Program

Sunday, September 8, 2019

Welcome Cocktail Reception

19.30 – 21.30 **Sala delle Colonne, Castello del Valentino**

Monday, September 9, 2019

8.30 - 9.00 **Registration**

9.00 – 10.45 **Keynote Session 1**
Room: Energy Center Auditorium

9.00 - 9.45 *Application of Sensorless Drive from Automotive to Home Appliance*
Seung Ki Sul
Professor, Seoul National University, Korea

9.45 - 10.00 *IEEE Fellow Elevation of Silverio Bolognani*
Chiara Boccaletti
IAS Treasurer

10.00 - 10.45 *Convergence and Robustness Properties of Rotor Position Estimation by HF Voltage Injection in IPM and Reluctance Synchronous Motor DrivesS. Bolognani:*
Silverio Bolognani
Professor, University of Padova, Italy

10.45 - 11.15 **Coffee Break**

11.15 - 12.30 **Session A - Self Commissioning and Automatic Tuning Methods**
Room: Energy Center Auditorium
Chair: Axel Mertens

11.15 – 11.40 *Automatic Tuning Procedure at Standstill for Extended Kalman Filter in Sensorless Control of Permanent Magnet Synchronous Motors*
Ludovico Ortombina, Dario Pasqualotto, Fabio Tinazzi, Mauro Zigliotto
University of Padova, Italy

11.40 – 12.05 *Commissioning and Sensorless Control of High Power SyR Machine Prototypes*
Paolo Pescetto, Eric Armando, Gianmario Pellegrino
Politecnico di Torino, Italy

12.05 – 12.30 *Feasible Auto-Tuning Procedure for Mid-Performance Sensorless IPMSM and SynRM Drives*
Nicola Bedetti[1], Sandro Calligaro[2], Roberto Petrella[3]
[1]Gefran Spa, Italy, [2]Free University of Bolzano, Italy, [3]University of Udine, Italy

12.30 - 13.40 **Lunch**
Room: Energy Center Foyer

13.40 - 15.20 **Oral SESSION B - New and Improved Sensorless Algorithms**
Room: Energy Center Auditorium
Chair: Mauro Zigliotto

13.40 – 14.05 *Iterative Tracker for Anisotropy-Based Self-Sensing Control of PMSM*

Niklas Himker, Georg Lindemann, Axel Mertens
Leibniz University Hannover, Germany

14.05 – 14.30 *Enhanced Observer with Adaptive Reference Frame for Self-Sensing Control of PMSM*
Georg Lindemann, Niklas Himker, Axel Mertens
Leibniz University Hannover, Germany

14.30 – 14.55 *Applying the Square-Root-Condition combined with DB-DTFC as a Flux Observer-Based Maximum Torque per Flux Strategy*
Hadi El Khatib[1], Mario Pena[2], Emebet Gedlu[2], Michael Saur[3]
[1]Technical University of Munich, Germany, [2]University of Oviedo, Spain, [3]Audi AG, Germany

14.55 – 15.20 *Novel Sensorless Control Algorithm for SyR Machines Based on Low Speed Active Flux*
Paolo Pescetto[1], Arzhang Yousefi-Talouki[2], Gianmario Pellegrino[1]
[1]Politecnico di Torino, Italy, [2]ABB Oy, Finland

15.20 - 15.40 Coffee Break

15.40 - 17.45 125' Oral Session C

15.40 - 17.45 Oral SESSION C – Analysis of State Observers for Sensorless Control
Room: Energy Center Auditorium
Chair: Seung-Ki Sul

15.40 – 16.05 *Comparison of Anisotropy Signals for Sensorless Control of Star-Connected PMSMs*
Klaus Schuhmacher, Stephan Kleen, Matthias Nienhaus
Saarland University, Germany

16.05 – 16.30 *Convergence Properties of Direct Position and Speed Estimation in Synchronous Motor Drives*
Matthias Preindl
Columbia University, USA

16.30 – 16.55 *Evaluation of Extended Electro Motive Force Observer Dynamic Performances Using Complex Vectors*
Abdelrahman Elsman, Fabio Giulii Capponi, Giulio De Donato, Federico Caricchi
Sapienza – University of Rome, Italy

16.55 – 17.20 *Discrete Time Implementation Issues in Back-EMF Observer for Sensorless Control of PMSM and SynRM*
Sandro Calligaro[1], Roberto Petrella[2]
[1]Free University of Bolzano, Italy, [2]University of Udine, Italy

17.20 – 17.45 *Sensorless Synchronous Reluctance Motor Drives: A Sensitivity Analysis Framework and Design to Achieve Stator Resistance Immunity*
Anantaram Varatharajan, Gianmario Pellegrino
Politecnico di Torino, Italy

20.00 - 22.30 Social Dinner
Unione Industriale di Torino

Tuesday, September 10, 2019

8.30 - 9.00 **Registration**

9.00 – 9.45 **Keynote Session 2**
Room: Energy Center Auditorium

9.00 - 9.45 *Sensorless Plug-and-Play Control of Industrial Drives*
Marko Hinkkanen
Associate Professor, Aalto University, Finland

9.45 - 10.35 **Oral Session D, Robert Lorenz Memorial Session – part 1**
Room: Energy Center Auditorium
Chair: Bulent Sarlioglu

9.45 – 10.10 *Carrier Separation Techniques for Improved Disturbance Rejection of Injection-Based Self-Sensing Control*
Marc S. Petit[1], Bulent Sarlioglu[1], Robert D. Lorenz[1], Christoph H. van der Broeck[2]
[1]University of Wisconsin - Madison, USA, [2]RWTH Aachen University, Germany

10.10 – 10.35 *Sensorless Estimation of Machine Parameters in Synchronous Reluctance Motor Drives*
Salvatore Foti[1], Antonio Testa[1], Giacomo Scelba[2], Luigi Danilo Tornello[2], Salvatore De Caro[1], Tommaso Scimone[1]
[1]University of Messina, Italy, [2]University of Catania, Italy

10.35 - 11.00 **Coffee Break and start of Poster Session**

11.00 - 12.40 **Poster Session (see titles and authors here)**
Room: Energy Center Foyer

12.40 - 14.00 **Lunch**
Room: Energy Center Foyer

14.00 - 14.50 **Oral Session D, Robert Lorenz Memorial Session – part 2**
Room: Energy Center Auditorium
Chair: Fabio Giulii Capponi

14.00 – 14.25 *Full Order Discrete-Time Modeling for Accurate and Speed Independent Pulsating Voltage Injection Self-Sensing*
Timothy Slininger[1], Marc Petit[1], Huthaifa Flieh[1], Shao-Chuan Chien[2], Li-Hsing Ku[2], Robert Lorenz[1]
[1]University of Wisconsin - Madison, USA, [2]Delta Electronics, Inc, Taiwan

10.10 – 10.35 *SynRM Sensorless Torque Estimation Using High Frequency Signal Injection*
Maria Martinez, Diego Laborda, David Reigosa, Daniel Fernandez, Juan Manuel Guerrero, Fernando Briz
University of Oviedo, Spain

14.50 - 16.05 **Session E – Special Solutions**
Room: Energy Center Auditorium
Chair: Giacomo Scelba

14.50 – 15.15 *An Improved IDIM Technique for Sensorless Control of Single-Phase Electromagnetic Drives*
Niklas Koenig[1], Giorgia Anzelmi[2], David Naso[2], Matthias Nienhaus[1], Emanuele Grasso[2]
[1]Saarland University, Germany, [2]Politecnico di Bari, Italy

15.15 – 15.40	*Self-Sensing-Oriented Optimization of Synchronous Reluctance Machine Design* Giacomo Bacco, Virginia Manzolini, Silverio Bolognani, Nicola Bianchi [1]University of Padova, Italy, [2]EEI Spa, Italy
15.40 – 16.05	*Search Coils Based Sensorless Controls for Permanent Magnet Synchronous Motor Drives* Luigi Danilo Tornello[1], Giacomo Scelba[1], Giuseppe Scarcella[1], Salvatore Foti[2], Antonio Testa[2] [1]University of Catania, Italy, [2]University of Messina, Italy
16.05 - 16.30	**Coffee Break and Conclusion**

Poster Session – List of Papers

Room: Energy Center Foyer
Chair: Paolo Pescetto

1. *Analysis of Voltage Distortion and Comparison of Two Simple Voltage Compensation Methods for Sensorless Control of Induction Motor*
   Ondrej Lipcak, Jan Bauer
   Czech Technical University in Prague, Czech Republic

2. *Investigation of the Linear Alternative of the SMO Switching Function used for Self-Sensing High-Speed PMSM*
   Andreas Krämer, Mirza Cizmic, Tobias Strnad, Abid Ali
   University of Applied Sciences Wurzburg-Schweinfurt, Germany

3. *Challenges of Sensorless Controlled High-speed PMSM Drives*
   Simon Zossak[1], Marek Musak[2], Marek Stulrajter[2], Pavol Makys[1]
   [1]University of Zilina, Slovakia, [2]NXP Semiconductors, Czech Republic

4. *Machine-Parameter-Independent Reduction of Harmonic Errors in Self-Sensing Control of PMSM*
   Mirza Cizmic, Andreas Krämer, Abid Ali
   University of Applied Sciences Wurzburg-Schweinfurt, Germany

5. *Current sensorless field oriented control of a RSM by Extended-Kalman-Filter based state estimation*
   Matthias Laumann[1,2], Christian Weiner[1], Ralph Kennel[2]
   [1]University of Applied Sciences Darmstadt, Germany, [2]Technical University Munich, Germany

6. *Comparative Study of Speed Ripple Reduction in Sensorless PMSM Drive System with Pulsating Load*
   Yukinori Inoue, Yuma Komaru, Shigeo Morimoto, Masayuki Sanad
   Osaka Prefecture University, Japan

7. *Self-sensing Control of a Synchronous Homopolar Machine Using Field Current Response from Phase-shifted PWM*
   Alecksey Anuchin, Maxim Lashkevich, Dmitry Aliamkin, Maria Gulyaeva
   Moscow Power Engineering Institute, Russia

8. *Robust phase-shift estimator for self-sensing control of PM synchronous machines*
   Amir Messali[1], Malek Ghanes[1], Mohamad Koteich[2]
   [1]LS2N, France, [2]Renault Group, France

9. *An Improved Low-Noise Sensorless PMSM Drive able to Face Highly Intermittent Load Torque*
   Mario Marchesoni[1], Massimiliano Passalacqua[1], Luis Vaccaro[1], Marco Calvini[2], Marco Venturini[2]
   [1]University of Genova, Italy, [2]Phase Motion Control, Italy

10. *Fast Moving Horizon Estimator for Induction Motor Sensorless Control*
    Andrea Favato, Paolo Gherardo Carlet, Francesco Toso, Matteo Carbonieri, Silverio Bolognani
    University of Padova, Italy

11. *Sensorless control of Interior Permanent Magnet motor using a Moving Horizon Estimator based on a linearized motor model*
    Paolo Gherardo Carlet, Francesco Toso, Andrea Favato, Silverio Bolognani
    University of Padova, Italy

12. *Improved Simple I-F Open-Loop Start-up of PMSM Drives Without Speed or Position Sensor*
    Matej Pacha[1], Simon Zossak[2]
    [1]NXP Semiconductors, Czech Republic,[2]University of Zilina, Slovakia

13. *Identification of Moment of Inertia in Sensorless PMSM drive at Quasi Stand-Still*
    Sandro Calligaro[1], Jose Jacob[1], Roberto Petrella[2]
    [1]Free University of Bolzano, Italy, [2]University of Udine, Italy

14. *An Open Loop Starting Procedure for Sensorless Control of Synchronous Reluctance Motors*
Andrea Credo[1], Marco Tursini[1], Simone Paolini[2], Mauro Paletta[1]
[1]University of L'Aquila, Italy, [1]R13 Technology Srl, Italy

15. *Permanent Magnet Synchronous Machine Torque Estimation Using Low Cost Hall-Effect Sensors*
Daniel Fernandez, Ye Gu Kang, Diego Fernandez, Maria Martinez, David Reigosa, Fernando Briz
University of Oviedo, Spain

16. *Critical Aspects and Strategies for Sensorless Control of IPMSM based on Low-Frequency Voltage Injection*
Riccardo Brugioni, Emilio Carfagna, Emilio Lorenzani, Fabio Immovilli
University of Modena and Reggio Emilia, Italy

17. *Electrical-Sensorless Control of Induction Motor*
Kenza Bouhoune[1], Krim Yazid[1], Mohamed Seghir Boucherit[2], Babak Nahid-Mobarakeh[3], Mohamed Menaa[1]
[1]USTHB Algers, Algeria, [2]ENP Algers, Algeria, [3]ENSEM Nancy, France