

# **2009 2nd International Students Conference on Electrodynamics and Mechatronics**

**(SCE II)**

**Opole, Poland  
19 – 21 May 2009**



**IEEE Catalog Number: CFP0959G-PRT  
ISBN: 978-1-4244-3897-6**

**Copyright © 2009 by the Institute of Electrical and Electronic Engineers, Inc  
All Rights Reserved**

*Copyright and Reprint Permissions:* Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***\*\*\*This publication is a representation of what appears in the IEEE Digital Libraries. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP0959G-PRT
ISBN 13:	978-1-4244-3897-6
Library of Congress No.:	2009900552

**Additional Copies of This Publication Are Available From:**

Curran Associates, Inc  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: (845) 758-0400  
Fax: (845) 758-2633  
E-mail: curran@proceedings.com

# CONTENTS

## MATERIALS IN ELECTRICAL ENGINEERING

<b>Measurement of Some Magnetic Properties of Electrical Steel Sheets Under Axial Magnetization .....</b>	<b>1</b>
W. Pluta	

<b>The New Concept of Protection Method Against Stresses in Medium Voltage Instrument Transformers .....</b>	<b>3</b>
R. Pytlech	

## ELECTRODYNAMICS

<b>Parameters of Acoustic Emission Signals Constituting the Knowledge Base of a Computer Diagnostic System of Power Transformer Insulation Systems .....</b>	<b>5</b>
T. Boczar, S. Borucki, A. Cichoń	

<b>The Electromagnetic Field Calculation of the Switched Reluctance Motor .....</b>	<b>7</b>
M. Kowol, P. Mynarek, D. Mrocheń	

<b>Review of Methods Used for Computational Electromagnetics.....</b>	<b>9</b>
M. Niziołek	

<b>Application of On-Line Analytical Processing Systems in Monitoring of Electrical Power Engineering Devices .....</b>	<b>11</b>
S. Paszkiel, A. D. Kawala	

<b>A Simplified Thermal-Magnetic Model of a Coil with Electric Current .....</b>	<b>13</b>
A. Waindok, A. Włodarczyk	

## MECHATRONICS

<b>Angle Measurement Using a Miniature Hall Effect Position Sensor.....</b>	<b>15</b>
K. Bieńczyk	

<b>Mechanical Construction and Kinematic Calculations of the Six-legged Walking Machine ARTHRON .....</b>	<b>17</b>
P. Graca, J. Zimon	

<b>Construction of a Dynamic Model for a Switched Reluctance Motors .....</b>	<b>19</b>
M. Kowol, P. Mynarek, D. Mrocheń	

<b>Determination of the Electric Drive Car Parameters Using Matlab/Simulink.....</b>	<b>21</b>
A. Lechowicz, J. Zimon	

**A Mathematical and Physical Models of the Three-Stage Reluctance Accelerator .....23**  
A. Waindok, G. Mazur

**Dynamic re-definition of Region-of-Interest in Vision System's Feedback .....25**  
M. A. Podpora

**Applying the Signal of Speech and Hidden Markov Models in the Process  
of Controlling the Mechanical Device.....27**  
M. Rosik

**Control System Design for Active Magnetic Bearing .....29**  
D. Wajnert, J. Zimon

**Increasing the Manipulation Abilities by a Humanoid Robot .....31**  
Z. Zając

## **PROBLEMS ON PHYSICAL MATHEMATICS**

**Partial Discharge Simulation in an Acoustic Model of a Power Transformer .....33**  
D. Wotzka

## **APPENDIX: MATERIALS IN ELECTRICAL ENGINEERING**

**Crystalline Structure of Samples Investigated by DEPES: Theory and Experiment.....35**  
L. Poczesny