

# Meiyi LI

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## EDUCATION

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### 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%, Ranking 1st 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

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- [1] **M Li**, W Huang, N Tai. A Dual-Adaptivity Inertia Control Strategy for Virtual Synchronous Generator. *IEEE Transactions on Power Systems*, 2019. Published.
- [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. Stability Analysis of VSG Under Grid Voltage Drop and Current Saturation. *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. Published.
- [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 Journal). Accepted.
- [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. Accepted.
- [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. Accepted.
- [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). Accepted.
- [10] **M Li**, W Huang, N Tai. Large Signal Stability of Autonomous Operation of A VSG-IIDG: Modeling and Analysis (Working paper).

## RESEARCH EXPERIENCE

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

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

- *Project I: Adaptive Control of the Inverter-interfaced Distributed Generator (IIDG) (I1)* Oct. 2018-Jun. 2019
  - 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**

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

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

- Analyzed the power-angle relationship of the virtual synchronous generator considering the voltage regulation and line resistance to illustrate when the Q-V controller might have an enhanced or deteriorative effect on stability of the IIDG system.
- Established the small-signal model of the controller using the grid voltage drop as an input to analyze dynamic characteristics of IIDG's output power and frequency when the system recovers from the disturbance.
- Revealed possible instabilities of the IIDG that were not reported previously by discussing two situations considering current saturation: non-instant saturation and instant saturation.

## **RA, Department of Electrical Engineering, SJTU**

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

- 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.

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

- Calculated the operation area of the IIDG controller according to 1) phase and gain margin, 2) system capacity, 3) standards in accordance with power quality, and 4) characteristic roots.
- Analyzed typical instabilities and their mechanisms of the IIDG considering the current limit unit to enhance the stability of the IIDG system.

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

- Presented an algorithm 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**

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### **Key Technologies Study on Control and Protection of Multi-microgrid**

*Dec. 2017-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**

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### **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**

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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 (V158-Q169-A3.5), TOFEL:106 (R30-L28-S25-W23)



# RECORDS FOR UNDERGRADUATE

COLLEGE: School of Electronic Information and Electrical Engineering  
STUID: 5130309456

MAJOR: Electric Power Engineering and Automation  
NAME: Li Meiyi

CLASS: F1303015

## ACADEMIC YEAR: 2013-2014

CODE	COURSES	SEMESTER	CREDIT	GRADECODE	CODE	COURSES	SEMESTER	CREDIT	GRADECODE
CS902	Thinking and Approach of Programming	1	3	B+	EN026	University English II	2	3	B
EI901	Science and Technology Innovation (Part I)	1	2	B+	EV017	Water Resource and Water Environment Protection	2	2	A-
EN025	University English I	1	3	B	MA043	Mathematical Analysis II	2	6	A
IN901	Information Literacy and Practice	1	2	A	MA119	Probability and Statistics	2	3	A
MA077	Linear Algebra	1	3	A	MU903	World Ethnic Music Appreciation	2	2	A
MA115	Discrete Mathematics	1	2	A+	PE002	Physical Education II	2	1	A-
MA118	Mathematical Analysis I	1	6	A	PH001	Physics I	2	4	A+
PE001	Physical Education I	1	1	A	PH028	Physics Lab. I	2	1	A-
TH000	Cultivation of Ethics and Fundamentals of Law	1	3	A	TH009	Circumstance and Policy	2	1	A-
TH004	Military Theory	1	1	A	TH010	Military Training	2	3	P
TH009	Circumstance and Policy	1	1	A-	TH021	Modern Chinese History	2	2	A-
CS048	C++ Programming	2	3	B+	XP000	General Education Practice	2	2	P

## ACADEMIC YEAR: 2014-2015

CODE	COURSES	SEMESTER	CREDIT	GRADECODE	CODE	COURSES	SEMESTER	CREDIT	GRADECODE
AM923	Innovation and Entrepreneurship	1	2	A-	BI903	Experimental Exploration to Life Science	2	2	A+
EI203	Fundamental Circuit Theory	1	4	B+	CH927	Introduction to Modern Chinese Poetry	2	3	A
EI204	Basic Circuit Lab.	1	2	A	EE206	Cognitive Practice	2	1	A-
EI205	Digital Electronics Technology	1	3	B-	EE207	ARM Embedded Systems and its Experiments	2	5	A-
EN027	University English III	1	3	B+	EI200	Electromagnetic Field	2	2	B+
MA097	Mathematical Methods in Physics	1	3	A-	EI207	Analog Electronic Technology	2	3	B+
ME068	Modern Technology of Electric Automobile	1	1	A-	EI210	Signals and Systems	2	3	A
PE003	Physical Education III	1	1	A+	EI227	Science and Technology Innovation (Part 2A)	2	2	A
PH002	Physics II	1	4	A	EN026	University English II	2	3	A-
PH029	Physics Lab. II	1	1	A-	ES003	Electronics Lab.	2	3	A
PU933	Political Man	1	2	A-	ME037	Basics of Machine Manufacturing	2	2	A-
SO923	News Media and Society	1	2	A	PE004	Physical Education IV	2	1	A-
TH007	Basic Theory of Marxism	1	3	A-	TH009	Circumstance and Policy	2	1	A+
TH009	Circumstance and Policy	1	1	A	TH012	Introduction to Mao Zedong's Thoughts and Theoretical System of Socialism with Chinese Characteristics	2	6	A-

## ACADEMIC YEAR: 2015-2016

CODE	COURSES	SEMESTER	CREDIT	GRADECODE	CODE	COURSES	SEMESTER	CREDIT	GRADECODE
AM001	Basic Management	1	2	B+	EC016	Engineering Economics(F)	2	2	A-
EE301	Fundamentals of Electrical Engineering I	1	4	A	EE302	Fundamentals of Electrical Engineering II	2	2	B+
EE303	Fundamentals of Power Electronics Technology	1	3	A	EE308	Relay Protection of Power System	2	3	A
EE311	Database	1	2	A+	EE315	Electrical Power System Automation	2	3	A-
EE314	Electrical Machinery Theory	1	4	A	EE318	Motor Control Technology	2	3	A-
EE317	Digital Signal Processing (B)	1	2	A	EE319	Electrical and Electronic Measurement Technology	2	2	A
EI205	Digital Electronics Technology	1	3	A+	EE329	Electrical Professional Practice	2	2	A
EI303	Automatic Control Theory B	1	3	A	EE332	Course Design in Power Electronic	2	2	A
EI310	Science and Technology Innovation (Part 3-A)	1	2	A-	EE413	Transient Analysis of Power System	2	2	A
PE901	Sport Culture	1	1	A+	EI317	Science and Technology Innovation (Part 4-B)	2	2	A
AU321	Motion Control System Integrated Test	2	2	B+	T030PRP2	PRP(T030PRP28075) 8075	2	2	A

## ACADEMIC YEAR: 2016-2017

CODE	COURSES	SEMESTER	CREDIT	GRADECODE	CODE	COURSES	SEMESTER	CREDIT	GRADECODE
EE404	Digital Power Systems Protection and its Application	1	2	A	EE422	Numerical Computation of Electro-Magnetic Field	1	2	A
EE411	Course Design in Power System Protection	1	2	A-	EE431	Electrical System Lab.	1	2	A+
EE412	Electrical Power System Optimization and Marketing	1	2	A	EI302	Communication Fundamentals (B)	1	2	A-
EE414	Modern Electrical Technology	1	1	B+	BS055	Undergraduate Project (Thesis)	2	17	B+





# TRANSCRIPT FOR GRADUATE STUDENT

Date Issued:25-OCT-2019

Name: Li Meiyi

Nationality:China

Gender:Female

Date of Birth:22-JUL-1994

Study Program:Professional Master

Enrollment Date:SEP-2017

Student ID: 117031910072

Supervisor:Tai Nengling

School: School of Electronic Information & Electrical Engineering

Major:Electrical Engineering

COURSE TITLE	CREDIT	GRADE	SEMESTER
☆ Academic Speech and Seminar	2	A	2018 Fall
☆ English for Academic Purposes	2	A-	2018 Spring
☆ Power System Security Analysis	2	A	2018 Spring
☆ Reliability of Power Systems	2	A+	2018 Spring
☆ Introduction to Computer Relaying Protection	2	A	2018 Spring
Distribution automation system	2	A	2018 Spring
Advanced Optimization of Power System Operation	2	B	2017 Fall
☆ Theory and Application of Optimization in Modern Power System Operation	2	B-	2017 Fall
Relaying Protection for Extra-high Voltage Transmission Line	2	B	2017 Fall
☆ Fundamentals and Theory for Optimization Methods	3	B-	2017 Fall
Dialectic of nature	1	A	2017 Fall
The Theory and Practice of Socialism in China	2	B+	2017 Fall
☆ Modern Control Theory	3	A-	2017 Fall
☆ Project Management	1	A-	2017 Fall

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Total Credits	Credits for GPA	Cumulative GPA	Degree-Specific Requirements	Semester	Grade
28	19	3.56/4.0	research assistant	2019 Spr	P
Degree Conferred			Conferred Date		
Thesis Title					

\* Courses marked with ☆ are used for calculating GPA.

\*\* The transcript should be stamped to be official.

\*\*\* Explanatory legend is printed on the back page.



Dean:

Kang Shengrong

Shanghai Jiao Tong University  
Graduate School

成绩专用章