Meiyi LI

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EDUCATION

Shanghai Jiao Tong University (SJTU) *Shanghai, China*

●*M.Sc. in Electrical Engineering* |GPA: 3.56/4.0 *Sep. 2017-Present*

○Received waiver for the National Postgraduate Entrance Examination to enter SJTU (Rank 10/170)

○**National Scholarship** for Outstanding Academic Achievements (Highest scholarship, Top **1**%, Top **1** among female students)

○Thesis: "Stability Analysis and Optimal Control of Virtual Synchronous Generator Controlled Inverter-Interfaced Distributed Generators"

●*B.Sc. in Electrical Engineering and Automation* |GPA: **4.01**/4.3 *Sep. 2013-Jun. 2017*

○Outstanding Engineers Honor Class (30 students selected from 160 candidates in the school)

○Merit student of SJTU (Top **3**%), Outstanding Graduates of Shanghai (Top **5**%)

○Thesis: "Transient Stability and Optimization Control of Microgrid"

PUBLICATIONS

[1] **M Li**, W Huang, N Tai, Liuqing Yang. A Dual-Adaptivity Inertia Control Strategy for Virtual Synchronous Generator. ***IEEE Transactions on Power Systems***, 2019.

[2] **M Li**, W Huang, N Tai. Transient Behavior Analysis of VSG-IIDG During Disturbances Considering the Current Limit Unit. ***2019 IEEE Power and Energy Society General Meeting***, 2019. **Prize Conference Paper (4/900), the only Chinese student who won the prize in the past several years**.

[3] **M Li**, W Huang, N Tai. Virtual Power-angle Stability of VSG-IIDG During Voltage Disturbance Considering the Current Limit Unit. ***IEEE Transactions on Power Systems***. Under Review.

[4] **M Li**, W Huang, N Tai. Stability Analysis of the VSG-IIDG in the Microgrid: A Review. ***Applied Energy***. Under Review.

[5] **M Li**, W Huang, N Tai. Lyapunov-Based Large Signal Stability Assessment for VSG Controlled Inverter-Interfaced Distributed Generators. ***Energies***, 2018.

[6] **M Li**, W Huang, N Tai. Control Strategy for Inverter Interfaced Distributed Generator based on Virtual Synchronous Generator using Adaptive Inertia under Frequency Disturbances. *Power System Technology*, 2019. (Chinese EI)

[7] **M Li**, W Huang, N Tai. Surge Current Calculation and Limit Strategy of the IIDG during Loop Closing Operation in Distribution Networks. 2019 IEEE Sustainable Power & Energy Conference, 2019.

[8] **M Li**, W Huang, N Tai. Analysis and Limit Strategy of the Surge Current Caused by Closing-Loop Operation in the DG dominated Distribution Network. 2019 China Electrotechnical Society Academic Annual Conference, 2019.

[9] Y Chen, Z Liu, **M Li**. Evaluation Index and Method of Active Distribution Network Based on Multi-source Data. Electrical Automation, 2019. (Chinese Core Journal).

[10] **M Li**, W Huang, N Tai. Large Signal Stability of Autonomous Operation of A VSG-IIDG: Modeling and Analysis (Working paper).

RESEARCH EXPERIENCE

Research Assistant (RA), Key Laboratory of Control of Power Transmission and Conversion, Shanghai

●*Project I: Adaptive Control of the Inverter-interfaced Distributed Generator (IIDG)* ***([1])*** *Jun. 2018-Sep. 2018*

Advisor: *Prof. Liuqing Yang (Professor, Department of Electrical and Computer Engineering, Colorado State University; IEEE Fellow)*

○Proposed a dual-adaptivity inertia control strategy for the IIDG based on the virtual synchronous generator to 1) offer responsive and stable frequency support and 2) achieve the balance between power regulation and frequency regulation

according to different operating conditions.

○Derived transfer functions of the IIDG power and angular frequency.

○Analyzed the response characteristics (overshoot and resettling time) of the IIDG output power and frequency.

○Proposed an assessment method considering the cumulative effect of the output deviation and its duration to 1) cope with the tradeoff between speed and tracking accuracy and 2) universally reflect the dynamic performance of power and frequency.

RA, Research Center for Big Data and Artificial Intelligence Engineering and Technologies, Shanghai

●*Project I: Lyapunov-based Stability Analysis of the Virtual Synchronous Generator* ***([5])*** *Apr. 2018-Jun. 2018*

Advisor: *Prof. Robert Caiming Qiu (Professor, Department of Electrical Engineering, SJTU; IEEE Fellow)*

○Derived the Lyapunov energy function based on Popov's theory to determine the stability domain of the IIDG system.

○Analyzed the effects of control parameters on the large-signal stability of the IIDG system.

RA, Department of Electrical Engineering, SJTU

●*Project I: Virtual Power Angle Stability of the IIDG* ***([3])*** *Sep. 2019-Present*

Advisor: *Prof. Vassilios G Agelidis (Professor, Department of Electrical Engineering, Technical University of Denmark);*

○Derived the virtual power-angle characteristics of the IIDG considering saturation of the inner loop current controller.

○Analyzed the effects of voltage regulation on the stability of the IIDG control system.

○Verified the theoretical analysis based on a real-time controller hardware-in-loop experiment platform on RTDS.

●*Project II: Stability Mechanism of the IIDG* ***([2], [4], [6], [10])*** *Sep. 2017-Present*

Advisor: *Prof. Nengling Tai (Professor and Chair, Department of Electrical Engineering, SJTU);*

○Established the small-signal linearized model of the IIDG system with a VSG-IIDG and a local load.

○Calculated the operation area of parameters according to 1) phase and gain margin, 2) system capacity, 3) standards in accordance with power quality and 4) characteristic roots.

○Revealed the typical instabilities and their mechanism of the IIDG system.

●*Project III: Surge Current of the IIDG during Closing-Loop Operation* ***([7], [8])*** *Sep. 2018-Sep. 2019*

Advisor: *Prof. Dongliang Duan (Associate Professor, Department of Electrical & Computer Engineering, University of Wyoming)*

○Presented an algorism for calculating the surge current of voltage source inverters and current source inverters.

○Proposed a control scheme to limit the surge current of the IIDG during closing-loop operation in the distributed network.

INDUSTRIAL COLLABORATIVE PROJECTS

Key Technologies Study on Control and Protection of Multi-microgrid *Dec. 2016-Dec. 2018*

Electric Power Research Institute of Guangxi Province

○Established a simulation platform of the microgrid in Guangxi No.1 middle school including three photovoltaic plants, a wind generator, three storage batteries, a diesel generator, and their controllers, et al.

○Analyzed the amplitude-frequency and phase-frequency characteristics of controllers and phase-locked loops based on impedance-based stability theory.

○Designed and implemented an automated software tool to determine the stability of the microgrid based on MATLAB.

WORK EXPERIENCE

Intern Electrical Engineer, State Grid Corporation of China, Shanghai, China ([9]) *Sep. 2018-Nov. 2018*

○Led a team of 3 students and established the simulation platform of the grid-connected photovoltaic power system of the Songjiang District of Shanghai.

○Calculated and analyzed the overvoltage and high impact current with the increase of penetration of photovoltaic power.

TECHNICAL SKILLS

Programming: MATLAB, Simulink, Power Systems Computer Aided Design/Electro-Magnetic Transient in DC System (PSCAD/EMTDC), Real Time Digital Simulator (RTDS), Python, C/C++

Standardized tests: GRE:327, TOFEL:105