

**2018 25th International Workshop on Electric Drives:  
Optimization in Control of Electric Drives  
IWED2018**

---



Moscow Power Engineering Institute, Moscow, Russia

31<sup>st</sup> of January – 02<sup>nd</sup> of February 2018



**Кафедра автоматизированного электропривода  
Department of Electric Drives**



Научно-технический семинар

**ОПТИМИЗАЦИЯ УПРАВЛЕНИЯ  
В ЭЛЕКТРОПРИВОДАХ**

К 80-летию со Дня рождения  
Сергея Картерьевича Козырева

## Программа семинара Program

8:30	<b>Регистрация участников семинара Registration</b>
9:00 – 9:15	<b>Открытие семинара (Opening Ceremony)</b> <i>Н.Д. Роголев – ректор НИУ «МЭИ», А.С. Анучин – зав. кафедрой АЭП</i>
9:15 – 11:00	<b>Секция «Оптимизация управления в электроприводах» Optimization in Control of Electric Drives</b>
	The Impact of Modulation Technique on High Power Density Synchronous Machine Characteristics. <i>Dmitry Golovanov, Galina Mirzaeva, David Gerada and Chris Gerada</i>
	Minimization and Distribution of Switching Losses Using Predictive PWM Strategy in a Voltage Source Inverter. <i>Alecksey Anuchin, Dmitry Aliamkin, Maxim Lashkevich, Dmitry Shpak, Alexandr Zharkov and Fernando Briz</i>
	Joint Space Reference Trajectory to Reduce the Energy Consumption of a Six-Legged Mobile Robot. <i>Alexey Bodrov, Weichen Cheah, Peter N. Green, Simon Watson and Judith Apsley</i>
	Optimization in Servo Motion Control: Considering Hardware Constraints <i>L.N. Rassudov, A.P. Balkovoi</i>
	Impact of Low Switching-to-Fundamental Frequency Ratio on Predictive Current Control of PMSM. <i>Leszek Jarzebowicz</i>
	Genetic Algorithm Optimization of SHE-PWM Technique for Multi-Module VSIs Employed in Electric Drive systems. <i>Ahmed Omara, Michael Sleptsov and Mohamed El-Nemr</i>
	Simulink Based Model for Flow Control of a Centrifugal Pumping System. <i>Levon Gevorkov, Anton Rassolkin, Ants Kallaste and Toomas Vaimann</i>
11:00 – 11:30	<b>Перерыв (Coffee Break)</b>
11:30 – 12:15	<b>Секция «Оптимизация управления в электроприводах» Optimization in Control of Electric Drives</b>
	Analysis of Motion Controller Requirements for Precision Planar Motion System with Parallel Kinematic. <i>Mikhail Tiapkin, Dmitriy Elenskiy, Alexander Balkovoy and Oleg Tolstykh</i>
	Application of Adaptive Neuro Fuzzy Inference System (ANFIS) Controller in Servodrive with Multi-Mass Object. <i>Dmitry Lukichev, Galina Demidova, Aleksei Kuzin and Aleksandr Saushev</i>
	Improving the dynamic response of FOC induction machines operated with reduced rotor flux. <i>Alexander Popov, Viktoriya Lapshina, Igor Gulyaev and Fernando Briz</i>
12:15 – 13:00	<b>Секция «Актуальные вопросы электропривода» Other Topical Reports on Electric Drives</b>
	Comparison of Electrical Machines for use with a High-Horsepower Marine Engine Turbocharger. <i>David Gerada, Zeyuan Xu, Dmitry Golovanov and Chris Gerada</i>
	Design And Testing of Electromechanical Actuator for Aerospace Applications. <i>Luca Papini, Peter Connor, Chintanbhai Patel, Lee Empringham, Chris Gerada and Patrick Wheeler</i>
	Modeling of Two-Trolleybus Motion with Braking Energy Exchange and Transmission Resistance. <i>Girts Stana and Viesturs Brazis</i>
13:00 – 14:00	<b>Перерыв (Coffee Break)</b>

14:00 – 16:30	<b>Приглашенные доклады</b> <b>Invited Speeches and Tutorials</b>
	Crossrail – London’s New Underground Railway. <i>Rhys Vaughan Williams and Peter Excell</i>
	From Control to Intelligence the new generation of Electric Drives with Xilinx All Programmable System on Chip. <i>Dr. Giulio Corradi – Senior System Architect ISM Xilinx, с переводом на русский язык</i>
	Development Tools and Reference Solutions for Novel Russian Motor Control Microcontroller. <i>Максим Лашкевич (in Russian)</i>
16:30 – 17:30	<b>Секция «Оптимизация управления в электроприводах» (in Russian)</b>
	Оптимальное по быстродействию управление в электроприводах с питанием двигателей от вентильных преобразователей. <i>А.Н. Ладыгин</i>
	Оптимальное и квазиоптимальное управление позиционным электроприводом постоянного тока по критерию минимума электрических потерь при ослаблении магнитного потока. <i>М.Г. Бычков</i>
	Оптимизированный синхронный метод измерения скорости с помощью инкрементального датчика положения. <i>А.С. Анучин, Д.М. Шпак, В.С. Подзорова, А.Н. Дианов</i>
	Особенности оптимизации интеллектуальных электроприводов технологических установок нефтегазового комплекса <i>О.В. Крюков</i>
	Оптимизация применения электроприводов средствами IT технологий и машинного интеллекта <i>А.Н. Мосин</i>
16:00 – 17:30	<b>Секция стендовых докладов</b> <b>Poster session</b>
	Quasi-Optimal Energy Path Planning for Anthropomorphic Manipulator using Gravity Torque Mapping. <i>Sang Beom Woo, Alexey Bodrov and Judith Apsley</i>
	Comparison of linear position and velocity control strategies for a direct servodrive. <i>Elizaveta K. Samygina, Lev N. Rassudov and Aleksandr P. Balkovoi</i>
	Estimation of the Requirements for Hybrid Electric Powertrain Based on Analysis of Vehicle Trajectory Using GPS and Accelerometer Data. <i>Egor Kulik, Trung Tran and Alecksey Anuchin</i>
	Design of a Portable Drone for Educational Purposes. <i>Maximilian Hell, Robert Bolam, Yuriy Vagapov and Alecksey Anuchin</i>
	Interpolation and analysis of the efficiency of a synchronous reluctance electric drive at various load points of a fan profile. <i>Nail Safin, Vadim Kazakbaev, Vladimir Prakht, Vladimir Dmitrievskii and Sergei Sarapulov</i>
	Torque Control of Switched Reluctance Drive in Generating Mode. <i>Mikhail Bychkov, Alexander Krasovsky, Artem Fedorenko and Elena Gorbunova</i>
	Internal Design of Permanent-Magnet Direct-Drive In-Wheel Motors for Battery-Powered Traction Applications. <i>Essam Hamdi and John Paul Spivey</i>
	Ultrasonic Sensor for UAV Flight Navigation. <i>David Davies, Robert Bolam, Yuriy Vagapov and Peter Excell</i>

	<p>Thermal Models Based Power Module Temperature Monitoring in AC Drives.  <i>Mikhail Ilyin, Alexander Popov, Fernando Briz and Igor Gulyaev</i></p>
	<p>Calculation of the Efficiency and Power Consumption of Induction IE2 and Synchronous Reluctance IE5 Electric Drives in the Pump Application Based on the Passport Specification According to the IEC 60034-30-2.  <i>Nail Safin, Vadim Kazakbaev, Vladimir Prakht and Vladimir Dmitrievskii</i></p>
	<p>Model Predictive Direct Power Control of Rotor Side Converter for DFIGs Driven by Variable Speed Wind Turbines.  <i>Ahmed Diab</i></p>
	<p>Comparative Study of Field-Oriented Control Model in Application for Induction and Synchronous Reluctance Motors for Lifecycle Analysis.  <i>Siahrey Autsou, Anton Rassõlkin, Levon Gevorkov, Viktor Saroka, Dmitriy Karpovich, Toomas Vaimann, Ants Kallaste and Anouar Belahcen)</i></p>
	<p>Optimization Task Definition of Double Inverter-Fed Motor Drive Based on Energy Criteria.  <i>Gennady Tutaev and Maxim Bobrov</i></p>
	<p>Simulation of Synchronous Reluctance Motor with Digital Control System and Magnetic Flux Estimator.  <i>Vadim Kazakbev, Vladimir Prakht and Vladimir Dmitrievskii</i></p>
	<p>Mathematical Modeling Ultra Premium Efficiency (IE5 class) PM assisted synchronous reluctance motor with ferrite magnets.  <i>Vladimir Prakht, Vladimir Dmitrievskii and Vadim Kazakbaev</i></p>
	<p>Optimum and Quasioptimum Control of the Position Electric Drive by Criterion of Electric Losses Minimum.  <i>Mikhail Bychkov and Valentina Kuznetsova</i></p>
	<p>Cascaded Fuzzy Logic Based Direct Torque Control of Interior Permanent Magnet Synchronous Motor for Variable Speed Electric Drive Systems.  <i>Ahmed Omara, Michael Sleptsov and Ahmed Zaki</i></p>
	<p>High-Speed Generator with Tooth-Coil Winding, Permanent Magnets and New Design of a Stator Magnetic Core Made from Amorphous Alloy.  <i>Flur Ismagilov, Jing Ou, Vuacheslav Vavilov and Denis Gusakov</i></p>
	<p>Overvoltage Protection for Interior Permanent Magnet Synchronous Motor Testbench  <i>Hiep Duy Do, Alecksey Anuchin, Dmitry Shpak, Alexandr Zharkov and Anatoliy Rusakov</i></p>
	<p>Calculation of the Traction Effort of ISEAUTO self-driving vehicle  <i>Anton Rassõlkin, Levon Gevorkov, Toomas Vaimann, Ants Kallaste, Raivo Sell</i></p>