredjian (*IEEE Fellow*).
- **PhD in Electrical Engineering**. Sep. 2014—June. 2020
  Huazhong University of Science and Technology. GPA:87.0/100 Top10%
  Dissertation: Fault analysis of power systems integrating DFIG-based wind turbine.
  Transferred to PhD without completing Masters.
  Supervisor: Prof. Jiabing Hu (*IEEE Senior Member*, *IET Fellow*).
- **Bachelor in Electrical Engineering.** Sep. 2010—Jun. 2014
  Huazhong University of Science and Technology. GPA:86.65/100 Top10%

SCHOLARSHIPS AND PRIZES RECEIVED

- 1st Scientific and Technological Advancement Award, State Grid Corporation of China. 2020
- 1st Scientific and Technological Advancement Award, China Electric Power Research Institute. 2020
- Best Conference Paper Award, the International Conference on Renewable Power Generation, IET. 2019
- First-class PhD Student Scholarship, Huazhong University of Science and Technology 2014-2019
- First-class Academic Scholarship, Huazhong University of Science and Technology 2014-2019
- Best Oral Speaker, Tsinghua University-IET Electrical Engineering Academic Forum. 2018
- Best Paper Award, Wuhan Power Supply Society General Meeting. 2018
- 1st PhD Student Scholarship of Hopewind Electric Co., Ltd.. 2018
- Star Reviewer, IEEE Transactions on Energy Conversion. 2017–2018
- Best Conference Paper Award, the International Conference on Renewable Power Generation, IET. 2017
- Excellent Scholarships of Mitsubishi Electric Corporation. 2017 and 2015
- Best Oral Speaker, Wuhan University Electrical Engineering Forum. 2016
- Excellent Student Scholarships of Infineon Technologies. 2014 and 2016
- Excellent Undergraduate Dissertation of Hubei Province, China 2014
- National First Prize in National Undergraduate Electronic Design Contest. 2013

SCIENTIFIC ACHIEVEMENTS

- ***Articles Published in Journals with An Editorial Team (RAC)***

[1] **Y. Chang**; J. Hu, G. Song; X. Kong, Y. Yuan, "Impact of DFIG-based wind turbine's fault current on distance relay during symmetrical faults," in *IET Renewable Power Generation*, vol. 14, no. 16, pp. 3097-3102, Dec 2020.

[2] Z. He, J. Hu, L. Lin, **Y. Chang** and Z. He, "Pole-to-ground Fault Analysis for HVDC Grid Based on Common- and Differential-mode Transformation," in *Journal of Modern Power Systems and Clean Energy*, vol. 8, no. 3, pp. 521-530, May 2020.

[3] **Y. Chang**, J. Hu and X. Yuan, "Mechanism Analysis of DFIG-Based Wind Turbine's Fault Current During LVRT With Equivalent Inductances," in *IEEE Journal of Emerging and Selected Topics in Power Electronics*, vol. 8, no. 2, pp. 1515-1527, June 2020.

[4] **Y. Chang**, J. Hu, X. Kong and Y. Yuan, "Characteristics Analysis of DFIG-based Wind Turbine's Stator Fault Current During Crowbar Protection by Operational Inductance," in *Proceedings of the Chinese Society for Electrical Engineering (CSEE)*, vol. 39, no. 21, pp. 6192-6199, Nov 2019.

[5] **Y. Chang**, J. Hu, W. Tang and G. Song, "Fault Current Analysis of Type-3 WTs Considering Sequential Switching of Internal Control and Protection Circuits in Multi Time Scales during LVRT," in *IEEE Transactions on Power Systems*, vol. 33, no. 6, pp. 6894-6903, Nov. 2018.

[6] W. Tang, J. Hu, **Y. Chang** and F. Liu, "Modeling of DFIG-based WT for System Transient Response Analysis in Rotor Speed Control Timescale," in *IEEE Transactions on Power Systems*, vol. 33, no. 6, pp. 6795-6805, Nov. 2018.

[7] **Y. Chang** and X. Kong, "Linear demagnetizing strategy of DFIG-based WTs for improving LVRT responses," in *The Journal of Engineering*, vol. 2017, no. 13, pp. 2287-2291, 2017.

[8] J. Liu, J. Hu, **Y. Chang**, W. Tang and H. Tang, "Short-circuit current analysis of grid-connected LCL VSC by operational inductance," in *The Journal of Engineering*, vol. 2017, no. 13, pp. 1101-1105, 2017.

- ***Contributions To A Collective Work (Chapters in A Book) (COC)***

[9] Organizing Committee of National Undergraduate Electronic Design Contest, "Single-phase AC/DC Converter," in *Awarded Works of 11th National Undergraduate Electronic Design Contest*, Beijing Institute of Technology Press, 2015, 1(1): 3-10. ISBN 978-7-5682-0173-5.

- ***Conferences With Review (COF)***

[10] **Y. Chang**, J. Hu, X. Liu and G. Song (Best Paper Award), "Impact of DFIG-based wind turbine's fault current on distance relay during symmetrical faults," *8th Renewable Power Generation Conference (RPG 2019)*, Shanghai, China, 2019, Shanghai, China.

[11] X. Yu, **Y. Chang**, J. Hu and L. Shang, "Fault Current Analysis of Type-3 Wind Turbine Considering Dynamic Influence of Phase Locked Loop," *2019 10th International Conference on Power Electronics and ECCE Asia (ICPE 2019 - ECCE Asia)*, Busan, Korea (South), 2019.

[12] **Y. Chang** (Invited Panelist), "Fault Current Analysis of DFIG-based WT: Operational Inductance and The Analytical Method," Panel: Invited Young Scholars' Forum, *the 2nd IEEE Conference on Energy Internet and Energy System Integration*, 2018, Beijing, China.

[13] **Y. Chang**, J. Hu, E. Zhang and X. Zhang, "Impact of Nonlinearity on Type-3 WT's Fault Current," *2018 IEEE 4th Southern Power Electronics Conference*, Singapore, 2018, pp. 1-7.

[14] **Y. Chang** (Best Paper Award), "Sequential Switching Characteristic of DFIG-based Wind Turbine during LVRT and the Fault Current Analytical Method based on Operational Inductance," *Wuhan Power Supply Society General Meeting 2018*, Wuhan, China.

[15] **Y. Chang** (Best Oral Speaker), "Characteristics Analysis to DFIG-based Wind Turbine's Stator Current During Crowbar Protection and Symmetrical Fault by Operational Inductance," *Tsinghua University-IET Electrical Engineering Academic Forum 2018*, Beijing, China.

[16] **Y. Chang** and X. Kong, "Linear demagnetizing strategy of DFIG-based wind turbines for improving LVRT responses," *International Conference on Renewable Power Generation (RPG)*, Wuhan, 2017. (Best Conference Paper Award)

[17] **Y. Chang** and J. Hu, "Modeling, analysis and parameters design of rotor current control in DFIG-based wind turbines for dynamic performance optimizing," *2017 IEEE Energy Conversion Congress and Exposition (ECCE)*, Cincinnati, OH, 2017, pp. 3303-3308.

[18] **Y. Chang**, J. Hu, W. Tang and H. Tang, "Operational inductance of DFIG-based wind turbines for fault current analysis during LVRT," *2017 IEEE Power & Energy Society General Meeting*, Chicago, IL, 2017.

[19] W. Tang, J. Hu, **Y. Chang** and X. Kong, "Short-circuit current of grid-connected voltage source converters: Multi-timescale analysis method," *2017 IEEE Power & Energy Society General Meeting*, Chicago, IL, 2017.

[20] **Y. Chang** (Best Oral Speaker), "Study of Fault Ride Through Operation in DFIG-based Wind Turbines," *Wuhan University Electrical Engineering Forum 2016,* Wuhan, China.

[21] H. Tang, **Y. Chang**, Y. Chi, B. Wang, Y. Li and J. Hu, "Analysis and control of doubly fed induction generator for zero voltage ride through," *2016 19th International Conference on Electrical Machines and Systems (ICEMS)*, Chiba, 2016, pp. 1-5.

- ***Patents (BRE)***

[22] J. Hu, **Y. Chang**, Q. Li and J. He, "A kind of quantitative method of interaction among multi renewable power stations," China Patent ZL 2016 1 0377589.6, Oct. 2016. (Granted)

[23] J. Hu, **Y. Chang**, E. Zhang and X. Yuan, "AC Excitation Synchronous Condenser and its Control Method," China Patent (Application Number CN 108281970 A), Dec. 2017. (Granted)

[24] J. Hu, **Y. Chang**, E. Zhang and X. Yuan, "AC Excitation Synchronous Condenser and Control Method," US Provisional Patent (Patent No. 10411627), Dec. 2017. (Granted)

- ***Other Achievements (AUT)-Research Reports***

[26] Technical Report, "Protection for developing network with limited fault current capability of generation," *International Council on Large Electric systems (CIGRE) Working Group B5.48 Report*, France, 2021. (To be published)

[27] Technical Report, "Behavior of Inverter-Based Resources in Response to Bulk Grid Faults," *International Electrotechnical Commission (IEC) SC8A Joint Working Group 5 Technical Report*, 2021. (To be published)

TEACHING EXPERIENCES

- Power Electronic Converters: Training for National Undergraduate Electronic Design Contest
  Huazhong University of Science and Technology, School of Electrical and Electronic Engineering
  Role: Lecturer; Course Level: Undergraduate; April, 2015-May, 2015

SOCIAL IMPLICATION

- **Member**, Standards Council of Canada (SCC). 2021—Present
  Mirror Committee/IEC/TC 8/SC 8A.
- **Secretary and Member**, IEC SC 8A Joint Working Group 5. 2018—Present
  System issues regarding integration of wind and PV generation into bulk electrical grid.
- **Report contributor**, CIGRE Working Group B5.48. 2018—Present
  Protection for developing network with limited fault current capability of generation.
- **Reviewer** for IEEE Transactions on Energy Conversion, IEEE Journal of Emerging and Selected Topics in Power Electronics, IEEE Transactions on Industrial Electronics, IET Renewable Power Generation, IET Electric Power Applications and IEEE Energy Conversion Congress and Exposition (ECCE). Records
- **Volunteer**, Huazhong University of Science and Technology 2010—Present
- **Member**, Societies of Power & Energy, Power Electric and Young Professionals, IEEE 2017—Present
- **Member**, Chinese Societies for Electrical Engineering (CSEE) and Power Supply (CPSS). 2019—Present