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**Belfast, United Kingdom
31 August – 2 September 2016**



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**The 2016 UKACC International Conference on Control
(UKACC Control 2016)
Pre-conference Workshop
Belfast, UK, 29 August 2016**

Monday, 29 August

Monday

14:30-15:50 Session WS-1A Lanyon Building 01/052

Workshop 1: Batteries, electric vehicles, and their integrations with grid

Chairs: Yu Jilai (Harbin Institute of Technology, China)

Patrick Luk (Cranfield University, UK)

14:30 Kailong Liu (Queen's University Belfast, UK)

Kang Li (Queen's University Belfast, UK)

Jing Deng (Queen's University Belfast, UK)

[**ID149-A novel hybrid data-driven method for Li-ion battery internal temperature estimation**](#) 1

14:50 Qiwei Xu (Chongqing University, China)

Shumei Cui (Harbin Institute of Technology, China)

[**ID131-Comparison Analysis of Power Management used in Hybrid Electric Vehicle based on Electric Variable Transmission**](#) 7

15:10 Aina Tian (Harbin Institute of Technology, China)

Weixing Li (Harbin Institute of Technology, China)

Wenhuan Hao (Harbin Institute of Technology, China)

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15:30 Liu Peng (Harbin Institute of Technology, China)

Yu Jilai (Harbin Institute of Technology, China)

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15:50 Yufeng Guo (Harbin Institution of Technology, China)

Yi Jiang (Harbin Institution of Technology, China)

Jilai Yu (Harbin Institution of Technology, China)

Yaohua Tang (Institute State Grid Hennan Electric Power Company, China)

[**ID30-Service Life of EV Batteries Used in Power Grid Frequency Regulation**](#) 26

Monday

14:30-15:50 Session WS-1B Lanyon Building 0G/049

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Chairs: Shumei Cui (Harbin Institute of Technology, China)

Dajun Du (Shanghai University, China)

14:30 Tuopu Na (Harbin Institute of Technology, China)

Qianfan Zhang (Harbin Institute of Technology, China)

Chaowei Zhou (Harbin Institute of Technology, China)

[ID112-Modeling and Design of Quasi-Z-Source Inverter for PMSM Drive System](#) 32

14:50 Kaixuan Zhang (Harbin Institute of Technology, China)

Ruiye Liu (Harbin Institute of Technology, China)

Zhizhong Guo (Harbin Institute of Technology, China)

[ID49-Non-linear Time-delay Robust Control for Steam Turbine Generator Units](#) 37

15:10 Yanliang Cui (Shanghai University, China)

Minrui Fei (Shanghai University, China)

Dajun Du (Shanghai University, China)

[ID16-Convergence rate controllable event-triggered robust load frequency control for multi-area power systems](#) 43

15:30 Zhi Kuang (Harbin Institute of Technology, China)

Tianxu Zhao (Harbin Institute of Technology, China)

Shumei Cui (Harbin Institute of Technology, China)

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Monday

14:30-15:50 Session WS-1C Lanyon Building Old Staff Common Room

Workshop 3: Renewable generation, and integration of renewable power

Chairs: Qianfan Zhang (Harbin Institute of Technology, China)

Jun Cao (Northern China Electric Power University, China)

14:30 Xiandong Xu (Queen's University Belfast, UK)

Kang Li (Queen's University Belfast, UK)

Yang Liu (Harbin Institute of Technology, China)

Hongjie Jia (Tianjin University, China)

[ID111-Integrated Optimal Power Flow for Distribution Networks in Local and Urban Scales](#) 60

14:50 Zhile Yang (Queen's University Belfast, UK)

Kang Li (Queen's University Belfast, UK)
Lidong Zhang (Northeast Dianli University, China)

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15:10 Jun Cao (Northern China Electric Power University, China)
Yi Ge (Jiangsu Electric Power Company, China)
Hui Cai (Jiangsu Electric Power Company, China)
B.W. Zhou (Dongbei University, China)

ID177-Enhanced Corrective Security Constrained OPF with Hybrid Energy Storage Systems 72

15:30 Huihui Song (Harbin Institute of Technology at Weihai, China)
Qi Zhang (Harbin Institute of Technology at Weihai, China)
Yanbin Qu (Harbin Institute of Technology at Weihai, China)
Xinyu Wang (Harbin Institute of Technology at Weihai, China)

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Monday

16:10-17:55 Session WS-2A Lanyon Building 01/052

Workshop 4: Networked control and applications in power systems

Chairs: [Minrui Fei](#) (Shanghai University, China, China)
Taicheng Yang (University of Sussex, UK)

16:10 [Wen Song](#) (Tongji University, China)
[Hao Zhang](#) (Tongji University, China)
[Huaicheng Yan](#) (East China University of Science and Technology, China)
[Chen Peng](#) (Shanghai University, China)

ID166-Distributed Event Triggered H_{∞} Filtering With Nonhomogeneous Markov Switching Topologies 85

16:25 [Min Zheng](#) (Shanghai University, China)
[Yijie Zhang](#) (Shanghai University, China)

ID103-New improvements on event-triggered communication and H_1 analysis for networked control systems 91

16:40 [Dajun Du](#) (Shanghai University, China)
[Guohua Zhan](#) (Shanghai University, China)
[Bo Qi](#) (Shanghai University, China)
[Minrui Fei](#) (Shanghai University, China)

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16:55 [Zhenglong Huang](#) (Shanghai University, China)
[Yang Song](#) (Shanghai University, China)
[Li Jia](#) (Shanghai University, China)

[Min Zheng](#) (Shanghai University, China)

[T. C. Yang](#) (Engineering and Design, University of Sussex, UK)

ID66-Stabilization of Markov Jump Linear Systems Over Gaussian Relay Channel 102

17:10 [Sheng Xu](#) (Shanghai University, China)

[Minrui Fei](#) (Shanghai University, China)

[Dajun Du](#) (Shanghai University, China)

[Liqin Wu](#) (Nantong Vocational University, China)

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17:25 [Jin Zhang](#) (Shanghai University, China)

[Chen Peng](#) (Shanghai University, China)

[Suhair Masroor](#) (Shanghai University, China)

[Hongtao Sun](#) (Shanghai University, China)

[Lin Chai](#) (Southeast University, China)

ID59-Stability analysis of networked control systems with denial-of-service attacks 113

17:40 [Xiaowei Yang](#) (Nantong University, China)

[Jianguo Wu](#) (Nantong University, China)

[Kun Zhang](#) (Nantong University, UK)

[Peijian Zhang](#) (Nantong University, China)

[Conghua Xie](#) (Changshu Institute of Technology, China)

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Monday

16:10-17:40 Session WS-2B

Lanyon Building 0G/049

Workshop 5: Operation and control of power systems, smart grid, micro grid, and distributed energy system

Chairs: [Chen Peng](#) (Shanghai university, China)

[Shuai Deng](#) (Tianjin University, China)

16:10 [Weihua Deng](#) (Shanghai University of Electric Power, China)

[Jing Deng](#) (Queen's University Belfast, UK)

[Pengfei Chen](#) (Shanghai University of Electric Power, China)

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16:30 [Yan Wang](#) (Tianjin University, China)

[Shuai Deng](#) (Tianjin University, China)

[Ying Zhang](#) (Tianjin University, China)

[Li Zhao](#) (Tianjin University, China)

[Dan Wang](#) (Tianjin University, China)

[Yunfei Mu](#) (Tianjin University, China)

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- 16:50 [Haiping Ma](#) (Zhejiang University, China)
[Zhile Yang](#) (Queen's University Belfast, UK)
[Pengcheng You](#) (Zhejiang University, China)
[Minrui Fei](#) (Shanghai University, China)

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- 17:10 [Chengcheng Li](#) (Nantong University, China)
[Jianguo Wu](#) (Nantong University, China)
[Xiang Dai](#) (Enpower Energy Co., Ltd., China)
[Kun Zhang](#) (Nantong University, China)
[Sheng Xu](#) (Shanghai University, China)

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Monday

16:10-17:40 Session WS-2C Lanyon Building Old Staff Common Room

Workshop 6: Sensor network and data analytics in power and energy systems

Chairs: [Wasif Naeem](#) (Queen's University, UK)
[Lidong Zhang](#) (Northeast Dianli University, China)

- 16:10 [Juan Yan](#) (Queen's University Belfast, UK)
[Kang Li](#) (Queen's University Belfast, UK)
[Xiaodong Zhao](#) (Queens University Belfast, UK)

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- 16:30 [Lidong Zhang](#) (Northeast Dianli University, China)
[Lijiao Ma](#) (Northeast Dianli University, China)
[Kang Li](#) (Queen's University Belfast, UK)
[Shaojun Gan](#) (Chongqing University, China)
[Juan Yan](#) (Queen's University Belfast, UK)
[Xiandong Xu](#) (Queen's University Belfast, UK)
[Mingliang Zhu](#) (Jilin East Power Engineering Co., Ltd, China)
[Weiwei Li](#) (Huaneng Chaohu Power Generation Co. Ltd, China)

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- 16:50 [Yuanjun Guo](#) (High Performance Computing Centre, China)
[Shengzhong Feng](#) (High Performance Computing Centre, China)
[Kang Li](#) (Queen's University Belfast, UK)
[Wenxiong Mo](#) (Guangzhou Power Supply Co. Ltd., China)
[Yuquan Liu](#) (Guangzhou Power Supply Co. Ltd., China)
[Yong Wang](#) (Guangzhou Power Supply Co. Ltd., China)

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- 17:10 [Nan Xiong](#) (Shanghai University, China)
[Minrui Fei](#) (Shanghai University, China)
ID60-Simulation of Gossip Averaging based Clock Synchronization Protocol for Wireless Sensor Networks 162
- 17:30 [Li Liu](#) (Shanghai University, China)
[Aolei Yang](#) (Shanghai University, China)
[Minrui Fei](#) (Shanghai University, China)
[Xiaowei Tu](#) (Shanghai University, Canada)
[Wasif Naeem](#) (Queen's University Belfast, UK)
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The 2016 UKACC International Conference on Control (UKACC Control 2016)

Belfast, UK, 31 August - 2 September 2016

TECHNICAL PROGRAM

Wednesday, 31 August

Wednesday

09:15-10:15 Session 3 Conference Rooms 1 & 2

Keynote speech 1: Smart optimization control system for energy-intensive equipments

Speaker: Tianyou Chai (Northeastern University, China)

Chair: Kang Li (Queen's University Belfast, UK)

Wednesday

10:30-12:30 Session 4A Conference Room 1

SS1: Control and forecasting techniques for wave energy systems

Chairs: John Ringwood (Maynooth University, Ireland)

Ron Patton (University of Hull, UK)

10:30 Romain Genest (Maynooth University, Ireland)

John Ringwood (Maynooth University, Ireland)

[**ID102-An Evaluation of Receding Horizon Pseudospectral Optimal Control for Wave Energy Conversion**](#) 174

10:50 Dhruv R.S. Chandel (University of Bath, UK)

Nathan P. Sell (University of Bath, UK)

Andrew R. Plummer (University of Bath, UK)

Andrew J. Hillis (University of Bath, UK)

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11:10 Ming Ge (Imperial College London, UK)

Eric Kerrigan (Imperial College London, UK)

[**ID26-Short-term Ocean Wave Forecasting Using an Autoregressive Moving Average Model**](#) 187

11:30 Bingyong Guo (University of Hull, UK)

Ron Patton (University of Hull, UK)

Mustafa Abdelrahman (University of Hull, UK)

Jianglin Lan (University of Hull, UK)

[**ID96-A Continuous Control Approach to Point Absorber Wave Energy Conversion**](#) 193

11:50 Adrian O Sullivan (University College Cork, Ireland)

Gordon Lightbody (University College Cork, Ireland)

[**ID38-Predictive control of a wave to wire energy conversion system - the**](#)

importance of field weakening 199

12:10 Xiaoxing Fu (University of Leicester, UK)
Andrea Lecchini Visintini (University of Leicester, UK)

ID85-Optimisation of restricted complexity control for wave energy conversion 205

Wednesday

10:30-12:30 Session 4B Conference Room 2

InstMC and IChemE Mini Symposium

Chairs: Keith Burnham (University of Wolverhampton, UK)
Ogi Marjanovic (The University of Warwick, UK)

Wednesday

13:30-15:30 Session 5A Conference Room 1

Autonomous Systems and Robotics

Chairs: Desineni Naidu (Univ. of Minnesota, USA)
James Whidborne (Cranfield University, UK)

13:30 Isonguyo Inyang (Cranfield University, UK)
James Whidborne (Cranfield University, UK)
Martin Bayliss (Schlumberger Oilfield UK Plc, UK)

ID42-Bilinear Modelling and Bilinear PI Control of Directional Drilling 210

13:50 Xiaoming Liu (School of Astronautics, Beihang University, China)
Zhongyuan Chen (School of Astronautics, Beihang University, China)
Wanchun Chen (School of Astronautics, Beihang University, China)
Xiaolan Xing (System Analysis Institute, Air Force Armament Research Academy, China)

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14:10 Ahmed Khamis (Idaho State University, USA)
Cheng-Hung Chen (Technische Universitat Munchen, Germany)
Desineni Naidu (University of Minnesota Duluth, USA)

ID76-Tracking of a Robotic Hand via SD-DRE and SD-DVE Strategies 223

14:30 Lv Xu (Nanjing University of Science and Technology, China)
Zhengrong Xiang (Nanjing University of Science and Technology, China)

ID12-Consensus of Heterogeneous Multi-agent Systems with Delayed and Intermittent Communications 229

14:50 Hassrizal Bin Hassan Basri (The University of Sheffield, UK)
John Anthony Rossiter (The University of Sheffield, UK)

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15:10 Maradona Rodrigues (WMG, The University of Warwick, UK)
Andrew McGordon (WMG, The University of Warwick, UK)
Graham Gest (Tata Motors European Technical Centre Plc, UK)
James Marco (WMG, The University of Warwick, UK)

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Chairs: Eric Rogers (University of Southampton, UK)

John Rossiter (The University of Sheffield, UK)

13:30 Shukri Dughman (The University of Sheffield, UK)

Anthony Rossiter (The University of Sheffield, UK)

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13:50 Muhammad Bin Abdullah (University of Sheffield, UK)

John Anthony Rossiter (University of Sheffield, UK)

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14:10 Hidetoshi Oya (Tokyo City University, Japan)

[ID11-A New Variable Gain Robust State Observer for a Class of Uncertain Linear Systems](#) 261

14:30 Eric Rogers (University of Southampton, UK)

Wojciech Paszke (University of Zielona Gora, Poland)

Marcin Boski (University of Zielona Gora, Poland)

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14:50 Emmanuel Edet (University of Strathclyde, UK)

Reza Katebi (University of Strathclyde, UK)

[ID21-Design and Tuning of Fractional-order PID Controllers for Time-delayed Processes](#) 272

15:10 Yahya Al-Naumani (The University of Sheffield, UK)

J Anthony Rossiter (The University of Sheffield, UK)

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Chairs: Bryn Jones (University of Sheffield, UK)

Richard Mitchell (University of Reading, UK)

13:30 Oliver Dellar (The University of Sheffield, UK)

Bryn Jones (The University of Sheffield, UK)

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13:50 Bruce Postlethwaite (University of Strathclyde, UK)

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14:10 Peter Heins (The University of Sheffield, UK)

Bryn Jones (The University of Sheffield, UK)

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- 14:30 Charlotte Currie (NATS, UK)
 Andres Marcos (University of Bristol, UK)
 Oliver Turnbull (University of Bristol, UK)
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- 14:50 Theopisti Zaza (University of Bristol, UK)
 Arthur Richards (University of Bristol, UK)
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- 15:10 Richard Mitchell (University of Reading, UK)
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Networked Control Systems and Applications

Chairs: Ron Patton (University of Hull, UK)

Liang Hu (Queen's University Belfast, UK)

- 15:50 Zain Ul Aabidin Lodhi (National University of Sciences and Technology, Pakistan)
 Attaullah Y. Memon (National University of Sciences and Technology, Pakistan)

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- 16:10 Liang Hu (Queen's University Belfast, UK)
 Zidong Wang (Brunel University London, UK)
 Wasif Naeem (Queen's University Belfast, UK)

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- 16:30 Jianglin Lan (University of Hull, UK)
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- 16:50 Pablo Baldivieso Monasterios (The University of Sheffield, UK)
 Paul Trodden (The University of Sheffield, UK)

[ID86-Output Feedback Quasi-Distributed MPC for Linear Systems Coupled via Dynamics and Constraints](#) 338

- 17:10 Mercedes Chacon Vasquez (University of Strathclyde, UK)
 Reza Katebi (University of Strathclyde, UK)

[ID14-Comparison of PID methods for Networked Control Systems](#) 344

Wednesday

15:50-17:50 Session 6B Lecture Room 3

Fault Detection and Condition Monitoring

Chairs: Mingcong Deng (Tokyo University of Agriculture and Technology, Japan)
David Henry (University Bordeaux 1, France)

15:50 Nicolas Ellero (University Bordeaux 1, France)
David Gucik-Derigny (University Bordeaux 1, France)
David Henry (University Bordeaux 1, France)

[ID55-Unknown input interval observer for uncertain Linear Time Invariant systems](#) 350

16:10 Shuang Liang (Beihang University, China)
Jinsong Yu (Beihang University, China)
Diyin Tang (Beihang University, China)
Hao Liu (Beihang University, China)

[ID50-A Bayesian nonparametric approach for tool condition monitoring](#) 356

16:30 Shotaro Kawahata (Tokyo University of Agriculture and Technology, Japan)
Mingcong Deng (Tokyo University of Agriculture and Technology, Japan)
Shin Wakitani (Tokyo University of Agriculture and Technology, Japan)

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16:50 Wathiq Abed (Plymouth University, UK)
Riccardo Polvara (Plymouth University, UK)
Yogang Singh (Plymouth University, UK)
Sanjay Sharma (Plymouth University, UK)
Robert Sutton (Plymouth University, UK)
Daniel Hatton (Plymouth University, UK)
Andrew Manning (Plymouth University, UK)
Jian Wan (Plymouth University, UK)

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17:10 Xiaogang Deng (China University of Petroleum, China)
Xuemin Tian (China University of Petroleum, China)
Sheng Chen (University of Southampton, UK)
Chris J. Harris (University of Southampton, UK)

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Wednesday

15:50-17:50 Session 6C Lecture Room 2

Industrial Process Applications of Control

Chairs: Sarah K. Spurgeon (University of Kent, UK)
Shinji Wakui (Tokyo University of Agriculture and Technology, Japan)

15:50 Keisuke Nakade (Tokyo University of Agriculture and Technology, Japan)
Shinji Wakui (Tokyo University of Agriculture and Technology, Japan)

[ID27-Pitching vibration suppression of the galvano mirror considering coupling rigidity](#) 380

- 16:10 Qiankun Ma (Shanghai Jiao Tong University, China)
 Xuyong Wang (Shanghai Jiao Tong University, China)
 Fan Yuan (Shanghai Jiao Tong University, China)
 Jianfeng Tao (Shanghai Jiao Tong University, China)
 Peng Liu (Shanghai Jiao Tong University, China)
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- 16:30 Ajaree Suwattikul (Chulalongkorn University, Thailand)
 Nattaya Laisua (Chulalongkorn University, Thailand)
 Paisan Kittisupakorn (Chulalongkorn University, Thailand)
[ID58-Improvement of Palladium Ions Recovery via Hollow Fiber Supported Liquid Membrane with Model Predictive Control](#) 392
- 16:50 Shuzhan Zhang (China University of Petroleum, China)
 Dongya Zhao (China University of Petroleum, China)
 Sarah K. Spurgeon (University of Kent, UK)
 Xinggang Yan (University of Kent, UK)
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- 17:10 Ferial Kochtbene (Arts et Métiers Paris Tech, France)
 George Moraru (Arts et Métiers Paris Tech, France)
[ID161-Active control of a vibrating beam in Milling](#) 404
- 17:30 Qiang Chen (Zhejiang University of Technology, China)
 Liang Tao (Zhejiang University of Technology, China)
 Fang Dong (Zhejiang University of Technology, China)
 Yurong Nan (Zhejiang University of Technology, China)
[ID64-Universal control for a class of nonlinear systems based on finite-time parametric estimation](#) 412

Wednesday

15:50-17:50 Session 6D Conference Room 2

SS2: Advanced Modeling, Optimization and Control for Energy and Power Generation/Transmission Systems

Chairs: Guido Herrmann (University of Bristol, UK)

Jing Na (University of Bristol, UK)

Q.M Zhu (University of the West of England, UK)

- 15:50 Vicenç Puig (UPC, Spain)
 Ramon Costa (UPC, Spain)
 José Luis Sampietro (UPC, Spain)
[ID125-Economic MPC for the Energy Management of Hybrid Vehicles including Fuel Cells and Supercapacitors](#) 418
- 16:10 Francesco Paparella (COER, Maynooth University, Ireland)
 John V. Ringwood (COER, Maynooth University, Ireland)
[ID36-Enhancement of the wave energy conversion characteristics of a hinge barge using pseudospectral control](#) 424

- 16:30 Jing Na (University of Bristol, UK)
 Guido Herrmann (University of Bristol, UK)
 Clement Rames (University of Bristol, UK)
 Richard Burke (University of Bath, UK)
 Chris Brace (University of Bath, UK)
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- 16:50 Q.M Zhu (University of the West of England, UK)
 Na Jing (University of Bristol, UK)
 S. Ghauri (University of the West of England, UK)
[ID53-U-model based Control System Formulation and Design for Wind Energy Conversion Systems](#) 436
- 17:10 Jianhua Zhang (North China Electric Power University, China)
 Ting Zhang (North China Electric Power University, China)
 Mingming Lin (North China Electric Power University, China)
 Guolian Hou (North China Electric Power University, China)
 Kang Li (Queen's University Belfast, UK)
[ID170-Multiple Model Predictive Control for Organic Rankine Cycle \(ORC\) based Waste Heat Energy Conversion Systems](#) 442
- 17:30 Siyuan Zhan (Queen Mary University of London, UK)
 Henri Huijberts (Queen Mary University of London, UK)
 Jing Na (Kunming University of Science and Technology, UK)
 Guang Li (Queen Mary University of London, UK)
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Wednesday

18:00-19:00 Session 7

Conference Rooms 1 & 2

Panel discussion - challenges and opportunities in control engineering

Chair: Eric Kerrigan (Imperial College London, UK)

Tianyou Chai (Northeastern University, China)

Thursday, 1st September

Thursday

09:00-10:00 Session 8 Conference Rooms 1 & 2

Keynote speech 2: Optimising the Performance of Wave Energy Systems

Chair: Sean McLoone (Queen's University Belfast, Ireland)

Speaker: John Ringwood (Maynooth University, Ireland)

Thursday

10:30-12:30 Session 9A Conference Room 1

IET Mini Symposium: Applications of Biomedical Modelling and Control

Chair: James Taylor (Lancaster University, UK)

Thursday

10:30-12:30 Session 9B Conference Room 2

Industry 4.0 Mini Symposium: Putting Theory Into Practice

Chair: Micheal Cassidy (Irish Manufacturing Research, Ireland)

Thursday

13:30-15:30 Session 10A Conference Room 2

SS3: Applications of MATLAB and Simulink with hardware

Chairs: Coorous Mohtadi (The MathWorks Ltd, UK)

Owen Mcaree (University of Sheffield, UK)

13:30 Owen Mcaree (University of Sheffield, UK)

Jonathan Aitken (University of Sheffield, UK)

Sandor Veres (University of Sheffield, UK)

[**ID138-A model based design framework for safety verification of a semi-autonomous inspection drone 455**](#)

13:50 Kameswarie Nunna (The MathWorks Ltd, UK)

Nicolas Gautier (The MathWorks Ltd, UK)

Sebastian Malack (The MathWorks Ltd, Germany)

Mischa Kim (The MathWorks Ltd, Germany)

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14:10 Jonathan M. Aitken (University of Sheffield, UK)

Owen Mcaree (University of Sheffield, UK)

Sandor Veres (University of Sheffield, UK)

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14:30 Minhee Kwon (Kookmin University, Korea)

H.J. Chang (Kookmin University, Korea)

[**ID122-Extended Root-Locus Technique Applied to Pole-Placement for PI Controller Design 472**](#)

14:50 Mohammed Alkhafaji (Cranfield University, UK)
Patrick Luk (Cranfield University, UK)
Akram Bati (Surrey University, UK)
[ID4-Integration of electric vehicle within micro grid](#) 478

Thursday

13:30-15:30 Session 10B Lecture Room 3

Renewable Energy, Smart Grid and Environmental Systems

Chairs: Paul Trodden (The University of Sheffield, UK)
Hong Yue (University of Strathclyde, UK)

13:50 Farooq Alam (National University of Sciences and Technology (NUST), Pakistan)
Sajjad Zaidi (National University of Sciences and Technology (NUST), Pakistan)
Attaullah Memon (National University of Sciences and Technology (NUST),
Pakistan)
Muhammad Ashfaq (National University of Sciences and Technology (NUST),
Pakistan)

[ID133-Robust Droop Control Design For a Hybrid AC/DC Microgrid](#) 484

14:10 Sung-Ho Hur (University of Strathclyde, UK)
Bill Leithead (University of Strathclyde, UK)

[ID129-Model Predictive Control of a Variable-Speed Pitch-Regulated Wind Turbine](#) 490

14:30 Eyefujirin Ejegi (University of Sheffield, UK)
John Rossiter (Sheffield, UK)
Paul Trodden (University of Sheffield, UK)

[ID88-Distributed model predictive load frequency control of a deregulated power system](#) 496

14:50 Xiyun Yang (North China Electric Power University, China)
Hong Yue (University of Strathclyde, UK)
Jie Ren (North China Electric Power University, China)

[ID92-Photovoltaic Power Forecasting with a Rough Set Combination Method](#) 502

15:10 Xiaoqing Chen (University of Oxford, UK)
Stephen Duncan (University of Oxford, UK)

[ID94-Automatic Detection of Tap Changes on an Electricity Grid](#) 508

16:50 Zi Zhu (Harbin Institute of Technology, China)
Xuefeng Bai (Harbin Institute of Technology, China)
Ying Xu (Harbin Institute of Technology, China)
Wei Zhang (Harbin Institute of Technology, China)
Ruiye Liu (Harbin Institute of Technology, China)

[ID104-Identifying Equivalent Load model of Power Systems With Wind Power Integration](#) 515

Thursday

13:30-15:30 Session 10C Lecture Room 2

System Identification and Big Data

Chairs: Manuel De La Sen (University of Basque Country, Spain)

Gordon Lightbody (University College Cork, Ireland)

13:30 Chen Rongbao (Hefei University of Technology, China)

Ma Wuyong (Hefei University of Technology, China)

Xiao Benxian (Hefei University of Technology, China)

Cao Zipei (Hefei University of Technology, China)

[ID101-Research on the Rough Set Attribute Reduction Algorithm Based on Significance of Attributes](#) 519

13:50 Lan Cheng (Taiyuan University of Technology, China)

Mifeng Ren (Taiyuan University of Technology, China)

Gang Xie (Taiyuan University of Technology, China)

Jie Chen (Beijin Institute of Technology, China)

[ID61-Multipath Estimation using Kernel Minimum Error Entropy Filter](#) 528

14:10 U Saralegi (UPV/EHU, Spain)

M. De La Sen (UPV/EHU, Spain)

S Alonso-Quesada (UPV/EHU, Spain)

[ID155-A Feedback Vaccination Law For An SIR Epidemic Model: A Case Study](#) 533

14:30 Edward O'Dwyer (University College Cork, Ireland)

Luciano De Tommasi (United Technologies Research Centre Ireland, Italy)

Kostas Kouramas (United Technologies Research Centre Ireland, Greece)

Marcin Cychowski (United Technologies Research Centre Ireland, Poland)

Gordon Lightbody (University College Cork, UK)

[ID75-Low-Order Building Model Identification in Presence of Unmeasured Disturbance for Predictive Control Strategies](#) 539

14:50 Philip Gillespie (Queen's University Belfast, UK)

Daniel Gaida (University of Applied Sciences, Gummersbach, Germany)

Peter Hung (National University of Ireland, Maynooth, Ireland)

Robert Kee (Queen's University Belfast, UK)

Sean McLoone (Queen's University Belfast, UK)

[ID146-Noise resilient discrete-time cross-relation sensor characterisation](#) 545

15:10 Junhong Li (Nantong University, China)

Juping Gu (Nantong University, China)

Yi Yang (Nantong University, China)

Xinsong Zhang (Nantong University, China)

[ID175-Hierarchical maximum likelihood iterative identification algorithm for Hammerstein Box-Jenkins systems](#) 551

Thursday

13:30-15:30 Session 10D Conference Room 1

Control System Design Methods (II)

Chairs: Hong Wang (University of Manchester, UK)
Jianhua Zhang (North China Electric Power University, China)

LOCATION: Conference Room 1

- 13:30 Rene Galindo Orozco (Autonomous University of Nuevo Leon, Mexico)
Roger Ngwompo (University of Bath, UK)
[ID152-A Bond Graph Pseudo-Junction Structure for Non-Linear Non-conservative Systems](#) 557
- 13:50 Yuyang Zhou (the university of manchester, UK)
Qichun Zhang (the university of manchester, UK)
Hong Wang (the university of manchester, UK)
[ID119-Enhanced Performance Controller Design for Stochastic Systems by Adding Extra State Estimation onto the Existing Closed Loop Control](#) 563
- 14:10 Runxian Yang (Nanjing University of Aeronautics and Astronautics, China)
Chenguang Yang (Swansea University, UK)
Mou Chen (Nanjing University of Aeronautics and Astronautics, China)
Jing Na (University of Bristol, UK)
[ID52-RBFNN Based Adaptive Control of Uncertain Robot Manipulators in Discrete Time](#) 569
- 14:30 Metehan Yayla (Middle East Technical University, Turkey)
Ali Turker Kutay (Middle East Technical University, Turkey)
[ID142-Guaranteed Exponential Convergence without Persistent Excitation in Adaptive Control](#) 575
- 14:50 Fan Yuan (Shanghai Jiao Tong University, China)
Xuyong Wang (Shanghai Jiao Tong University, China)
Qiankun Ma (Shanghai Jiao Tong University, China)
Zhonghua Miao (Shanghai University, China)
[ID123-Friction Compensation Control of Cam-Rotor Vane Motor Based on Improved LuGre Model](#) 581
- 15:10 Rodrigo Trentini Preuss (University of Applied Sciences and Arts Hannover, Germany)
Antonio Silveira (Federal University of Pará, Brazil)
Marvin Timo Bartsch (University of Applied Sciences and Arts Hannover, Germany)
Rüdiger Kutzner (University of Applied Sciences and Arts Hannover, Germany)
Lutz Hofmann (Leibniz Universität Hannover, Germany)
[ID139-On the design of stochastic RST controllers based on the Generalized Minimum Variance](#) 587

Thursday

15:50-17:30 Session 11A Conference Room 1

Control Applications in Transportation

Chairs: Paolo Lino (Politecnico di Bari, Italy)
C. James Taylor (Lancaster University, UK)

15:50 Ivana Tomic (City University London, UK)

George Halikias (City University London, UK)

[**ID118-Performance analysis of distributed control configurations in LOR multi-agent system design**](#) 593

16:10 Nan Li (Zhejiang University, China)

Guang Zhou Zhao (Zhejiang University, China)

[**ID109-Adaptive signal control for urban traffic network gridlock**](#) 599

16:30 Kieran Reeves (National Motorsport Academy, UK)

Allahyar Montazeri (Lancaster University, UK)

C. James Taylor (Lancaster University, UK)

[**ID90-Model Development and Energy Management Control for Hybrid Electric Race Vehicles**](#) 605

16:50 Mukarram Shaik (Cranfield University, UK)

James Whidborne (Cranfield University, UK)

[**ID117-Robust Sliding Mode Control of a Quadrotor**](#) 611

17:10 Paolo Lino (Politecnico di Bari, Italy)

Guido Maione (Politecnico di Bari, Italy)

Fabrizio Saponaro (Politecnico di Bari, Italy)

Jing Deng (Queen's University Belfast, UK)

Kang Li (Queen's University Belfast, UK)

[**ID164-Identification of Solenoid Valve Dynamics in a Variable Valve Timing System**](#) 617

Thursday

15:50-17:30 Session 11B Lecture Room 3

Algorithms and Architectures of Control Systems

Chairs: Paul Trodden (The University of Sheffield, UK)

James Whidborne (Cranfield University, UK)

15:50 James Whidborne (Cranfield University, UK)

[**ID110-Solving Optimal Control Problems using Chebfun**](#) 623

16:10 Jiayang Hu (University of Bath, UK)

Andrew Plummer (University of Bath, UK)

[**ID71-Compensator Design for Model-in-the-Loop Testing**](#) 629

16:30 Bernardo Hernandez (The University of Sheffield, UK)

Paul Trodden (The University of Sheffield, UK)

[**ID45-Distributed Model Predictive Control Using a Chain of Tubes**](#) 635

16:50 Kritchai Witthephanich (Cork Institute of Technology, Ireland)

Luis Orihuela (Universidad Loyola Andalucia, Spain)

Ramon A. Garcia (Universidad de Sevilla, Spain)

Juan M. Escano (Cork Institute of Technology, Ireland)

[**ID48-Min-max model predictive control with robust zonotope-based observer**](#) 641

17:10 Jianhua Zhang (North China Electric Power University, China)

Yamin Kuai (North China Electric Power University, China)

Shuqing Zhou (North China Electric Power University, China)

Guolian Hou (North China Electric Power University, China)

Mifeng Ren (Taiyuan University of Technology, China)

[**ID169-Improved minimum entropy control for two input and two-output networked control systems**](#) 647

Thursday

15:50-17:30 Session 11C Conference Room 2

SS4: Virtual Reality and Robotics

Chairs: Wasif Naeem (Queen's University, UK)

Karen Rafferty (Queen's University Belfast, UK)

15:50 Rameez Hayat (Student at TU Munich, Germany)

Martin Buss (Technical University of Munich, Germany)

[**ID130-Model Identification for Robot Manipulators using Regressor-Free Adaptive Control**](#) 652

16:10 Siavash Ahmadi Barogh (Institute of Control Systems, TUHH, Germany)

Herbert Werner (Institute of Control Systems, TUHH, Germany)

[**ID62-Cascaded Formation Control Using Angle and Distance Between Agents with Orientation Control \(Part 1\)**](#) 659

16:30 Siavash Ahmadi Barogh (Institute of Control Systems, TUHH, Germany)

Herbert Werner (Institute of Control Systems, TUHH, Germany)

[**ID116-Cascaded Formation Control Using Angle and Distance Between Agents with Orientation Control \(Part 2\)**](#) 665

16:50 Ivana Tomic (City University London, UK)

Efstathios Milonidis (City University London, UK)

George Halikias (City University, UK)

[**ID128-LQR distributed cooperative control of a formation of low-speed experimental UAVs**](#) 671

17:10 Yasuhiko Mutoh (Sophia Univ., Japan)

Masakatsu Kemmotsu (Sophia Univ., Japan)

Wataru Akutsu (Sophia Univ., Japan)

[**ID74-Time Varying Observer Based Discrete Control for 2-Link Robot Manipulator**](#) 677

Thursday

15:50-17:30 Session 11D Lecture Room 2

Nonlinear Control Systems Design

Chairs: Ziqiang Lang (Sheffield University, UK)

Dong Yue (Nanjing University of Posts and Telecommunications, China)

15:50 Yunpeng Zhu (Sheffield University, UK)

Ziqiang Lang (Sheffield University, UK)

[**ID106-Analysis of Output Response of Nonlinear Systems using Nonlinear Output Frequency Response Functions**](#) 685

16:10 Ross Drummond (Oxford University, UK)

Giorgio Valmorbida (CentraleSupélec, France)

Stephen Duncan (Oxford University, UK)

ID82-Lyapunov Analysis of Nonlinear Systems With Rational Vector Field and Jacobian 691

16:30 Xue Wu (Nanjing University of Aeronautics and Astronautics, China)

Shaojie Zhang (Nanjing University of Aeronautics and Astronautics, China)

Weifang Shuang (Nanjing University of Aeronautics and Astronautics, China)

Erik-Jan van Kampen (Delft University of Technology, Netherlands)

Qiping Chu (Delft University of Technology, Netherlands)

ID65-Optimal adaptive compensation control for a class of MIMO nonlinear systems with actuator failures 695

16:50 Yang Yang (Nanjing University of Posts and Telecommunications, China)

Dong Yue (Nanjing University of Posts and Telecommunications, China)

Zhou Gu (Nanjing Forestry University, China)

ID40-Observer-Based Adaptive Fault-Tolerant Control of A Class of Nonlinear Systems With Actuator Failures 701

Thursday

17:30-18:30 Session 12 Lecture Room 3

UKACC Committee meeting

Chair: Eric Kerrigan (Imperial College London, UK)

Thursday

19:30-21:30 The Great Hall at Belfast City Hall

Conference Banquet at Belfast City Hall

Friday, 2nd September

Friday

09:00-10:00 Session 13 Conference Rooms 1 & 2

Keynote speech 3: Target/Source Localization by a Network of Imperfect Binary Sensors

Speaker: Erwei Bai (University of Iowa, USA)

Chair: Sarah K. Spurgeon (University of Kent, UK)

Friday

10:00-11:00 Session 14 The Courtyard Catering Area

Poster session and refreshments

10:00 Hui-Hong Duan (University of Shanghai for Science and Technology, China)

Sheng-Dong Nie (University of Shanghai for Science and Technology, China)

Jing Gong (University of Shanghai for Science and Technology, China)

[ID73-Two-pass region growing combined morphology algorithm for segmenting airway tree from CT chest scans](#) 707

10:00 Lidong Zhang (Northeast Dianli University, China)

Kang Li (Queen's University Belfast, UK)

Zhile Yang (Queen's University Belfast, UK)

Zi Yang (Northeast Dianli University, China)

Qing Wang (Northeast Dianli University, China)

[ID179-TRIZ Based Teaching Strategy for Wind Turbine Control](#) 713

10:00 Scott Devine (Queen's University Belfast, UK)

Karen Rafferty (Queen's University Belfast, UK)

Stuart Ferguson (Queen's University Belfast, UK)

[ID154-Real time robotic arm control using hand gestures with multiple end effectors](#) 719

10:00 Thelfa Ahmad (Queen's University Belfast, UK)

Tim Littler (Queen's University Belfast, UK)

Wasif Naeem (Queen's University Belfast, UK)

[ID150-Investigating the effect of PID controller on inertial response in doubly fed induction generator \(DFIG\)](#) 724

10:00 David McIntyre (Queen's University, UK)

Wasif Naeem (Queen's University, UK)

Xiandong Xu (Queen's University, UK)

[ID127-Cooperative Obstacle Avoidance using Bidirectional Artificial Potential Fields](#) 731

10:00 Seamus Mcloone (Maynooth University, Ireland)

John Maloco (Maynooth University, Ireland)

[ID32-A Cost-effective Hardware-based Laboratory Solution for Demonstrating PID Control](#) 737

- 10:00 Furqan Alam (King Abdulaziz University, Saudi Arabia)
 Vijey Thayanathan (King Abdulaziz University, Saudi Arabia)
 Iyad Katib (King Abdulaziz University, Saudi Arabia)
[**ID24-Analysis of Round-robin Load-balancing Algorithm with Adaptive and Predictive Approaches**](#) 743
- 10:00 Jun Zhao (Harbin Institute of Technology, China)
 Guo-Ping Liu (The University of Southwales, UK)
[**ID132-A Novel NCS Simulation and Experimental Platform**](#) 750
- 10:00 Wei Xie (Shanghai Key Laboratory of PowerStation Automation Technology School of Mechatronics and Automation, China)
 Xianxia Zhang (Shanghai Key Laboratory of PowerStation Automation Technology, School of Mechatronics and Automation, Shanghai University, China)
[**ID41-An Improved Online Self-organizing Dynamic Fuzzy Neural Network for Nonlinear Dynamic System Identification**](#) 756
- 10:00 [Mohammed Al-Saadi](#) (Cranfield University, UK)
[Patrick Luk](#) (Cranfield University, UK)
[Weizhong Fei](#) (Cranfield University, UK)
[**ID178-Impact of Unit Commitment on the Optimal Operation of Hybrid Microgrids**](#) 762
- 10:00 Franklyn Duarte (Institute of Electrical Information Technology, Clausthal University of Technology, Germany)
 Christian Bohn (Institute of Electrical Information Technology, Clausthal University of Technology, Germany)
[**ID80-Modeling and Centralized Sliding Mode Control of a Two-flexible-link Robot**](#) 768

Friday

11:00-13:00 Session 15A Conference Room 1

Artificial Intelligence in Control

Chairs: Wen-Hua Chen (Loughborough University, UK)

Jianhua Zhang (North China Electric Power University, China)

- 11:00 Dazi Li (Beijing University of Chemical Technology, China)
 Guifang Wang (Beijing University of Chemical Technology, China)
 Tianheng Song (Beijing University of Chemical Technology, China)
 Qibing Jin (Beijing University of Chemical Technology, China)
[**ID57-Improving Convolutional Neural Network using Accelerated Proximal Gradient Method for Epilepsy Diagnosis**](#) 774
- 11:20 Fanlin Meng (Loughborough University, UK)
 Jinya Su (Loughborough University, UK)
 Cunjia Liu (Loughborough University, UK)
 Wen-Hua Chen (Loughborough University, UK)
[**ID83-Dynamic Decision Making in Lane Change: Game Theory with Receding Horizon**](#) 780
- 11:40 Teng D Chollom (University of leicester, UK)

Nkemdilim Ofodile (University of Leicester, UK)

Osichinaka Ubadike (Nigerian Air Force, Nigeria)

ID135-Application Techniques of Multi-objective particle swarm optimization: Aircraft flight control 786

12:00 Mifeng Ren (Taiyuan University of Technology, China)

Ting Cheng (Taiyuan University of Technology, China)

Lan Cheng (Taiyuan University of Technology, China)

Jianhua Zhang (North China Electric Power University, China)

Gaowei Yan (Taiyuan University of Technology, China)

ID140-A Single Neuron Controller for Non-Gaussian Systems with Unmodeled Dynamics 792

12:20 Quang An Phan (Cork Institute of Technology, Ireland)

Michael D. Murphy (Cork Institute of Technology, Ireland)

Michael C. Breen (Cork Institute of Technology, Ireland)

Ted Scully (Cork Institute of Technology, Ireland)

ID144-One-day-ahead Cost Optimisation for a Multi-energy Source Building using a Genetic Algorithm 798

12:40 Shaojun Gan (Chongqing University, China)

Shan Liang (Chongqing University, China)

Kang Li (Queen's University Belfast, UK)

Jing Deng (Queen's University Belfast, UK)

Tingli Cheng (Chongqing University, China)

ID163-Ship Trajectory Prediction for Intelligent Traffic Management using Clustering and ANN 804

Friday

11:00-13:00 Session 15B Lecture Room 3

Advanced Control and Informatics

Chairs: Minyou Chen (Chongqing University, China)

Donglian Qi (Zhejiang University, China)

11:00 Bryn Jones (University of Sheffield, UK)

Peter Heins (University of Sheffield, UK)

Iñaki Esnaola (University of Sheffield, UK)

ID93-Sea-Surface Reconstruction for Surface Marine Vehicles: A Matrix Completion Approach 810

11:20 Zhekang Dong (College of Electrical Engineering, Zhejiang University, China)

Donglian Qi (College of Electrical Engineering, Zhejiang University, China)

Li Luo (School of Electronic and Information Engineering, Southwest University, China)

Shukai Duan (School of Electronic and Information Engineering, Southwest University, China)

Xiaofang Hu (School of Computer and Information Science, Southwest University, China)

ID113-A Fuzzy-based Parametric Fault Diagnosis Approach for Multiple Memristor Circuits 816

11:40 Yang Liu (Harbin Institute of Technology, China)
Li Li (Harbin Institute of Technology, China)
Zhenxian Fu (Harbin Institute of Technology, China)
Jiubin Tan (Harbin Institute of Technology, China)
Kang Li (Queen's University Belfast, UK)
[ID172-Automatic Mass Balancing of a Spacecraft Simulator Based on Non-orthogonal Structure](#) 822

12:00 Zhenxian Fu (Harbin institute of technology, China)
Guangying Zhang (Harbin institute of technology, China)
Yurong Lin (Harbin institute of technology, China)
Yang Liu (Harbin institute of technology, China)
Jiubin Tan (Harbin institute of technology, China)
[ID173-Calibration and compensation of inertial sensor errors in portable applications - a review](#) 828

12:20 Yue Dong (Harbin Institute of Technology, China)
Yang Liu (Harbin Institute of Technology, China)
Fazhi Song (Harbin Institute of Technology, China)
Li Li (Harbin Institute of Technology, China)
Kang Li (Queen's University Belfast, UK)
[ID171-Modeling and Sliding-mode Control of Wafer Stage in Lithrography Machines](#) 832

12:40 Weifang Ling (Chongqing University, China)
Minyou Chen (Chongqing University, China)
Zuolin Wei (Chongqing University, China)
Feixiong Chen (Chongqing University, China)
Lei Yu (China Southern Power Grid Research Institute, China)
David C Yu (University of Wisconsin-Milwaukee, USA)
[ID162-A Distributed Optimal Control Method for Active Distribution Network](#) 838

Friday

11:00-13:00 Session 15C Conference Room 2

SS5: Recent Advances in Spacecraft Modelling and Control

Chairs: Chuanjiang Li (Harbin Institute of Technology, China)
Yanning Guo (Harbin Institute of Technology, China)

11:00 Mohammed Al-Saadi (Cranfield university, UK)
Patrick Luk (Cranfield University, UK)
Fei Weizhong (Cranfield, UK)
Akram Bati (Surrey University, UK)
[ID148-Security Constrained Active and Reactive Optimal Power Management of Microgrid in Different Market Policies](#) 844

11:00 Baichun Gong (Northwestern Polytechnical University, China)
Jianjun Luo (Northwestern Polytechnical University, China)
Chuanjiang Li (Harbin Institute of Technology, China)
[ID115-Initial Relative Orbit Determination For Close-in Proximity Operations Based on Tshcauner-Hempel Dynamics](#) N/A

- 11:20 Han Gao (Harbin Institute of Technology, China)
 Yueyong Lv (Harbin Institute of Technology, China)
 Guangfu Ma (Harbin Institute of Technology, China)
 Chuanjiang Li (Harbin Institute of Technology, China)
[ID126-Backstepping sliding mode control for combined spacecraft with nonlinear disturbance observer](#) 850
- 11:40 Li Yuan (Harbin Institute of Technology, China)
 Chuanjiang Li (Harbin Institute of Technology, China)
 Boyan Jiang (Harbin Institute of Technology, China)
 Guangfu Ma (Harbin Institute of Technology, China)
[ID97-Fixed-Time Spacecraft Attitude Stabilization using Homogeneous Method](#) 856
- 12:00 Mohammed Arezki Si Mohammed (Centre de Développement des Satellites (CDS), Algeria)
 Abdellatif Bellar (Centre de Développement des Satellites (CDS), Algeria)
 Akram Adnane (Centre de Développement des Satellites (CDS), Algeria)
 Halima Boussadia (Université des Sciences et de la Technologie d'Oran Mohamed Boudiaf (USTO.MB), Algeria)
[ID99-Performance Analysis of Attitude Determination and Estimation Algorithms Applied to Low Earth Orbit Satellites](#) 862
- 12:20 Yanning Guo (Harbin Institute of Technology, China)
 Yao Zhang (Harbin Institute of Technology, China)
 Guangfu Ma (Harbin Institute of Technology, China)
 Tianyi Zeng (Beijing Institute of Technology, China)
[ID124-Multi-power Sliding Mode Guidance for Mars Powered Descent Phase](#) 868

Additional Papers:

Saqib Nazir (National University of Sciences and Technology, Pakistan)
 Nouman Ashraf (Frederick University, Cyprus)
 Iftikhar Ahmad (National University of Sciences and Technology, Pakistan)
[Backstepping Based Control of Heave-Induced Pressure Deviations in Managed Pressure Drilling](#) 874

Tuopu Na (Harbin Institute of Technology, China)
 Qianfan Zhang (Harbin Institute of Technology, China)
 Chaowei Zhou (Harbin Institute of Technology, China)

[Modeling and Design of Quasi-Z-Source Inverter for PMSM Drive System](#) 880