



Magnetic Measurements 2010

Book of Abstracts

September 12 - 15, 2010
Prague, Czech Republic

Magnetic Measurements 2010 Book of Abstracts

Volume editors: Radek Sedláček
Antonín Platil
Pavel Ripka

Contact: Czech Technical University in Prague,
Faculty of Electrical Engineering,
Technická 2, 166 27 Prague 6
Phone: (+420) 224 353 954, e-mail: platil@fel.cvut.cz

Printed by: Česká technika - nakladatelství ČVUT
Žitkova 4, 166 36 Praha 6
128 pages, 1st issue

Czech Technical University in Prague, Faculty of Electrical Engineering
Prague, September 2010
150 copies

ISBN 978-80-01-04616-6

Table of Contents

International Program Committee	IV
Local Organizing Committee	IV
Preface	V
Magnetic Measurements 2010 Conference Programme at a Glance	VI
Magnetic Measurements 2010 Conference Programme in Detail	VII
Abstracts:	
MI, M1 - M10 (Monday oral presentations)	1 - 14
T1 - T13 (Tuesday oral presentations)	15 - 31
W1 - W7 (Wednesday oral presentations)	32 - 39
MP1 - MP28 (Monday poster presentations)	40 - 75
TP1 - TP29 (Tuesday poster presentations)	76 - 109
Index of authors	

Notice:

Reviewed full papers will be published in special issue of Journal of Electrical Engineering (<http://iris.elf.stuba.sk/JEEEC/>), which is impacted by SCI. Please, prepare your max. 4 pages long full paper according to the full paper template, which can be downloaded from <http://amca.cz/mm2010>. The full paper can be submitted at the Registration desk during the conference. Please, bring one hard copy of your full paper as well as electronic version. You can also send the electronic version to archiv_mereni@fel.cvut.cz (please cc to platil@fel.cvut.cz). The final deadline for full papers is September 30, 2010. The Journal issue with conference papers is scheduled for December, 2010. Electronic version will be available before the end of this year. The printed version will be distributed early Spring 2011.

International Program Committee

Pavel	Ripka	CZ (chairman)			
Claudio	Aroca	ES	Helmut	Pfützner	AT
Jozef	Blažek	SK	Antonin	Platil	CZ
Ján	Bydžovský	SK	Jozef	Puttera	SK
Pavol	Butvin	SK	Rudolf	Schäfer	DE
Horia	Chiriac	RO	Jozef	Sláma	SK
Christophe	Dolabdjian	FR	Marian	Soinski	PL
Karel	Draxler	CZ	Jozef	Šuriansky	SK
Václav	Havlíček	CZ	Peter	Švec	SK
Evangelos	Hristoforou	GR	Elemír	Ušák	SK
Vladimír	Jančárik	SK	Rastislav	Varga	SK
Petr	Kašpar	CZ	Gábor	Vértesy	HU
Luděk	Kraus	CZ	Pavol	Vojtaník	SK
Mojmír	Kollár	SK	Karel	Závěta	CZ
José	Merayo	DK	Ivan	Zemánek	CZ
István	Mészáros	HU	Mária	Zentková	SK
Anthony J.	Moses	UK	Tomáš	Žák	CZ

Local Organizing Committee

Antonín	Platil (chairman)	Radek	Sedláček (administration)
Petr	Kašpar (treasurer)	Michal	Janošek (local arrangements)
Pavel	Ripka (publicity)	Aleš	Zikmund
Pavel	Mlejnek	Mattia	Butta
Petr	Nováček	Vojtěch	Petrucha

Preface

After 6 years, the Magnetic Measurements 2010 conference returns to Prague, Czech Republic. Magnetic Measurements is a biennial conference since 1984. Originally it was held alternately in the Czech Republic and the Slovak Republic, but in 2008 the conference site was Budapest and the proposed site for 2012 conference is in Austria. The conference provides an excellent opportunity for scientists and engineers especially (but not exclusively) from Central Europe to share ideas and experience in the field of magnetic measurements.

There will be two and half days of technical programme composed of oral presentations. Moreover, there will be poster sessions through the first two days.

I would like to thank to all colleagues who helped to prepare this conference. I hope that you will enjoy this event.

Prague, September 2010

Antonín Platil
Local organizing committee chairman

Magnetic Measurements 2010 Conference Programme at a Glance

Sunday, September 12, 2010		Monday, September 13, 2010		Tuesday, September 14, 2010		Wednesday, September 15, 2010	
		8:00	Registration (till 17:00)	8:00	Registration (till 17:00)		
		9:00	Opening	9:00	Session 1 oral presentations	9:00	Session 1 oral presentations
		9:20	Invited presentation				
		10:00	Session 1 oral presentations				
		10:40	Coffee break	10:20	Coffee break	10:20	Coffee break
		11:20	Session 2 oral presentations	11:00	Session 2 oral presentations	11:00	Session 2 oral presentations
		12:20	Lunch	12:00	Lunch	12:00	Programme closes Farewell
		13:20	Session 3 poster presentations	13:20	Session 3 poster presentations		
		14:20	Session 4 oral presentations	14:20	Session 4 oral presentations		
		15:20	Coffee break	15:00	Coffee break		
		15:40	Session 5 oral presentations	15:40	Session 5 oral presentations		
18:00	Registration & Welcome party						
18:30	Barrels open	19:00		17:00		Beer party - Barrels open	
20:30	Barrels close						

Magnetic Measurements 2010 Conference Programme in Detail

Sunday, September 12, 2010

- 18:00** **Registration & Welcome party**
18:30 **Barrels open**
20:30 **Barrels close**

Monday, September 13, 2010

8:00 **Registrations (8:00 – 17:00)**

SESSION 1 oral presentations

- 9:20** **M1: Visualization of Magnetic Domains and Magnetization Processes in Bulk Materials by Neutron Dark-field Imaging** 1
C. Grünzweig, C. David, O. Bunk, G. Frei, E. Lehmann, J. Kohlbrecher, R. Schäfer, P. Lejcek, J. Kopecek, H. M. R. Rønnow, and F. Pfeiffer
- 10:00** **M1: Real Time Visualization of Magnetic Field Using 2- Dimensionally Integrated Hall Sensors Array** 3
J. Lee, J. Jun and H. Choi
- 10:20** **M2: Methodology of Testing the Magnetoelastic Characteristics of Ring-shaped Cores under Uniform Compressive and Tensile Stresses**..... 4
J. Salach, R. Szewczyk, A. Bieńkowski
- 10:40** **Coffee break**

SESSION 2 oral presentations

- 11:20** **M3: High Temperature Magnetostriction Measurements** 5
M.Kriegisch, J.Möller, R.Grössinger
- 11:50** **M4: Magnetic Testing of Lean-Duplex Stainless Steel** 6
I. Mészáros
- 12:20** **Lunch**

SESSION 3 poster presentations

- 13:20** **Monday poster session MP – for detailed list see separate pages XII - XIII**

SESSION 4 oral presentations

- 14:20** **M5: Innovative Research of Electron Microscopes, Problematic of Modern Types Magnetic Lens and Chambers - part 1: Magnetic Properties of Steel for Magnetic Lens and Chambers** 7
M.Marek, A.Folvarčný, R.Holčáková, P.Urbánek, L.Jelen

14:40 M6: Investigation of Measured Distributions of the Local Vector Magnetic Properties in Three-phase Induction Motor Model Core 9
T. Kai, S. Aihara, T. Todaka, M. Enokizono

15:00 M7: Effects of DC-bias on the Loss Distribution of a Model Transformer Core10
H. Pfützner, G. Shilyashki, F. Hofbauer, D. Sabic, E. Mulasalihovic, V. Galabov

15:20 Coffee break

SESSION 5	oral presentations
------------------	---------------------------

15:40 M8: Determination of Flat Coil Fields Using Energy Equivalence Method11
L. Bettaieb, H. Kokabi and M. Poloujadoff

16:00 M9: Stray Field Measurement During Power Transformer Energization12
M. Novák

16:20 M10: Influence of Insulation Coating of Electrical Steel Sheets on Local Two-dimensional Vector Magnetic Properties13
S. Aihara, T. Todaka, and M. Enokizono

19:00 Concert in Bethlehem Chapel (drinks from 18:30)

Tuesday, September 14, 2010

8:00 Registration (8:00 – 17:00)

SESSION 1 oral presentations

- 9:00 T1: Investigation on Magneto-Elasto-piezoelectric Sensor Noise15**
X. Zhuang, M. Lam Chok Sing, C. Cordier, S. Saez, C. Dolabdjian, J. Das, J.F. Li and D. Viehland
- 9:20 T2: GMI Noise Performance Optimisation.....16**
B. Dufay, M. Malatek, S. Saez, C. Dolabdjian, A. Yelon, and D. Ménard
- 9:40 T3: Fluxgate Magnetometer for Temperatures up to 180°C.....17**
P. Sebbes, F. Ludwig, and M. Schilling
- 10:00 T4: Detection of Magnetic Particles by Fluxset Type Magnetic Probe18**
G. Vértesy, A. Gasparics
- 10:20 Coffee break**

SESSION 2 oral presentations

- 11:00 T5: Optimizing the Magnetic Properties of CoP Alloys for their Use as Magnetic Core in Planar Fluxgate Sensors.....19**
L. Pérez, I. Lucas,* and M. D. Michelena
- 11:20 T6: Sensitivity of Vema-04.1 Magnetometer20**
J. Hudak, J. Blazek, D. Praslicka, I. Mikita, P. Lipovsky, P. Gonda
- 11:40 T7: Spacecraft and Subsystem Level Magnetic Characterizations within the Newly Renovated NASA Goddard Magnetic Test Facility.....21**
T. Bonalsky
- 12:00 Lunch**

SESSION 3 poster presentations

13:20 Tuesday poster session TP – for detailed list see separate pages XIV - XV

SESSION 4 oral presentations

- 14:20 T8: Magnetic/Magneto-optical Study of Soft Magnets up to the MHz Range23**
F. Fiorillo, A. Caprile, E. Ferrara, A. Magni
- 14:40 T9: Hopkinson Effect Study in a Spinel and Hexagonal Ferrites24**
J. Sláma, M. Šoka, A. Grusková, A. González and V. Jančárik
- 15:00 Coffee break**

SESSION 5 oral presentations

- 15:40 T10: Measurement of Three-dimensional Magnetostriction on Grain-oriented Electrical Steel Sheet25**
D. Wakabayashi, T. Todaka, M. Enokizono

16:00	T11: Barkhausen Noise in Grain-Oriented 3% Si-Fe at 50Hz	26
	N. Chukwuekwa, A. J. Moses and P. I. Anderson	
16:20	T12: Comparisons of AC Magnetostriction of Non-oriented Electrical Steels measured in Epstein and Disc Samples	28
	S. Somkun*, P. Klimczyk, A. J. Moses, and P. I. Anderson	
16:40	T13: Soft Magnetic Amorphous Bilayer Ribbons	30
	P. Švec, I. Škorvánek, A. K. Panda, D. Janičkovič, I. Matko, P. Švec Sr.	
17:00	Beer party - Barrels open	

Wednesday, September 15, 2010

SESSION 1

oral presentations

- 9:00 W1: Dual Core Differential Pulsed Eddy Current Probe to Detect the Wall Thinning of Stainless Pipe.....31**
D. G. Park, C. S. Angani, C. G. Kim, G. D. Kim, Y. M. Cheong
- 9:20 W2: Separability of Multiple Deep Crack Defects with an NDE Eddy Current System.....32**
R. Hamia, C. Cordier, C. Dolabdjian
- 9:40 W3:Nondestructive Evaluation of Pipe Wall Thinning by Using Pulsed Magnetic Field33**
T. Yao, Y Tuchida, T. Todaka, M. Enokizono
- 10:00 W4: On the Mechanical Properties Determination of Armco Steel Using Magnetic Hysteresis Loop and Barkhausen Noise34**
K. Kosmas and E. Hristoforou
- 10:20 Coffee break**

SESSION 2

oral presentations

- 11:00 W5: Hardening Evaluation of Carbon Steel by using Frequency Sweeping Excitation and Spectrogram Method36**
T. Matsuda, Y. Tsuchida, T. Todaka, M. Enokizono, Y. Kai
- 11:20 W6: Correlation between Microstructure and Magnetic Properties in Duplex Stainless Steels.....37**
C. Giannouli, E. Hristoforou
- 11:40 W7: An Integrated Probe for Electromagnetic NDT Inspection38**
P. Kejik, S. Reymond, B. Revaz
- 12:00 Programm closes, Farewell**

Monday poster session MP – list of abstracts

MP1:	Antenna Parameters Enhancement by Using Artificial Magnetic Structure ...39 D. Faktorová, P. Omelka, K. Isteníková
MP2:	The Stress-Magnetic Properties of TbFeCo Film and SmFe Film40 H. Wakiwaka, T. Takeuchi, K. Tashiro, T. Kiyomiya, M. Makimura
MP3:	Magnetic Properties of NO Magnetic Sheet under Stress41 T. Kanada, A. Kutsukake, Y. Kido, T. Ikeda, M. Enokizono
MP4:	Magnetic Properties of Types Cores for Toroid Transformers Made from Thin a Low Losses Sheets and Thermal Influence on Resulting Idling Current of Transformer42 A. Folvarčný, M. Marek, R. Holčáková
MP5:	Moving Magnet Type Actuator with Ring Magnets43 C. Astratini-Enache, R. Olaru and C. Petrescu
MP6:	A Novel Minipump Actuated by Magnetic Piston44 R. Hertanu, R. Olaru
MP7:	Analyse of Mechanisms of Influence of Torque on Properties of Ring-Shaped Magnetic Cores, from the Point of View of Magnetoelastic Sensors Sensitivity45 J. Salach, A. Bieńkowski, R. Szewczyk
MP8:	Anomalies of Spin Dependent Electric Charge Transport in This Films Holmium in Magnetic Field.....46 J. Dudáš, S. Gabáni, I. Gosčiaňska, J. Bagi, A. Vincze
MP9:	The influence of Ferrite on Magnetic Charakteristics of Elastomeric Composites48 J. Kruželák, I. Hudec, M. Ušáková, R. Dosoudil
MP10:	Field Uniformity of Modern Permanent Magnets.....49 T. Mikolanda, J. Černohorský, M. Košek
MP11:	Detection System of Magnetic Nanoparticles in Biological Tissues by Magnetoencephalography51 A. Javorsky, M. M. Sanz, F. Maestú, J. M. Gaztelu, M. Maicas, J. García-Pacios, M. Romero-Vives, J. A. Barios, F. del Pozo and C. Aroca
MP12:	FEM-3D for Metrologically Improved Magnetic Measurements52 M. Cundeva-Blajer, L. Arsov
MP13:	Measurement of Non-oriented Steels with Field Control54 O. Stupakov
MP14:	Surface Magnetic Field Measurement with Magnetic Shielding.....55 O. Perevertov
MP15:	Innovative Research of Electron Microscopes, Problematic of Modern Types Magnetic Lens and Chambers - part 2: Simulation of Layout Magnetic Field of Types Magnetic Lens56 R. Holčáková, M. Marek, A. Folvarčný, P. Urbánek, L. Jelen

MP16:	Effect of DC Voltage on AC Magnetization of Transformer Core Steel.....	57
	P. Marketos, A. J. Moses, J. Hall	
MP17:	Application of Preisach Model for Modeling Ferrite-based Cores of Sensors.	59
	P. Frydrych, R. Szewczyk	
MP18:	Automated Measurement of Complex Permeability and Permittivity at High Frequencies	60
	R. Dosoudil, E. Ušák, V. Olah	
MP19:	Measuring Magnetoimpedance in Multilayer Amorphous Microwires	62
	V. Raposo, G. Infante, M. Zazo and J. Iñiguez	
MP20:	Nondestructive Pipe Testing by Induced Current Technology	63
	V. Raposo, J. Iñiguez and P. Hernández	
MP21:	Development of System for Vector Magnetic Property Measurement under Stress.....	64
	Y. Kai, Y. Tsuchida, T. Todaka and M. Enokizono	
MP22:	Scalar Calibration of 3-D Coil System	65
	A.Zikmund, P. Ripka	
MP23:	A New Approach to Evaluation of Magnetisation Curve Parameters in Weak Fields as well as Saturated State.....	66
	E. Ušák	
MP24:	Experimental and Theoretical Investigation of Rotational Losses in Magnetic Cores of Electrical Machines.....	67
	E. Dlala, C. Appino, F. Fiorillo, C. Ragusa, and A. Belahcen	
MP25:	Barkhausen Frequency Response in a-Fe Steels	68
	P. Fotopoulos and E. Hristoforou	
MP26:	Correlation of Structural Characteristics of Low Carbon Ferritic Steel with Magnetic Properties.....	70
	A. Mpalliou, P. Tsakiridis, E. Hristoforou	
MP27:	Determination of the Degree of Cold Working in Low Carbon Steel (Mild Steel) with the Use of the Method of Barkhause Noise Analysis.....	72
	Z. Petrakou, K. Kosmas, P. Tsakiridis, E. Hristoforou	
MP28:	Barkhausen Noise Dependence on Plastic Deformation for TRIP Steel Samples	74
	E. Varouti, K. Kosmas, E. Hristoforou	

Tuesday poster session TP – list of abstracts

TP1:	Magnetic Flux Density Computation and Measurement in Simple Magnetic Filter	75
	A. Hála	
TP2:	Upgraded Magnetizing and Measuring System for Compensation Ferrimeters	77
	I. Zemánek	
TP3:	Role of Thermomagnetic Curves at Preparation of NiZn Ferrites with Fe Ions Deficiency	78
	M. Šoka, J. Sláma, A. Grusková, M. Ušáková and R. Dosoudil	
TP4:	Design and Testing of a New Magnetic Chuck-type Holding Device	79
	J. Bydžovský, M. Kollár, K. Ondrejčka	
TP5:	Measurement of the Time-Dependence of the Complex Magnetic Permeability of Soft-Ferrites	80
	P. Fulmek, H. Wegleiter, P. Haumer, and B. Schweighofer	
TP6:	A Comprehensive Study of Relationship between Magnetic Hysteresis Properties and Irradiation Embrittlement in Nuclear Reactor Pressure Vessel Steels.....	81
	S. Kobayashi, H. Kikuchi, S. Takahashi, Y. Kamada	
TP7:	Magnetic Minor Hysteresis Loops and the Scaling Laws in Some Heavy Rare-Earth Metals	82
	S. Kobayashi, S. Takahashi, H. Kikuchi, Y. Kamada	
TP8:	Application of the Magnetic Comparators for Detection of Current Crossing Through the Zero Value.....	83
	J. Bajorek, J. Nowak, A. Kałwak	
TP9:	Measurement of Specific Total Loss of Electrical Steels at High Field Intensities.....	84
	J. Bajorek, J. Nowak	
TP10:	Measurements of Magnetic Properties of Electrical Steel Sheets for the Aim of Loss Separation	85
	W. A. Pluta	
TP11:	Modeling and Simulation of Relaxation Sensors	86
	J. Blazek – D. Praslicka – J. Hudak – I. Mikita - A. Klinda - P. Jozek	
TP12:	Weak Points of Current Sensors in Static Energy Meters	87
	P. Mlejnek, P. Kašpar	
TP13:	Multi-position Static Test of Magnetometer from IMU	88
	J. Hudak, J. Blazek, F. Kmec, K. Draganova, P. Lukac	
TP14:	Changes of NiZn Properties by Substitution of Zn with Cu and Co Ions	89
	J. Sláma, M. Šoka, A. Grusková, M. Ušáková, V. Olah and V. Jančárik	
TP15:	Temperature Stability of Coil-less Fluxgate Offset.....	90
	M. Butta, P. Ripka	

TP16:	Single Op-Amp Fluxgate Signal Conditioning.....	91
	V. Petrucha	
TP17:	PCB Fluxgate Gradiometer Measuring dBx/dy	93
	M. Janosek, P. Ripka	
TP18:	Analytical Model with Flexible Parameters for Dynamic Hysteresis Loops Modeling.	94
	I. Nová, I. Zemánek	
TP19:	Study of Microwave Magnetoabsorption in Ni Ferrite Nanoparticles	95
	P. Hernández-Gómez, J. M. Muñoz, Carlos Torres, M. A. Valente	
TP20:	Magnetostriction Distribution in a Model Transformer Core	96
	G. Shilyashki, H. Pfützner, F. Hofbauer, D. Sabic, V. Galabov	
TP21:	Crossfield Effect in Fluxgate and AMR Sensors	97
	P. Ripka, M. Janosek, M. Butta, S. W. Billingsley, E. Wakefield	
TP22:	Calibration of Area Turns Standards	99
	M. Ulvr, J. Kupec	
TP23:	Differential Induction Sensor with Extreme Geometrical Width of Scanning	101
	J. Blazek, P. Jozek, D. Praslicka, J. Hudak, I. M.	
TP24:	The New Method of Magnetic Properties Anisotropy Measurement.....	102
	J. Bajorek, D. Gaworska-Koniarek	
TP25:	Hysteresis Loops of Soft-Magnetic Ribbons – the Influence of Sample Type.....	103
	P. Butvin, B. Butvinová	
TP26:	Magnetic Multiphase Composition Sensor.....	104
	V. Masek, J.Ortiz	
TP27:	Effect of Magnetizing on Instrument Transformer Errors	106
	K. Draxler, R. Styblíková	
TP28:	Mine Detector with Discrimination Ability.....	108
	P. Nováček, P. Ripka	
TP29:	Nondestructive Evaluation for Degradation of Modified 12CrW Steel by Reversible Magnetic Permeability	109
	K. S. Ryu, S. H. Nahm, Ch. S. Kim, Ch.-J. Bong, E. K. Kim	