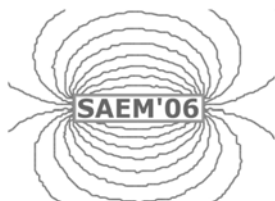


First Macedonian-Polish Symposium on Applied Electromagnetics



Book of Digests



8-10 June 2006, Ohrid – Macedonia

CIP – Каталогизација во публикација
Национална и универзитетска библиотека “Св.Климент Охридски“
Скопје

537 (062)
621.3 (062)

MACEDONIAN-Polish syposium on applied electromagnetics (1 ;
2006; Ohrid)
Book of digests / First Macedonian-Polish syposium on applied
electromagnetics 8-10 June, Ohrid-Macedonia. – Skopje : Faculty of
electrical engineering, 2006. – VIII, 114 стр. :
илустр. ; 24 см

Библиографија кон трудовите

ISBN 9989-630-51-8
1.Gl. stv. nasl.
a)Електромагнетика – Собири
COBISS.MK- 65723146

First Macedonian-Polish
Symposium on Applied ElectroMagnetics
SAEM'2006

Welcome to SAEM'2006

On behalf of the International Scientific Committee and the Organising Committee I want to give you a very warm welcome to the first Macedonian-Polish Symposium on Applied ElectroMagnetics in the beautiful "Balkan pearl", the city of UNESCO – Ohrid.

We have received a respectable number of papers from 10 countries. Corresponding to the symposium topics, the selected papers are divided into 8 technical sessions. We would like to thank all the authors for their contributions and participation to the venue. In particular, we would like to express our warmest thanks to the authors of the two invited lectures included in the first symposium session.

In addition to the technical sessions, for all participants and their accompanying persons, a number of social events have been arranged. On Wednesday evening (7th June) just after arrival at the Inex-Gorica hotel we will have welcome dinner "Get Together", providing plenty of opportunities to meet with old friends and to network new ones. On Thursday (8th June), after the first conference day full of interesting sessions we are organising an evening of good food, drink and music. On Friday afternoon (9th June) there will be an organised visit to the monuments, churches and landmarks of the city of Ohrid. Following the boat trip to the southern part of the Ohrid Lake and a visit to the St. Naum monastery and its surroundings, our farewell dinner will take place on Saturday evening (10th June) in the fish restaurant on the beach,

I hope that you will find the symposium interesting and you will make many fruitful personal contacts getting new friends. I wish you a great satisfaction and pleasure in discovering the ancient city of UNESCO – Ohrid and the Lake with its surrounding area.

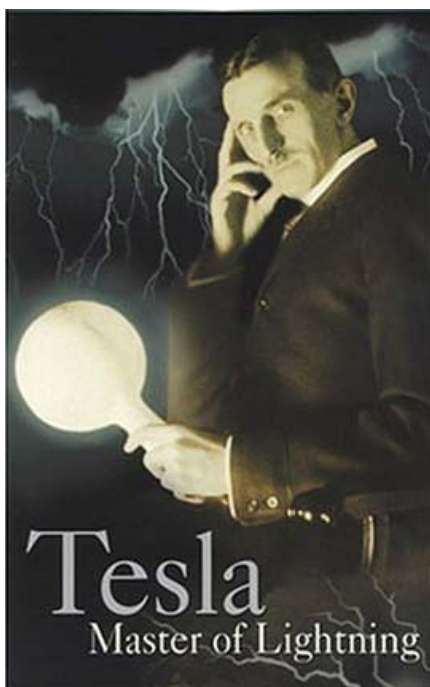
Thank you very much!

Prof. Lidija Petkovska
Chair of SAEM'2006

The Organising Committee of SAEM'2006 has decided to dedicate this first Macedonian-Polish Symposium on Applied ElectroMagnetics to the 150th anniversary of the birth of Nikola Tesla – the man who invented the twentieth century. Tesla is one of the most outstanding intellects of the world who paved the way for many of the technological developments of modern times.

The inventor, electrical engineer and scientist

Nikola Tesla (1856–1943)



*Nature and Nature's laws lay hid in night:
God said, "Let Tesla be", and all was light.*

B.A. Behrend

AIEE annual meeting
New York City, 18 May 1917



here are three aspects of Tesla's work which particularly deserve our admiration: ★ the importance of the achievements in themselves, as judged by their practical bearing; ★ the logical clearness and purity of thought, with which the arguments are pursued and new results obtained; ★ the vision and the inspiration, I should almost say the courage, of seeing remote things far ahead and so opening up new avenues to mankind.

I.C.M. Brentano

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SCOPE

The Symposium is aimed at the presentation of research work results as well as a survey of works in applied electromagnetics area in a wide sense. The science progress is based on the diffusion of the knowledge and experience. For this reason, the scope of the event is to debate ideas, to discuss freely on the works presented and to disseminate own research results.

Our idea is to encourage particularly young researchers and PhD students. We do sincerely hope that participating in the Symposium they will receive from this event enough advantages, like for to justify the additional effort for preparing papers, to apply for and to attend scientific meetings and to rely on oneself. This is certainly the main reason to support and to try to push them to the all community of applied electromagnetics in different areas.

TOPICS AND SUBJECTS

SAEM'2006 is the First Macedonian-Polish Symposium on Applied Electromagnetics and is devoted to exchanging ideas, presenting achievements and results, providing the forum for academics, both skilled and young, in the following subjects and topic area:

1. Applied Electromagnetics in Electrical Engineering
2. Bioelectromagnetics and Electromagnetic Hazards
3. Computational Electromagnetics
4. Inverse Problems and Optimisation Techniques
5. Coupled Problems and Applications
6. Electromagnetic Compatibility
7. Electromagnetism in Education

All the topics and subjects are connected, directly or indirectly, within the area of electromagnetism and its applications, starting from the electrical equipment, continuing with the human beings and focussing to the clean and healthy environment.

LANGUAGE

English will be the official language of the Symposium.

ORGANISING INSTITUTIONS

The Institutions that are involved with the organisation of the First Macedonian-Polish symposium on applied Electromagnetics are:

- ♦ Faculty of Electrical Engineering, Macedonia
Ss. Cyril & Methodius University of Skopje
- ♦ Central Institute for Labour Protection, Poland
- ♦ Institute of Mechatronics and Information Systems
Technical University of Łódź, Poland
- ♦ Polish Society of Applied Electromagnetics
- ♦ Polish-Japanese Institute of Information Technology



- ♦ Supported by:



IEEE Macedonian Section

- ♦ IEEE Voluntary Contribution Fund – VCF of Region 8

REGISTRATION

The regular registration fee is 200 €. The PhD students are granted with a discount and pay 160 €. Registered authors will receive a name badge and an author's bag. The registration fee is covering admission to the sessions, a copy of the Book of Digests, a post conference CD and after a peer review a qualification for publishing in the journal. Lunches, coffee and refreshments and all social events during the three symposium days are inclusive.

TECHNICAL PROGRAMME

All papers, accepted for presentation, in accordance with their topic are scheduled in 8 Technical Sessions. All sessions are oral. A special session of two invited papers, as well as a keynote paper, is scheduled on the first symposium day, just after the Opening Ceremony

PAPERS

The Book of Digests, containing all accepted paper will be published prior to the symposium. Authors of the presented papers are kindly asked to prepare the full manuscript of their contributions, up to 6 pages, and to submit to the symposium Secretariat for further reviewing. The deadline for submission will be announced at the Symposium Closing Session. Instructions for authors are given in a template that can be downloaded from the symposium website:

<http://www1.etf.ukim.edu.mk/saem2006/Information%20for%20authors.html>

Papers meeting the selection criteria will be published on a CD after the conference, which will be sent to authors who paid the registration fee at the symposium. Some papers will be published in the Polish Journal *Przegląd Elektrotechniczny*. Being in the scope of the journal, the selection will be based on the journal topics and in accordance with its editorial policy.

SOCIAL PROGRAMME

In addition to the technical sessions of the Symposium, for all participants and their accompanying persons, a number of social events have been arranged.

On Wednesday evening (7th June) just after arrival at the Inex–Gorica hotel there will be a welcome dinner “Get Together”, providing plenty of opportunities to meet with old friends and to network new ones.

On Thursday (8th June), after the first conference day full of interesting sessions will be organised an evening of good food, drink and music, entertained with a show of Macedonian national folk dance and music.

On Friday afternoon (9th June) there will be organised a visit to the city of Ohrid and its main landmarks. In the evening a Macedonian cheese & wine tasting will take place at the open air in the city centre. The farewell dinner will take place on Saturday evening (10th June) in the pretty fish restaurant on the beach of Trpeica village, after the boat trip to the southeast point of the Lake of Ohrid, where St. Naum monastery and the unique springs of river Drim are settled in a splendid surroundings.

For the guests accompanying the symposium participants, on Friday morning we designed a special trip called “*following the pearl*”. The details will be given at the registration desk.

SAEM'2006 – General Programme
Hotel Inex-Gorica Ohrid, **07-11 June 2006**

Wednesday 07 June		Thursday 08 June		Friday 09 June		Saturday 10 June		Sunday 11 June
		7 ³⁰ -9 ³⁰	Breakfast	7 ³⁰ - 9 ⁰⁰	Breakfast	7 ³⁰ - 9 ⁰⁰	Breakfast	Breakfast Trip to Skopje and short sightseeing of the city
			Registration					
		9 ³⁰ -10 ⁰⁰	Opening ceremony	9 ⁰⁰ -11 ⁰⁰	Session IV-IP	9 ⁰⁰ -11 ⁰⁰	Session VII-MAS	
		10 ⁰⁰ -11 ⁰⁰	Invited papers					
		11 ⁰⁰ -11 ¹⁵	Coffee break	11 ⁰⁰ -11 ¹⁵	Coffee break	11 ⁰⁰ -11 ¹⁵	Coffee break	
13 ⁰⁰ -20 ⁰⁰	Arrival of participants Accommodation	11 ¹⁵ -13 ¹⁵	Session I-BIO1	11 ¹⁵ -13 ¹⁵	Session V-AEM	11 ¹⁵ -12 ⁴⁵	Session VIII-BIO2	
						12 ⁴⁵ -13 ⁰⁰	Closing session	
		13 ¹⁵ -14 ³⁰	Lunch	13 ¹⁵ -14 ³⁰	Lunch	13 ¹⁵ -14 ³⁰	Lunch	
		14 ³⁰ -16 ³⁰	Session II-PMM	14 ³⁰ -16 ³⁰	Session VI-MS	14 ³⁰ -15 ³⁰	Boat trip to St. Naum	
20 ⁰⁰ -22 ⁰⁰	Welcome dinner "Get Together"	16 ³⁰ -16 ⁴⁵	Coffee break	16 ³⁰ -16 ⁴⁵	Coffee break	15 ³⁰ -18 ⁰⁰	Visit to St. Naum	Departure of participants
		16 ⁴⁵ -18 ¹⁵	Session III-TRA	17 ⁰⁰ -19 ³⁰	Ohrid sightseeing	18 ⁰⁰ -19 ⁰⁰	Return trip	
		20 ⁰⁰ -24 ⁰⁰	Banquet entertained with national folk dance show	20 ⁰⁰ -22 ⁰⁰	Reception in the city Cheese & Wine	19 ³⁰ -22 ³⁰	Farewell fish dinner on the beach	

PRESENTATION OF ALL PAPERS IS ORAL

- ⇒ The time scheduled for each presentation is 15 min + 5 min for discussion;
- ⇒ LCD projector and a computer will be available in the conference room;
- ⇒ Speakers can use their own laptop (mobile computer);
- ⇒ Overhead projector will be also available;

SAEM'2006 – Technical Programme

Thursday, 08 June 2006

9:30-10:00 **Opening ceremony**

10:00-11:00 **Invited Papers Session**

Chair: **L. Petkovska**

INV-1: **A control Strategy for Noise Reduction in Switched Reluctance Motors**

E. Bizkevelci, K. Leblebicioğlu, B. Ertan – Turkey

INV-2: **Computer Modeling of Micro-Bio-Pumps**

S. Wiak – Poland

KNP: **150th Anniversary of Nicola Tesla's Birth**

M. Duda, A. Krawczyk – Poland

Thursday, 08 June 2006 – 11:15-13:15

Session 1: **BIO1 – Bioelectromagnetics and Electromagnetic Hazards 1**

Chair: **A. Krawczyk/L. Ololovska**

BIO-1: **Electric And Magnetic Fields Emitted By A Television Set - A Case Study**

Marcelo J. Coelho, Carlos Lemos Antunes – Portugal

BIO-2: **Electromagnetic Field Influence On Implantable Cardioverter-Defibrillator**

A. Pławiak-Mowna, A. Krawczyk – Poland

BIO-3: **Calculations of absorbed energy in animals exposed to microwave fields and experimental validation of this method**

R. Kubacki, J. Sobiech – Poland

BIO-4: **Calculation Of Electromagnetic Field Influences From Electrical Devices On Humans**

L. Ololovska, Lj. Janev, S. Loskovska – Macedonia

BIO-5: **Maximum Permissible Exposure Levels For Electromagnetic Quantities European And Polish Regulations**

A. Miszczyk, A. Krawczyk – Poland

Thursday, 08 June 2006 – 14:30-16:30

Session 2: PMM – Permanent Magnet Machines

Chair: B. Štumberger/M. Čundev

PMM-1: Permanent Magnet Brushless DC Motor; Integrated Motor Drive Electrical Subsystem Simulation

B. Štumberger, G. Štumberger, M. Hadžiselimović, M. Trlep, A. Hamler – Slovenia

PMM-2: A Thermal Model For An Axial-Flux Permanent Magnet Machine

A. Haavisto and J. Perho – Finland

PMM-3: Performance Evaluation Of PM DC Commutator Motor Using Finite Element Method As A Tool

G. Cvetkovski – Macedonia

PMM-4: Numerical Analysis Of Eddy-Current Losses In The Rotor Of A High-Speed Synchronous Machine

Z. Kolondzovski, A. Belahcen and A. Arkkio – Finland

PMM-5: A Novel Design For Improved Characteristics Of PM Synchronous Motor

L. Petkovska – Macedonia

PMM-6: 2D Analytical Solution Of Magnetic Field In Linear Permanent Magnet Synchronous Machine; Comparison Of Analytical And Numerical Solution Of Magnetic Field By Permanent Magnets

P. Vrtič, B. Štumberger – Slovenia

Thursday, 08 June 2006 – 16:45-18:15

Session 3: TRA – Transformers and Apparatuses

Chair: V. Stoilkov/Z. Maljković

TRA-1: Calculation Of Losses In The Core Clamps Of A Transformer Using 3d Finite Element Method

D. Žarko, Z. Maljković, S. Štefan – Croatia

TRA-2: Electro-Magneto-Mechanical Dynamic Analysis Of Low Voltage Linear Contactor

V. Stoilkov, M. Čundev – Macedonia

TRA-3: Analytical And Numerical Analysis Of Magnetic Field In A Single – Phase Transformer

M. Hadžiselimović, T. Marčič, B. Štumberger, G. Štumberger, I. Zagradišnik – Slovenia

TRA-4: **Magnetic Measurements Coupled With Electromagnetic Field Analysis**
M. Čundeva -Blajer, Lj. Arsov – Macedonia

TRA-5: **Finite Element Method For Computation Of Electromagnetic Forces On Overline Magnetic Separator Oms**
M. Popnikolova-Radevska – Macedonia

Friday, 09 June 2006 – 9:00-11:00

Session 4: IP – Inverse Problems

Chair: G. Cvetkovski/I. Marinova

IP-1: **Inverse Problems In Electromagnetism**
I. Marinova – Bulgaria

IP-2: **GA Based Torque Optimisation Of Permanent Magnet Disc Motor For Electric Vehicle**
G. Cvetkovski – Macedonia

IP-3: **Application Of Soft Magnetic Materials In Development Of New Experimental Model Of Single Phase Shaded Pole Motor**
V. Sarac, L. Petkovska – Macedonia

IP-4: **Optimal Design Of The Grounding Grid By FEM Considering Different Layered Soil Models**
A. Habjanič, M. Trlep – Slovenia

IP-5: **FEM-3D For Metrological Optimal Design And Transient Analysis Of Combined Instrument Transformer**
M. Čundeva -Blajer, Lj. Arsov - Macedonia

Friday, 09 June 2006 – 11:15-13:15

Session 5: AEM – Applied Electromagnetics

Chair: R. Kołowski/B. Atamaniuk

AEM-1: **Application Of Fractional Derivative Operators To Some Electromagnetic Problems**
A. J. Turski, B. Atamaniuk – Poland

AEM-2: **Waves in Dusty Space Plasmas**
B. Atamaniuk and A. J. Turski – Poland

AEM-3: **Computer Simulation Of Magnetoplasticity: Dislocation Motion In Magnetic And Stress Fields**
V.I. Alshits, R. Kołowski, P. Tronczyk – Poland

AEM-4: **Electromagnetic Pulse Scattering By A Half-Plane Moving In Free Space With Moderate Or Low Velocity**

A. Ciarkowski – Poland

AEM-5: **Problems with Permissive Exposure Levels for Pulse Modulated Microwave Fields**

J. Kieliszek, R. Kubacki – Poland

AEM-6: **The Best Estimates Of Effective Dielectric Constants Of Two-Phase Composites**

S. Tokarzewski – Poland

Friday, 09 June 2006 – 14:30-16:30

Session 6: MSC – Miscellaneous

Chair: K. Najdenkoski/V. Arnautovski-Toševa

MSC-1: **Crosstalk Analysis Using EMC Software Wire-Mom**

S. Cundeva, V. Filiposki – Macedonia

MSC-2: **Investigation Of Fiber Optic Cables Deterioration Mechanism In High Electric Field Environment**

J. Sikoski, K. Najdenkoski – Macedonia

MSC-3: **Transient Analysis Of Power Converter Circuits**

V. Arnautovski-Toševa, L. Grcev – Macedonia

Y. Rousset, K. El Khamlichi Drissi – France

MSC-4: **Analysis Of A Tall Object Response To Lightning**

S. Filiposka, L. Grcev – Macedonia

MSC-5: **Detection Of Induction Motors' Faults By Vibration And Noise Monitoring**

M. Iorgulescu, R. Beloiu, M. O. Popescu – Romania

Saturday, 10 June 2006 – 9:00-11:00

Session 7: MAS – Motor Analysis and Simulation

Chair: L. Petkovska/T. Marčič

MAS-1: **An Induction Motor's Magnetic Field Analysis And Determination Of Its Iron Losses**

T. Marčič, B. Štumberger, M. Hadžiselimović, I. Zagradišnik – Slovenia

MAS-2: **A Combined Performance Analysis Of Induction Motor**

L. Petkovska, V. Šarac – Macedonia

MAS-3: **Heating Analysis For Explosion Proof Protected Motors Fed From 400v/50hz And 460v/60hz Supply**

I. Zagradišnik, M. Hadžiselimović, T. Marčič, B. Štumberger, G. Štumberger – Slovenia

MAS-4: **The Analysis Of The Structure Of Higher Harmonic Components Of Synchronous Motor Electromagnetic Torque Caused By Rotation Of Rotor**

V. Madžarević, N. Mehinović – Bosnia and Herzegovina

MAS-5: **Calculation of The Inductances of Salient Poles Synchronous Motor with Damper Based by using FEM**

D. Čundev – Macedonia

MAS-6: **Dynamics Of A Vector Controlled Induction Motor**

S. Martinovski, L. Petkovska – Macedonia

Saturday, 10 June 2006 – 11:15-12:45

Session 8: BIO2 – Bioelectromagnetics and Electromagnetic Hazards 2

Chair: R. Kubacki/J. Wyszowska

BIO-6: **The minimal requirements for SAR calculations in human head models for microwaves**

J. Sobiech, R. Kubacki, A. Krawczyk - Poland

BIO-7: **The Influence Of The Body Parameters On Sar In Biological Object**

K. Ciosk, A. Krawczyk – Poland

BIO-8: **Octopamine Activity As Indicator Of Electromagnetic Field Influence On Insect Nervous System**

J. Wyszowska, M. Stankiewicz, A. Krawczyk, T. Zyss – Poland

BIO-9: **Solar Potential Applied to Magnetic Stimulation Modelling**

B. Sawicki, P. Plonecki, J. Starzynski, S. Wincenciak – Poland

BIO-10: **A Model For Verification Of Quality And Efficiency Of Therapeutical System Using Electromagnetic Field**

M. Lisiecka-Biełanowicz, A. Krawczyk – Poland

Saturday, 10 June 2006 – 12:45-13:00

Closing session