

## Technical program

### Biomedical application part I

**Chairs: Oriano Bottauscio and Bernd Ittermann**

ID	Authors	Title
4	Vanni Lopresto, Rosanna Pinto, Laura Farina and Marta Cavagnaro	Microwave thermal ablation: effects of tissue properties variations in predictive models for treatment planning
208	L. M. Mir, C. Poignard, R. Scorretti, A. Silve and D.Voyer	Dynamic modeling of electroporation
75	Ricardo Spyrides Boabaid Pimentel Gonçalves, Jefferson Luiz Brum Marques	Remote Temperature Measurement and Inductive Heating in a Spherical Implant for Magnetic Hyperthermia Cancer Treatment
138	Oliver Laslett, Michael McPhail, Robert Woodward, Hans Fangohr and Ondrej Hovorka	The effect of trapezoidal wave rise time on power dissipation for magnetic hyperthermia
58	Alessandro Arduino, Oriano Bottauscio, Mario Chiampi and Luca Zilberti	About alternative Approaches to Magnetic Resonance based Electric Properties Tomography
39	Gerd Weidemann, Frank Seifert, Werner Hoffmann and Bernd Ittermann	A non-magnetic RF current sensor for use in clinical MRI systems
54	Daniele Andreuccetti, Laura Biagi, Giancarlo Burriesci, Gian Marco Contessa, Rosaria Falsaperla, Rossella Lodato, Vanni Lopresto, Caterina Merla, Rosanna Pinto, Gianluigi Tiberi, Michela Tosetti and Nicola Zopetti	Occupational exposure in MR facilities due to movements in the magnetic field
73	Alessandro Polichetti, Daniele Andreuccetti, Gian Marco Contessa, Rosaria Falsaperla, Vanni Lopresto, Rosanna Pinto, Mariangela Tomaiuolo and Nicola Zopetti	Regulatory issues in protection of workers exposed to static magnetic fields generated by Magnetic Resonance scanners

### Biomedical application part II

**Chair: Vanni Lopresto and Riccardo Scorretti**

ID	Authors	Title
27	Bernd Ittermann, Michele Borsero, Oriano Bottauscio, A. Cassarà, Mario Chiampi, Domenico Giordano, Jeffrey Hand, Jacco de Pooter, Leon de Prez, Hans Rabus, Frank Seifert, Hanitra Szymanowski, Gerd Weidemann and Luca Zilberti	Electromagnetic Fields Interacting with Biological Tissue – A European Research Project on Safety Aspects in Magnetic Resonance Imaging
38	Frank Seifert, Gerd Weidemann, Werner Hoffmann and Bernd Ittermann	TEM cell for calibration of RF electromagnetic field and current sensors in clinical MRI systems
215	Paulo A Augusto, Teresa Castelo-Grande, Angel M. Estévez, Domingos Barbosa	Biomedical Applications of Wet-Mode Magnetic Classification and the Proof-of-concept

46	Paola Tiberto, Gabriele Barrera, Federica Celegato, Marco Coïsson, Gianluca Conta, Franco Vinai, Katia Martina, Marina Caporaso, Loredana Serpe and Roberto Canaparo	Ni80Fe20 nanodisks by nanosphere lithography for biomedical applications
144	Federico Spizzo, Paolo Sgarbossa, Elisabetta Sieni, Lucia Del Bianco, Melissa Tamisari, Fabrizio Dughiero, Michele Forzan, Roberta Bertani	Ferrofluids made of magnetic nanoflowers: effect of the carrier fluid on magnetic and heating properties
148	Marco Monticelli, Dario Valter Conca, Daniela Petti, Edoardo Albisetti, Gururaj, Rao Kidiyoor, Dario Parazzoli and Riccardo Bertacco	On-chip application of localized forces on target cells via magnetic particles for mechanobiology studies
181	Mariem Harabech, Guillaume Crevecoeur, Jonathan Leliaert, Dirk Van Roost and Luc Dupré	The effect of the magnetic nanoparticles size dependence of the relaxation time constant on the specific loss power of magnetic nanoparticle hyperthermia
41	Marta Parazzini, Serena Fiocchi, Ilaria Liorni and Paolo Ravazzani	Modeling of the induced electric field in deep magnetic stimulation in anatomical head models

#### Electrical machines and other electromagnetic devices part I

Chair: Mauro Zucca

ID	Authors	Title
211	Valeria Boscaino, Giovanni Cipriani, Mattia Corpora, Vincenzo Di Dio and Marco Trapanese	Technical and Economical Comparison between Rare-Earth and Hard Ferrites linear tubular electrical generators from sea waves
194	Matteo Gamba and Gianmario Pellegrino	Design of Highly Loaded PM-assisted Synchronous Reluctance Motors: is Ferrite Viable for Traction Applications?
44	Chao Lu, Mohammad Abshari and Gianmario Pellegrino	Design of two PM Synchronous Machines for EV Traction Using Open-Source Design Instruments
48	Vilijan Matosevic, Željko Štih	Coupled Methodology for Thermal and Electromagnetic Modeling of Synchronous Generator
171	Warat Sriwannarat, Anan Kruesubthaworn and Apirat Siritaratiwat	An Optimizing Structure of Three-Phase Partitioned-Stator Doubly-Salient-Permanent-Magnet Generator for Wind Turbine Application
132	M'Hamed Belhadi, Guillaume Krebs, Claude Marchand, Hala Hannoun and Xavier Mininger	Geometrical optimization of SRM on operating mode for automotive application: minimization of torque ripples and radial efforts

#### Electrical machines and other electromagnetic devices part II

Chair: Gianmario Pellegrino

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107	Mauro Zucca, Arash Hadadian and Fausto Fiorillo	Fe-Si and Fe-Co based vibrational cantilever energy harvester
163	Guillaume Crevecoeur and Alex Van den bossche	Effect of coupled magnetic resonance air-cored receiver structures on the frequency splitting in wireless power transfer systems
3	Marco Tursini, Lino Di Leonardo and Alessio Di Tullio	Finite Element Analysis of Fault-Tolerant PM Motors with Independent Phases
193	Guang Yang, Lin Li and Xile Zhang	Dynamic Characteristics Analysis of Stepped Controlled Shunt Reactor
55	Yoshiyuki Kato, Nicolas Denis, Shunya Odawara and Keisuke Fujisaki	Comparison of 3-D Finite Element Methods for the Iron Loss Analysis of an Interior Permanent Magnet Motor
145	Victor P. B. Aguiar, Ricardo S. T. Pontes and Tobias R. Fernandes Neto	Parameters Estimation of Squirrel Cage Induction Motors with Closed Rotor Slots

### **Hysteretic processes modeling and FORC-based identification techniques**

**Chair: Alexandru Stancu**

<b>ID</b>	<b>Authors</b>	<b>Title</b>
8	Joachim Gräfe, Felix Haering, Markus Weigand, Maxim Skripnik, Ulrich Nowak, Paul Ziemann, Ulf Wiedwald, Gisela Schütz, Eberhard J. Goering	Microscopic Interpretation of FORC Diagrams by X-Ray Microscopy
17	Mariana P. Proenca, Célia T. Sousa, João Ventura, Javier Garcia, Manuel Vázquez and João P. Araújo	Detecting Non-Interacting Single Domain States in Ni Nanowire Arrays using First-Order Reversal Curves
29	Seyed Ali Mousavi, Göran Engdahl, Torbjorn Wass	An Engineering Approach for Estimation of FORCs and Differential Hysteresis Modeling
36	Shreyas Murlaidhar, Joachim Gräfe, Yu-Chun Chen, Helmut Kronmüller, Gisela Schütz and Eberhard Goering	Investigation of low temperature phase MnBi with temperature dependent first-order reversal curve measurements.
47	Laurentiu Stoleriu and Alexandru Stancu	Micromagnetic and FORC analysis of antidot ferromagnetic arrays
51	Claire Carvallo, Ramon Egli	FORC diagram and magnetic viscosity: influence of parameters linked to time
65	A.A. Adly, and S.K. Abd-El-Hafiz	An Efficient Hysteresis Modeling Methodology and Its Implementation in Field Computation Applications
98	Alexandru Stancu	Quantitative analysis of the First-Order Reversal Curve diagrams of 1D and 2D magnetic nanostructures
133	Claes Carrander, Seyed Ali Mousavi and Göran Engdahl	An application of the time-step topological model for three-phase transformer no-load current calculation considering hysteresis
166	A.V. Ognev, K.S. Ermakov, A.Yu. Samardak, A.G. Kozlov, E.V. Sukovatitsina, A.V. Davydenko, A.S. Samardak, L.A. Chebotkevich	FORC characterization of the ultra-high aspect ratio Co nanostripes epitaxially grown on step-bunched Si(111)5.55x5.55-Cu/Cu surfaces

### **Magnetic Energy and Losses**

**Chairs: Carlo Appino and Carlo Ragusa**

<b>ID</b>	<b>Authors</b>	<b>Title</b>
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60	Wen-Zhe Nan, Kyeong-Sup Kim, Seong-Cho Yu, Tae-Soo You and Byung-Sub Kang	Magnetic properties and Magnetocaloric Effect on La <sub>0.6</sub> Ce <sub>0.4</sub> Fe <sub>11.5</sub> Si <sub>1.5</sub> Alloy
61	A. Lekdim, L. Morel, M.A. Raulet	Influence of coating on nanocrystalline magnetic properties during high temperature thermal aging.
115	Carlo Ragusa, Carlo Appino, Mahmood Khan, Olivier de la Barrière, and Fausto Fiorillo	Loss decomposition in non-oriented steel sheets: the role of the classical losses.
122	Cinzia Beatrice, Samuel Dobak, Enzo Ferrara, Fausto Fiorillo, and Carlo Ragusa	Broadband magnetic losses of nanocrystalline ribbons and powder cores
123	Veronica Manescu Paltanea, Gheorghe Paltanea, Enzo Ferrara, Horia Gavrilă, and Fausto Fiorillo	Effect of punching and water-jet cutting methods on the hysteresis and excess loss components of non-oriented magnetic steel sheets.
147	Ran Li, and Lin Li	Design of Dual-tone Coil for Wireless Power Transfer System via Magnetic Resonant Coupling
169	Simon Steentjes, Francois Henrotte, Kevin Jacques, Kay Hameyer	Energy-Based Ferromagnetic Material Model with Magnetic Anisotropy and Magnetostriction

#### **Magnetic Levitation and Bearings part I**

**Chairs: Antonino Musolino and Johnathan Bird**

ID	Authors	Title
Invited	Eric Maslen	Computational Electromagnetics for Magnetic Bearings and Levitation
188	Corentin Dumont, Virginie Kluyskens, Bruno Dehez	Performance of Yokeless Heteropolar Electrodynamic Bearings
1	Mohammad Imani Nejad	Adjustable passive magnetic constant force actuator
149	Rüdiger Appunn and Kay Hameyer	Operation of a vertically levitated ropeless elevator: Interaction of linear drive and magnetic guiding
26	Mousa Lahdo, Tom Ströhla, Sergej Kovalev	A Novel High-Precision Positioning System Based on Magnetic Levitation
150	Yossi Golovachev, Evgeni Frishman	Analysis of Combined Magnetic Suspension System

#### **Magnetic Levitation and Bearings part II**

**Chairs: Hannes Bleuler, Andrea Tonoli**

ID	Authors	Title
179	Marcel Schuck, Jannik Schafer, Thomas Nussbaumer, and Johann W. Kolar	Analysis and Design of a Passive Electrodynamic Bearing for an Ultra-High Speed Spinning Ball Motor
6	E. Tripodi, E. Diez-Jimenez and R. Rizzo	Dynamics of a non-hysteretic superconductive passive magnetic linear bearing
93	Hubert Mitterhofer, Siegfried Silber	Comprehensive Design and Optimization of High-Speed Bearingless Disk Drives
204	Antonino Musolino, Rocco Rizzo, Fabrizio Impinna, Joaquim Girardello Detoni, Nicola Amati, Andrea Tonoli	Coupled electromagnetic-mechanical modeling applied to electrodynamic bearings

84	Roberto Muscia	Evaluation of Stiffness and Natural Frequencies of Passive Magnetic Axial Bearings based on Magnetic Charges Method Versus the Air Gap and Coaxiality Error
28	Li Li, Frank Worlitz	Adaptive State Control for Active Magnetic Bearings with Using Softcomputing
210	V. Boscaino, G.Cipriani, M.Corpora, D.Curto, V.Di Dio, V. Franzitta, Marco Trapanese	Temperature effects on an electromagnetic generator for MAGLEV transportation systems
225	Guojun Yang, Zhengang Shi, Xingnan Liu, Ni Mo, Zhe Sun, Yan Zhou, Jingjing Zhao	Active Magnetic Bearing and Its Application in Nuclear Power Station of High Temperature Gas-cooled Reactor

**Magnetic Levitation and Bearings part III**  
**Chairs: Virginie Kluyskens and Rocco Rizzo**

ID	Authors	Title
52	Gael Messenger, Andreas Binder	Six-Axis Rotor Magnetic Suspension Principle for Permanent Magnet Synchronous Motor with control of the Positive, Negative and Zero-Sequence Current Components
135	Qingwen Cui, Fabrizio Impinna, Joaquim Girardello Detoni, Nicola Amati, Andrea Tonoli and Hannes Bleuler	Simulations and experimental tests of electrodynamic bearings combined with active magnetic dampers
207	Wei Qin, Jonathan Z. Bird	Magnetic Rolling Resistance
90	D. F. B. Davida, J. A. Santistebana, A .C. Del Nero Gomesb	Initial Tests on an Interconnected Four Poles Magnetic Bearing
127	Tobias Wellerdieck, Patricio Peralta, Thomas Nussbaumer, and Johann W. Kolar	Thermal Analysis of a Bearingless Permanent Magnet Pump at Ultra-High Temperatures
72	Dr. Evgeni Frishman	Permanent Magnets Magnetic Suspension of Horizontal Type
182	J. J. Pérez-Loya, C. J. D. Abrahamsson, F. Evestedt, and U. Lundin	Initial Performance Tests of a Permanent Magnet Thrust Bearing for a Hydropower Synchronous Generator Test-Rig
218	Roberto Bassani, Antonino Musolino, Marco Raugi, Rocco Rizzo, Ernesto Tripodi	Stabilization of a new PMs Bearing

**Magnetic Measurements part I**  
**Chair: Bernardo Tellini**

ID	Authors	Title
25 (invited)	Alexandr Stupakov and Oleksiy Perevertov	Dynamical Behavior of Magneto-Acoustic Emission in Soft Steels
31	Georgi Shilyashki, Helmut Pfützner, Christian Huber	An Ultra-thin Printed Sensor Foil for Off-plane Flux Detection in Transformer Cores
70	Alexander Kurbakov, Mariya Kuchugura, Stanislav Podchezertsev, Juan Rodriguez-Carvajal, Vladimir Nalbandyan, Elena Zvereva	Spin Structure and Magnetic Properties of the Monoclinic Honeycomb-Lattice Na <sub>3</sub> Co <sub>2</sub> SbO <sub>6</sub> Antimonate

82	Chiung-Wu Su and Reui-Yi Lee	Flipping behavior of magneto-optic hysteresis on spin interfaces
86	Stuti Rani and G. D. Varma	Metamagnetism in chromium doped $\text{CoFe}_2\text{O}_4$ i.e. $\text{Co}_{1-x}\text{Cr}_x\text{Fe}_2\text{O}_4$ ( $x=0$ to $0.7$ ) nanoparticles
99	Giovanni Basso, Massimo Macucci, Mirko Marracci and Bernardo Tellini	Characterization of Magnetic Hysteresis Minor Loops versus Temperature in MnZn Ferrite

### **Magnetic Measurements part II**

**Chair: Mirco Marracci**

ID	Authors	Title
104	Todd C. Monson, Eric Langlois, Jamin R. Pillars, Christian L. Arrington, Mark A. Rodriguez, Andrew E. Hollowell, and Patrick S. Finnegan	Highly magnetostrictive electrodeposited CoFe for smart tags and sensors
157	Tran Dang Thanh, Dinh Chi Linh, Tien Van Manh, Suhk Kun Oh and Seong Cho Yu	Giant Magnetocaloric Effect in $\text{Sm}_{1-x}\text{Sr}_x\text{MnO}_3$ Compounds
160	Francesco Bertocci, Elisa Bertolucci, Ada Fort, Mirko Marracci, Marco Mugnaini, Anna Maria Raspolli Galletti, Bernardo Tellini, Valerio Vignoli	Characterization of magnetoresistance in magnetite nanopowder films prepared by an innovative hydrothermal approach
168	Anchit Modi, Masroor Ahmad Bhat, Preeti Khare, Tarachand, Shovit Bhattacharya, G. S. Okram, N. K. Gaur	Effect of Samarium Doping on Magnetotransport and Thermoelectric Behavior of Polycrystalline $\text{La}_{0.7-x}\text{Sm}_x\text{Ba}_{0.3}\text{MnO}_3$ ( $0 \leq x \leq 0.2$ )
191	Tuan Mai Kha, Frédéric Schoenstein, Brigitte Leridon, Fatih Zighem, Noureddine Jouini and Silvana Mercone	Magnetic properties in Co-based nanowires for new rare-earth free magnet
192	P. Arpaia, M. Buzio, M. D'Arco, A. Liccardo, and A. Parrella	Magnetic characterization of the new LHC magnets material: ARMCO pure iron
213	Carmine Stefano Clemente, Daniele Davino, Abdelmomen Mahgoub and Ciro Visone	Experimental Characterization of Magnetostrictive Materials
184	L. Angrisani, F. Attivissimo, A. M. L. Lanzolla, M. Marracci and B. Tellini	Anisotropic filter for Magnetic Resonance Imaging denoising

### **Magnetic Recording part I**

**Chair: Gaspare Varvaro and Sara Laureti**

ID	Authors	Title
Invited	Gerardo Bertero	Particle Size Effects in Media for Heat Assisted Magnetic Recording
Invited	Chengjun Sun	Investigation of Heat Assisted Magnetic Recording Media with Hard X-Rays
119	Jonathon Waters, Denis Kramer, Hans Fangohr and Ondrej Hovorka	Identification of the Curie Temperature Distribution from Temperature Dependent Magnetisation Data
121	S. Tacchi, G. Gubbiotti, M. Madami, G. Carlotti, A. di Bona, F. Albertini, F. Casoli, P. Ranzieri, P. Lupo, S. Valeri, A. Rettori and M. G. Pini	Anisotropy-graded FePt films obtained by ion irradiation

### **Magnetic Recording part II**

**Chair: Francesca Casoli and Julie Karel**

ID	Authors	Title
Invited	Manfred Albrecht	FePt-based bit patterned media
Invited	Jingsheng Chen	Control of microstructure of FePt-X (001) films for HAMR through interface modification and doping
151	Harald Oezelt, Alexander Kovacs, Johann Fischbacher, Manfred Albrecht, Patrick Matthes, Laura Heyderman, Eugenie Kirk and Thomas Schrefl	Micromagnetic simulations for switching field distribution of ferri-/ferromagnetic composite bit patterned media
161	Masaaki Futamoto, Mitsuru Ohtake, Masahiro Nakamura and Nobuyuki Inaba	Tailoring the Growth of L10-Ordered Magnetic Thin Films
14	Jai-Lin Tsai, Jie-Lin Tzeng, Keng-Chun Hu	Magnetic Properties and Microstructure of FePt film with combined MoC/(Mg-X)O (X= Cu, Ni, Co) intermediate layers
190	S. Laureti, C. Brombacher, D. Makarov, M. Albrecht, D. Peddis, G. Varvaro and F. D'Acapito	Correlation between magnetic properties and chemical order in L10 FePtCu thin films studied by EXAFS

### **Magnetic Recording part III**

**Chair: Gaspare Varvaro and Francesca Casoli**

ID	Authors	Title
7	Kotchakorn Pituso, Chanon Warisarn, Damrongsak Tongsomporn and Piya Kovintavewat	An ITI Subtraction Scheme of a Rate-4/5 Modulation Code for Two Dimensional Magnetic Recording
172	Aphaiphak Prathumthip, Apirat Siritaratiwat, Arkom Kaewrawang, Vichate Ungvichian and Anan Kruesubthaworn	Windowing and Groove Depth Variation Techniques for Crosstalk Reduction on 6-Line Suspension Assembly Interconnect Trace in Magnetic Recording Head
130	Pichet Nhunork, Chanon Warisarn and Damrongsak Tongsomporn	A Spin Stand Study of Head-to-Media Spacing Sensitivity for Shingled Magnetic Recording
110	J. Karel, F. Casoli, P. Lupo, L. Nasi, F. Celegato, S. Fabbri, L. Righi, P. Tiberto, F. Albertini, C. Felser	MnxGa1-x Thin Films and Nanodots with High Coercivity and Perpendicular Magnetic Anisotropy
143	F. Spizzo, M. Tamisari, E. Bonfiglioli, F. Chinni, L. Del Bianco	Tuning the magnetic exchange coupling at the IrMn/NiFe interface by Cu insertion
141	Marco Asa, Lorenzo Baldrati, Christian Rinaldi, Matteo Cantoni and Riccardo Bertacco	Ferroelectric control of spin-dependent transport in hybrid ferromagnetic/ferroelectric tunneling junctions
189	Kinga Lasek, Leszek Gladczuk, Maciek Sawicki, Pavlo Aleshkevych and Piotr Przyslupski	Impact of the tunnel barrier thickness on the magnetic anisotropy in Magnetic Tunnel Junction
199	Leszek Gladczuk, Kinga Lasek, Wojciech Paszkowicz, Marta Aleszkiewicz, Roman Minikayev, Pavlo Aleshkevych, and Piotr Przyslupski	Influence of the structural properties of hcp-Co and Au ultrathin layers on the Au/Co(Au)/MgO heterostructure anisotropy.

### **Magnetic Shielding**

**Chair: Maurizio Repetto**

ID	Authors	Title
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100	Fabio Freschi, Luca Giaccone and Maurizio Repetto	Finite Formulation of Surface Impedance Boundary Condition for Shielding Purposes
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**Materials for energy part I**

**Chairs: Franca Albertini and Manuel Vasquez**

ID	Authors	Title
Invited	Konstantin Skokov	Re-Thinking rare earth magnets for energy applications: Demand, sustainability and the reality of alternatives
224	Pramod Kumar, Rashmi Singh, Puneet Jain, Faizan Ahmad, Rachana Kumar	Correlation between magnetic and magnetocaloric effect in RAl compounds
200	Morgan Almanza, Alexandre Pasko, Frédéric Mazaleyrat, Martino LoBue	Numerical study of thermomagnetic cycle
2	Maximilian Fries, Zsolt Gercsi, Semih Ener, Konstantin P. Skokov, Oliver Gutfleisch	Manganese based monoborides for thermomagnetic energy conversion
222	Pramod Kumar, Rashmi Singh, Puneet Jain, Faizan Ahmad, Rachana Kumar	Combined giant inverse and normal magneto caloric effect in single crystal of Ca <sub>3</sub> Ru <sub>3</sub> O <sub>7</sub>
221	Benjamin Podmiljsak, Spomenka Kobe, Alexander Funk, Anja Waske	Metal bonded La(Fe,Si) <sub>13</sub> magnetocaloric materials for magnetic refrigeration
131	T. A. Ho, T. O. Ho, T. L. Phan, T. D. Thanh and S. C. Yu	Universal curve in assessing a first-order magnetic transition of La <sub>0.7-x</sub> Pr <sub>x</sub> Ca <sub>0.3</sub> MnO <sub>3</sub> exhibiting giant magnetocaloric effect

**Materials for energy part II**

**Chairs: Manuel Vasquez and Konstantin Skokov**

ID	Authors	Title
Invited	Claudia Felser	Design scheme for Tetragonal Heusler compounds
154	G. Giannopoulos, R. Salikhov, L. Reichel, G. Varvaro, V. Psycharis, A. Markou, I. Panagiotopoulos, M. Farle, S. Fähler and D. Niarchos	Structural and magnetic properties of coherently strained [Fe-Co(C)/Au-Cu] <sub>n</sub> layers
159	Ataru Suzuki, Yusuke Hotta, Makoto Yamada, Mitsuru Ohtake, Masaaki Futamoto, Fumiyoshi Kirino and Nobuyuki Inaba	Structure and Magnetic Properties of SmCo <sub>5</sub> /X (X = Fe, Fe-Co, Co) Magnetic Bilayer Films on MgO(110) Substrate
11	C. W. Shih, C. X. Huang, Y. Z. Yu, Y. I. Lee <sup>1</sup> , W. C. Chang C. H. Chiu <sup>2</sup> and H. W. Chang <sup>3</sup>	Controlled Dy Usage in Grain Boundary Diffusion Treated NdFeB Magnets by Dy, Dy <sub>85</sub> Cu <sub>15</sub> and Dy/Cu Overlayers
59	Manlong Xia, Asger B. Abrahamsen and Christian R. H. Bahl	The origin of carbon and its influence on NdFeB prepared by pressless method

**Materials for energy part III**

**Chairs: Franca Albertini and Claudia Felser**

ID	Authors	Title
Invited	Manuel Vasquez	Cylindrical Nanowires: from applications of their arrays to the spin reversal of individual wires



5	Alexander Chizhik, Andrzej Stupakiewicz, Arcady Zhukov and Julian Gonzalez	Basic Study of Magnetic Microwires for Sensor Application: Variety of Magnetic Structures
66	G. Vinai, A. Khare, D. S. Rana, E. Di Gennaro, B. Gobaut, R. Moroni, A. Yu. Petrov, U. Scotti di Uccio, G. Rossi, F. Miletto Granozio, G. Panaccione, P. Torelli	Chemically sensitive study of the magnetic properties of BiFe <sub>0.5</sub> Cr <sub>0.5</sub> O <sub>3</sub> thin films
226	S. Fabbri, P. Ranzieri, M. Campanini, L. Nasi, F. Casoli, R. Cabassi, E. Buffagni, V. Grillo, C. Magén, F. Celegato, G. Barrera, P. Tiberto, F. Albertini	Giant Magnetically Induced Reorientation of Martensitic Variants in Magnetic Shape-Memory Ni–Mn–Ga Films by Microstructure Engineering
125	Todd C. Monson, Baolong Zheng, Charles J. Pearce, Yizhang Zhou, Stanley Atcitty and Enrique Lavernia	Soft magnetic laminated FeSiCrB–Fe <sub>x</sub> N metallic glass composites fabricated via spark plasma sintering

### Matematical Modelling part I

Chair: Michela Eleuteri

ID	Authors	Title
Invited	Augusto Visintin	Mathematical models of hysteresis phenomena
24	Helmut Pfützner, Georgi Shilyashki, Gerald Trenner, Erich Gerstbauer Peter Hamberger <sup>2</sup> , Martin Aigner <sup>2</sup>	Mixed Core Materials for Transformers?
37	Olaf Klein	Uncertainty Quantification for a Hysteresis Operator and a Model for Magneto-Mechanical Hysteresis
76	Edward Della Torre, Ali Jamali, Hatem ElBidweihy, Lawrence H. Bennett, Ermanno Cardelli	A Vector Model for Off-axis Hysteresis Loops Using Anisotropy Field
120	Branko Koprivica, Alenka Milovanovic, Nebojsa Mitrovic	Mathematical Modelling of Frequency Dependent Hysteresis and Energy Loss of FeBSiC Amorphous Alloy
186	Younes Chiba, Arezki Smaili	Magnetocaloric material based on La-Fe-Co-Si development for magnetic refrigeration device

### Matematical Modelling part II

Chair: Antonio Faba

ID	Authors	Title
12	Maxym Ostrenko, Bogdan Andriienko, Sergei Tikhovod and Denys Prychynenko	Power Transformers and Reactors Structure Losses and Temperatures Calculation Using Surface Impedance Boundary Condition
95	Andrea R. Insinga, Rasmus Bjørk, Anders Smith and Christian R. H. Bahl	Optimization of Hybrid Magnetic Systems
97	Vincent Krakowski, Nadia Maïzi, Vincent Mazauric	A magnetic model dedicated to the stability of the power grid
105	Stanislav Zub, Sergiy Zub, Sergiy Lyashko and Andrii Cherniavskiy	Levitating Orbitron: Grid simulation

117	Shuaibing Wang, Lin Li, and Xiaojun Zhao	Transient Analysis of Transformer under DC Bias Based on Field-Circuit Coupled Time-Periodic Finite Element Method
124	Shumpei Ito, Takeshi Mifune, Tetsuji Matsuo and Chikara Kaido	Magnetomechanically coupled domain model of silicon steel sheet
203	E. Cardelli, A. Faba, M. Pompei and S. Quondam Antonio	A Challenging Hysteresis Operator for the Simulation of Anisotropic Cubic Crystal Grain Ferromagnets
214	Jonathan Z. Bird	A Decoupled Quasi-Static Stress Tensor Formulation

### Micromagnetic Modelling

Chair: Massimiliano d'Aquino

ID	Authors	Title
Invited	Thomas Schrefl	Micromagnetics for rare earth reduced permanent magnets magnets
45	Marek Frankowski, Jakub Chęciński, Witold Skowroński and Tomasz Stobiecki	Micromagnetic analysis of voltage-driven dynamics in magnetic tunnel junctions: spin-diode effect and pulse-induced switching
19	Pirat Khunkitti, Apirat Siritaratiwat, Arkom Kaewrawang, Chayada Surawanitkun, Tim Mewes, Claudia K.A. Mewes and Anan Kruesubthaworn	Electromagnetic interference effects on magnetic instability in tunneling magnetoresistive read heads
155	A. Quercia, C. Serpico, M. d'Aquino, S. Perna, V. Scalera and I. Mayergoyz	Normal form of nonlinear oscillator model relevant to spin-torque nano-oscillator theory
56	Ahmad M. Almodallal, J. I. Mercer, J. P. Whitehead and M. L. Plumer	Simulation Studies to Model the Effect of the Exchange Control Layer Thickness in CoPtCrB/CoPtCrSiO Granular Media
174	Andrzej Janutka	Ordering in rolled-up ferromagnetic nanomembranes
223	N Kumar, G Venkat and Anil Prabhakar	Sustained spin waves using an antidot magnonic crystal cavity
77	Warunee Tipcharoen, Chanon Warisarn and Piya Kovintavewat	Effects of Island Shape and Hotspot Position Fluctuation For Heated-Dot Magnetic Recording
13	Enamullah, K. G. Suresh and Aftab Alam	Effect of Pressure and Defects on Spin Polarization in Co-based Heusler Alloys: A First Principle Study
164	Vasiliy D. Buchelnikov, Mikhail A. Zagrebin and Vladimir V. Sokolovskiy	Ab initio investigations of reference states of Co <sub>2</sub> CrZ (Z = Al, In) Heusler alloys

### Nanomagnetism and Spintronics part I

Chair: Mario Carpentieri

ID	Authors	Title
Invited	Andrei Slavin	Autonomous and Non-Autonomous Dynamics of Spin Hall Auto-Oscillators
32	Witold Skowroński, Monika Cecot, Sławomir Ziętek, Jarosław Kanak, Tomasz Stobiecki, Kay Yakushiji, Takayuki Nozaki, Hitoshi Kubota, Shinji Yuasa	Spin orbit torques in perpendicularly magnetized CoFeB on W buffer

68	S. Ali Nasser, Simone Moretti, Eduardo Martinez, Gianfranco Durin, Claudio Serpico	Analytical Modeling of Domain Wall Motion in PMA Materials under Spin Hall Effect and in-Plane Fields
92	Monika Cecot, Witold Skowroński, Jerzy Wrona, Jarosław Kanak, Antoni Żywczak, Wiesław Powroźnik and Tomasz Stobiecki	Temperature study of spin Hall effect in Ta/CoFeB/MgO
126	Nicolas Reyren, João Sampaio, Murat Cubukcu, Majd Kuteifan, Dmytro Apalkov, Karim Bouzehouane, Alexey V. Khvalkovskiy, Vitali Lomakin and Vincent Cros	Interfacial Dzyaloshinskii-Moriya Interaction in Nanomagnets: From a New In-Plane Anisotropy to Detrimental Effects in MRAM
152	L. Sánchez-Tejerina, O. Alejos, E. Martínez	Dynamic of Dzyaloshinskii domain walls in ultrathin ferromagnetic strip with perpendicular magnetic anisotropy under perpendicular field and current excitation
170	R. Arun, P. Sabareesan and M. Daniel	Effect of Transverse Magnetic Field on Current Driven Transverse Domain Wall in the Presence of Spin Hall Effect

## Nanomagnetism and Spintronics part II

**Chairs: R. Zivieri, R. Tomasello**

ID	Authors	Title
Invited	Johan Akerman	Dynamical solitons in spin-torque and spin-hall effect driven nano-oscillators
22	Michał Matczak, Rudolf Schäfer, Maciej Urbaniak, Piotr Kuświk, Bogdan Szymański, Marek Schmidt, Jacek Aleksiejew, and Feliks Stobiecki	Influence of domain structure-induced coupling on magnetization reversal of Co/Pt/Co film with perpendicular anisotropy
69	A. Giordano, A. Laudani, V. Puliafito, R. Zivieri, G. Gubbiotti, B. Azzerboni, M. Carpentieri, G. Finocchio	Effect of the Oersted field and Dzyaloshinskii-Moriya interaction on the dynamical behavior of a spin-Hall oscillator
78	C. Rinaldi, M. Liebmann, D. Di Sante, J. Kellner, C. Pauly, R. N. Wang, J. E. Boschker, A. Giussani, S. Bertoli, M. Cantoni, L. Baldrati, M. Asa, I. Vobornik, G. Panaccione, D. Marchenko, J. Sanchez-Barriga, O. Rader, R. Calarco, S. Picozzi, R. Bertacco, M. Morgenstern	Rashba-type bands in ferroelectric GeTe(111)
106	Gianluca Gubbiotti, Silvia Tacchi, Marco Madami, Giovanni Carlotti, Junjia Ding, Zhen Yang, Adekunle Olusola Adeyeye, and Mikhail Kostylev	Propagation of collective spin excitation in arrays of bi-layer Permalloy/Iron nanowires
109	Vito Puliafito, Anna Giordano, Bruno Azzerboni and Giovanni Finocchio	Clocking for nanomagnetic logic driven by spin-Hall effect: a micromagnetic analysis
202	Alexander Samardak, Alexander Davydenko, Alexey Ognev, Yoo Sang Jeon, Young Soo Choi, Young Keun Kim	Magnetization reversal of magnetite nanoparticles and their one-dimensional nanochains

### Nanomagnetism and Spintronics part III

Chair: S. Komineas

ID	Authors	Title
Invited	Sergej Demokritov	Excitation of magnetization dynamics by pure spin currents
136	Dennis Nissen, Dmitriy Mitin, Oliver Klein, Sri Sai Phani Kanth Arekapudi, Robert Rückriem, Senoy Thomas, and Manfred Albrecht	Magnetic Vortices in Closely Packed Caps Structures
187	Òscar Iglesias, Carlos Moya, Xavier Batlle, Amílcar Labarta	Quantifying Dipolar Interactions in Magnetic Nanoparticles Assemblies: Experiment and Numerical Calculations
162	Vladimir Lepalovskij, Andrey Svalov, Konstantin Balymov, Nikita Kulesh, Vladimir Vas'kovskiy	Crystal structure and exchange bias in NixMn100-x/Fe20Ni80 films
217	G. Finocchio, M. Ricci, R. Tomasello, A. Giordano, M. Lanuzza, V. Puliafito, P. Burrascano, B. Azzerboni, M. Carpentieri	Skyrmion based microwave detectors and harvesting
128	Matteo Cantoni, Christian Rinaldi, Matteo Di Loreto, Marco Asa, Lorenzo Baldrati and Riccardo Bertacco	Towards Cr-based antiferromagnet spintronics: growth and magnetic anisotropy of Chromium thin films
113	R.V. Verba, M. Carpentieri, G. Finocchio, V.S. Tiberkevich, A.N. Slavin	Parametric excitation of propagating spin waves in ferromagnetic nanowires by voltage-controlled magnetic anisotropy

### Nanomagnetism and Spintronics part IV

Chair: S. Tacchi

ID	Authors	Title
Invited	Giovanni Finocchio	Improvement of the MTJ based oscillators and detectors by controlling the trade-off between the interfacial perpendicular anisotropy and the demagnetizing field
43	Piotr Kuświk, Błażej Anastaziak, Bogdan Szymański, Michał Matczak, Maciej Urbaniak, Arno Ehresmann and Feliks Stobiecki	Enhancement of perpendicular magnetic anisotropy of Co layer in Au/Co/NiO/Au system due to interlayer exchange bias coupling
49	Sławomir Ziętek, Piotr Ogrodnik, Witold Skowroński, Feliks Stobiecki, Sebastiaan van Dijken, Tomasz Stobiecki	Electric-field tunable spin diode FMR in a PMN-PT/NiFe magnetoresistance device
64	G. Siracusano, R. Tomasello, A. Giordano, V. Puliafito, B. Azzerboni, M. Carpentieri, G. Finocchio	Stability and dynamics of radial vortex with interfacial Dzyaloshinskii–Moriya Interaction
23	A. A. Povzner, A. G. Volkov	Influence of Voltage on Magnetization of Ferromagnetic Semiconductors with Colossal Magnetoresistance
81	Ben Van de Wiele, Sampo J. Hämäläinen, Kévin J.A. Franke, Diego López González, Arianna Casiraghi, Pavel Balaz, Federico Montoncello and Sebastiaan van Dijken	Short-Wavelength Spin Wave Emission from Elastically Coupled Ferromagnetic-Ferroelectric Domain Walls

- 158 Nikita Kulesh, Konstantin Balymov, Vladimir Vas'kovskiy, Vladimir Lepalovskij Comparative study of magnetization process in exchange bias films containing FeMn and Tb-Co layers

### Nanomagnetism and Spintronics part V

Chairs: G. Finocchio, V. Puliafito

ID	Authors	Title
Invited	Alberto Brambilla	Magnetic properties of CoO/Fe(001) with controlled interfacial properties
74	Igor Poperechny, Yuriy L. Raikher and Victor I. Stepanov	Ferromagnetic resonance in uniaxial single-domain particles
87	M.D. Kuchugura <sup>1</sup> , A.I. Kurbakov <sup>1</sup> , A.T. Senyshyn <sup>2</sup> , V.B. Nalbandyan <sup>3</sup> , E.A. Zvereva <sup>4</sup>	A new antiferromagnetic form of MnSb <sub>2</sub> O <sub>6</sub>
89	Arianna Casiraghi, Diego López González, Teresa Rincón Domínguez, Kevin J.A. Franke, Ben Van de Wiele, Sampo J. Hämäläinen, and Sebastiaan van Dijken	Pinned magnetic domain walls – towards reconfigurable magnetic logic
102	Riccardo Tomasello, Vito Puliafito, Anna Giordano, Bruno Azzerboni Mario Carpentieri <sup>4</sup> and Giovanni Finocchio <sup>3</sup>	Effect of the second order perpendicular anisotropy on skyrmion stability and motion in racetrack memories
146	G. Bussetti, A. Calloni, G. Berti, R. Yivlialin, A. Camera, A. Brambilla, M. Finazzi, L. Duò and F. Ciccacci	Filled and empty electronic states through the bcc-fcc transition in Ni/W(110) films.
183	Niéli Daffé, Véronica Gavrillov-Isaac, Sophie Neveu, Fadi Choueikani, Marie-Anne Arrio, Amélie Juhin, Philippe Ohresser, Vincent Dupuis, Philippe Saintavit	Ultrasmall CoFe <sub>2</sub> O <sub>4</sub> magnetic nanoparticles in ferrofluids, influence of the synthesis on the magnetic anisotropies

### Nanomagnetism and Spintronics part VI

Chair: A. Manzin

ID	Authors	Title
20	H.W. Chang, Y.C. Lo, S.Y. Lin, C.F. Chang, C.R. Wang, W.C. Chang, C.S. Tu and S.U. Jen	Multiferroic properties of Sr-doped BiFeO <sub>3</sub> polycrystalline thin films on the glass substrates
91	A. I. Mallick, Lakhan Bainsla, K. G. Suresh and Aftab Alam	Spin gapless semiconducting behavior in quaternary Heusler alloys CoFeMnSi and CoFeCrGa: Theory and Experiment
177	Marek Wójcik, Ewa Jędryka, David Pesquera, Josep Fontcuberta	NMR as a Probe of Hole Trapping Defects in Epitaxial Thin Films of LSMO
178	Ewa Jedryka, Marek Wojcik, Vadim Ksenofontov, Benjamin Balke, Sabine Wurmehl, Claudia Felser	Electron Doping and Atomic Short-Range Order in quaternary Co <sub>2</sub> Mn <sub>1-x</sub> Fe <sub>x</sub> Si Heusler Alloys Probed by <sup>59</sup> Co NMR
185	B. Idzikowski, Z. Śniadecki, R. Puźniak and D. Kaczorowski	Formation of metastable cubic phase in Ce <sub>100-x</sub> Al <sub>x</sub> (x = 45, 50) alloys and their magnetic properties
227	E. Albisetti, D. Petti, M. Pancaldi, M. Madami, S. Tacchi, J. Curtis, W.P. King, A. Papp, G. Csaba, W.Porod, P. Vavassori, E. Riedo and R. Bertacco	Reconfigurable patterning of continuous magnetic media via field cooling at the nanoscale
137	F. Fabiano, V. Puliafito, A. Giordano, L. Calabrese, C. Borsellino, G. Di Bella, E. Proverbio	Micromagnetic calculation and finite element study of a magnetic orthodontic system

## **Micromagnetics of multiphysics spin-dependent phenomena toward petascale micromagnetic solver**

**Chair: G. Finocchio**

<b>ID</b>	<b>Authors</b>	<b>Title</b>
Invited	Mathias Klauel	Multiscale modelling of spin – orbit effects
Invited	Paola Tiberto	Nanofabrication by nanolithographic process in magnetic thin films.
103 (Invited)	Stefano Chiappini	Adaptive distributed HPC infrastructure for massive scientific computations: limitations and challenges
40 (Invited)	Giuseppe Campobello	Spintronics, telecommunications and petascale computing: a necessary alliance
67 (Invited)	Stavros Komineas and Nikos Papanicolaou	Dynamics of Skyrmions in Chiral Ferromagnets
Invited	Alessandra Manzin	Towards large-scale micromagnetic simulations of static and dynamic properties of magnetic nanostructured films for magnetosensing applications

## **Nondestructive Testing part I**

**Chair: Salvatore Ventre and Sara Cercangiu**

<b>ID</b>	<b>Authors</b>	<b>Title</b>
18	Marko Jesenik, Miloš Beković, Anton Hamler and Mladen Trlep	Searching for hidden cracks and estimations of their depths
96	Alessandro Formisano, Raffaele Martone	Non Destructive Testing of Magnets using External Field Measurements
116	S.K. Abd-El-Hafiz1 and A.A. Adly	A Deconvolution Approach to the Three Dimensional Identification of Embedded Cracks in Magnetic Slabs
139	Martins Araujo D.1 and Demaldent E.1	A Priori h then p De-Refinement Based on the Use of Local Patterns
153	Anastassios Skarlatos1, Tomáš Svatoň1, Nikolaos Poulakis2 and Theodoros Theodoulidis3	On the Design of a Reference Problem for the Validation of Semi-Analytical and Numerical Eddy-Current Solutions in Non-Linear Materials
206	Ermanno Cardelli, Antonio Faba, Roberto Marsili, Michele Pompei, Gianluca Rossi, Roberto Tomassini	Differential Magneto-resistive Evaluation of Rotor Blade Tips

## **Nondestructive Testing part II**

**Chairs: Alessandro Formisano and Anastassios Skarlatos**

<b>ID</b>	<b>Authors</b>	<b>Title</b>
42	Muhsien M. Yazid, Sarah H. Olsen, and Glynn Atkinson	A comparison of Magnetic Microstructure for different SmCo Alloys obtained using Magnetic Force Microscopy
63	Sara Carcangiu, Alessandra Fanni and Augusto Montisci	Neural Network inversion approach to solve the Electric Capacitance Tomography problems
134	Christopher Hardly Joseph, Giorgio Badino, Silviu Sorin Tuca, Giovanni Sardi, Ferry Kienberger and Romolo Marcelli	Microwave Characterization of Magnetic Materials Using Scanning Microwave Microscopy Technique

173	Chafic Abu Antoun, Christoph Würsch, Christian Köchli and Yves Perriard	Smart self-calibrated metal detector, simulated, designed, verified, and used to discriminate single and multiple materials
201	S. Ventre, A. Vento, F. Caire, N. Le Lostec, A. Maffucci, G. Rubinacci, B. Sartre and A. Tamburrino	Coil Array design for real-time Eddy Current Tomography
205	M. d'Aquino, S. Minucci, C. Petrarca, G. Rubinacci, A. Tamburrino, S. Ventre	On the experimental validation of a numerical model of a magnetic probe for material characterization

### **Optimization and inverse problems**

**Chair: Alessandro Salvini**

<b>ID</b>	<b>Authors</b>	<b>Title</b>
Invited	Jens Haueisen	Defect reconstruction approaches in Lorenz Force Evaluation
129	Salvatore Coco, Antonino Laudani, Gabriele Maria Lozito and Giuseppe Pollicino	FE Evaluation of Equivalent Permeability of Magnetic Shielding Mortars
209	Ermanno Cardelli, Antonio Faba, Antonino Laudani, Tetsuji Matsuo, Francesco Riganti Fulginei and Alessandro Salvini	Experimental Identification of a Neural Network Model of a Non Grain Oriented Steel
219	Andrea G. Chiariello, Alessandro Formisano, Francesco Ledda, Raffaele Martone, Francesco Pizzo	An Iterative Combinatorial Scheme for Magnets Shape Optimization
220	Ermanno Cardelli, Antonio Faba, Antonino Laudani, Francesco Riganti Fulginei and Alessandro Salvini	A FEM-Neural approach for the simulation of a round rotational single sheet tester