

LISTA DE LUCRĂRI
Conf.dr.ing. Gabriela Ciuprina
14 octombrie 2013

A – Teza de doctorat

Titlu: *Studiul campului electromagnetic in medii neliniare – contributi privind optimizarea dispozitivelor electromagnetice.*

Conducător: Prof.dr.doc.ing. Constantin Mocanu, Universitatea Politehnica Bucuresti

An: 1999

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B – Carti si capitole in carti

Carti

1. **G. Ciuprina**, D. Ioan (**editori**), *Scientific Computing in Electrical Engineering*, in the Book series Mathematics in Industry, vol. 11, 464 pages, Springer, 2007, ISBN 978-3-540-71979-3. <http://www.springer.com/math/cse/book/978-3-540-71979-3>
2. **G. Ciuprina**, D.Ioan, I.Munteanu, M.Rebican, R.Popa, *Optimizarea numerica a dispozitivelor electromagnetice*, (207 pagini), ISBN 973-652-465-5 Editura Printech, ianuarie 2002. <http://www.lmn.pub.ro/~gabriela/books/opt2002>
3. Irina Munteanu, **Gabriela Ciuprina**, F.M.G.Tomescu, *Modelarea numerica a campului electromagnetic prin programe Scilab*, Editura Printech, Bucuresti, Romania, 2000 (140 pagini), ISBN 973-652-000-5. <http://www.lmn.pub.ro/~gabriela/books/mnce2000.pdf>
4. D.Ioan, I.Munteanu, B.Ionescu, M.Popescu, R.Popa, M.Lazarescu, **G.Ciuprina**, *Metode numerice in ingineria electrica*, Editura MATRIX-ROM, Bucuresti, 1998 (326 pagini), ISBN 973-9390-04-8

Capitole in carti¹

1. **Gabriela Ciuprina**, Cosmin Bogdan Dita, Mihai Iulian Andrei, and Daniel Ioan *Hierarchical Sparse Circuits for the Modeling of Homogeneous Domains in High Frequency ICs*, pp.181-188, Politehnica Press, 2012.
2. Daniel Ioan, **Gabriela Ciuprina**, Alexandru Lazar, *Substrate Modelling Based on Hierarchical Sparse Circuits*, Springer Series on Mathematics in Industry, Volume 16, pp. 143-152 Springer, 2012 (Michielsen, Bastiaan; Poirier, Jean-René (Eds.)) , ISBN 978-3-642-22453-9.
<http://www.springer.com/mathematics/applications/book/978-3-642-22452-2>
3. **Gabriela Ciuprina**, Alexandra Ștefănescu, Daniel Ioan, *Frequency dependent parametric models for transmission line structures*, Computer field models of electromagnetic devices (S. Wiak, E. Napieralska-Juszczak Eds), pp.618-625, IOS Press, 2010. ISBN 978-1-60750-603-4
<http://www.booksonline.iospress.nl/Content/View.aspx?piid=18760>
4. **Gabriela Ciuprina**, Daniel Ioan, Diana Mihalache, and Ehrenfried Seebacher, *Domain Partitioning Based Parametric Models for Passive On-chip Components*, Mathematics in Industry, 1, Volume 14, Scientific Computing in Electrical Engineering, SCEE 2008, Part 1, Pages 37-44, Springer, 2010, ISBN 978-3-642-12293-4. <http://www.springer.com/engineering/book/978-3-642-12293-4>, ISI
5. Alexandra Stefanescu, Daniel Ioan, and **Gabriela Ciuprina**, *Parametric Models of Transmission Lines Based on First Order Sensitivities*, Mathematics in Industry, 1, Volume 14, Scientific Computing in Electrical Engineering, SCEE 2008, Part 1, Pages 29-36, Springer, 2010, ISBN 978-3-642-12293-4.
<http://www.springer.com/engineering/book/978-3-642-12293-4>, ISI
6. **Gabriela Ciuprina**, *Scientific Computing in Electrical Engineering SCEE 2008 Introduction to Part I*, Mathematics in Industry, 1, Volume 14, Scientific Computing in Electrical Engineering, SCEE 2008, Part 1, Pages 5-8, Springer, 2010, ISBN 978-3-642-12293-4.
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7. **Gabriela Ciuprina**, Daniel Ioan, Dragos Niculae, Jorge Fernández Villena and Luis Miguel Silveira, *Parametric Models Based on Sensitivity Analysis for Passive Components*, Book chapter in the book Intelligent Computer Techniques in Applied Electromagnetics, in the book series Studies in Computational Intelligence, Springer Berlin / Heidelberg, vol. 119, ISBN 978-3-540-78489-0,

¹ Am considerat capitole in carti si publicatiile care se regasesc in bazele de date internationale (Springer sau IOS Press) ca fiind "book chapter". Unele dintre ele se regasesc si in baza de date ISI. Pentru a evita dublurile, le-am marcat aici ca fiind ISI si nu le-am mai trecut la capitolul C.

- pp. 231-239, 2008, <http://www.springer.com/engineering/book/978-3-540-78489-0>, **ISI**
8. D. Ioan and **G. Ciuprina**, *Reduced Order Models of On-chip Passive Components and Interconnects, Workbench and Test Structures*, Book chapter in the book Model Order Reduction: Theory, Research Aspects and Applications (W.H.A. Schilders, H.A. van der Vorst, J. Rommes, Eds.), in the book series Mathematics in Industry, Springer-Verlag, Heidelberg, ISBN: 978-3-540-78840-9 vol. 13, pp.447-467, 2008. <http://www.springer.com/math/cse/book/978-3-540-78840-9>
 9. **G. Ciuprina**, D. Ioan and D. Mihalache, *Reduced Order Electromagnetic Models based on dual Finite Integrals Technique*, Book chapter in the book Scientific Computing in Electrical Engineering, in the book series Mathematics in Industry (G. Ciuprina, D. Ioan Eds), ISBN 978-3-540-71979-3, Vol. 11, pp. 287-294, Springer, 2007, <http://www.springer.com/math/cse/book/978-3-540-71979-3>, **ISI**
 10. D. Ioan, **Gabriela Ciuprina**, M. Radulescu, Algebraic Sparsefied Partial Equivalent Circuit (ASPEEC), Book chapter in the book Scientific Computing in Electrical Engineering (M. A. Anile et al Eds), in the book series Mathematics in Industry Springer, Vol. 9, ISBN 978-3-540-32861-2, pp 45-50, 2006, <http://www.springer.com/math/cse/book/978-3-540-32861-2>, **ISI**
 11. Daniel Ioan, Marius Radulescu, **Gabriela Ciuprina**, *Fast Extraction of Static Electric Parameters with Accuracy Control*, Scientific Computing in Electrical Engineering (W.H.A.Schilders et al Eds), in the Book Series Mathematics in Industry, vol.4, pp.248-256, Springer, 2004. ISBN: 978-3-540-21372-7, <http://www.springer.com/math/cse/book/978-3-540-21372-7>
 12. **Gabriela Ciuprina**, Daniel Ioan, *Distributed Evolutionary Strategies for Electromagnetic Devices Optimization*, Applied Electromagnetics and Mechanical Systems, pp.386-391, Japan Society of Applied Electromagnetics and Mechanics, Tokyo, 1999. ISBN, 4931455077
 13. D.Ioan, M.Rebican, **G.Ciuprina**, P.J.Leonard, 3D FEM Model of a FLUXSET Sensor, Electromagnetic Nondesctructive Evaluation (II),Vol 14, pp.152-159, R.Albanese, G.Rubinaci, T.Takagi, S.S.Udpa (Eds), IOS Press, Amsterdam, 1998, ISBN 978-90-5199-375-2, <http://www.iospress.nl/loadtop/load.php?isbn=9789051993752>, **ISI**

Indrumare de laborator

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2. D. Ioan, I. Munteanu, B. Ionescu, M. Popescu, R. Popa, M. Lazarescu, **G. Ciuprina**, *Metode numerice - indrumar de laborator*, litografia UPB, 1995.

C – Lucrari indexate ISI/BDI

Reviste ISI/BDI

1. **Gabriela Ciuprina**, Daniel Ioan, Ioan Alexandru Lazar, Cosmin Bogdan Dita, *Vector Fitting Based Adaptive Frequency Sampling for Compact Model Extraction on HPC Systems*, IEEE Transactions on Magnetics, vol.48, no.2, pp.431-434, 2012, ISSN 0018-9464, <http://ieeexplore.ieee.org/xpl/articleDetails.jsp?arnumber=6136613>
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4. **Gabriela Ciuprina**, Daniel Ioan, Diana Mihalache, Alexandra Stefanescu, *The Electromagnetic Circuit Element – the Key of Modelling EM Coupled Integrated Components*, Revue Roumaine des Sciences Techniques – Electrotechnique et Energetique, vol. 54, no.1 pp. 37-46, 2009. <http://revue.elth.pub.ro/upload/186681GCiuprina04.pdf>
5. D. Ioan, **G. Ciuprina**, L.M. Silveria, *Effective Domain Partitioning With Electric and Magnetic Hooks*, IEEE Transactions on Magnetics, Vol. 45, no. 3, pp. 1328-1331, 2009. ISSN: 0018-9464, http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=4787316
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8. Daniel Ioan, **Gabriela Ciuprina**, Marius Radulescu, *Absorbing boundary conditions for Compact Modeling of On-chip Passive Structures*, COMPEL: The International Journal for Computation and Mathematics in Electrical and Electronic Engineering, vol. 25, no. 3, pp. 652-659, 2006. ISSN: 0332-1649, <http://www.emeraldinsight.com/10.1108/03321640610666817>
9. D. Ioan, **G. Ciuprina**, M. Radulescu and E. Seebacher, *Compact Modeling and Fast Simulation of On-Chip Interconnect Lines*, IEEE Transactions of Magnetics, vol. 42, no. 4, pp 547-550, 2006. ISSN: 0018-9464, http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=1608264
10. Peter Meuris, **Gabriela Ciuprina** and Ehrenfried Seebacher, *High Frequency Simulations and Compact Models compared with measurements for passive on-chip components*, International Journal of Numerical Modelling: Electronic Networks, Devices and Fields, vol. 18, no. 3, pp. 189-201, John Wiley, 2005, <http://onlinelibrary.wiley.com/doi/10.1002/jnm.569/pdf>
11. **Gabriela Ciuprina**, Daniel Ioan, Irina Munteanu, *Use of Intelligent-Particle Swarm Optimization in Electromagnetics*, IEEE Transactions on Magnetics, vol. 38, no. 2, pp. 1037-1040, 2002. ISSN: 0018-9464, http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=996266
12. Daniel Ioan, **Gabriela Ciuprina**, Catalin Ciobotaru, *Hybrid and Concurrent Algorithms for Nonlinear Magnetic Field Problems*, IEEE Transactions on Magnetics, vol. 36, no.4, pp. 1553-1556, 2000. ISSN: 0018-9464, http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=877735
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15. D.Ioan, **G.Ciuprina**, C.Dumitrescu, *Use of Stochastic Algorithms for Distributed Architectures in the Optimization of Electromagnetic Devices*, IEEE Transactions on Magnetics, vol. 34, no.5, pp. 3000-3003, 1998. ISSN: 0018-9464, http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=717701

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2. Mihail-Iulian ANDREI; Cosmin-Bogdan DITA; **Gabriela CIUPRINA**; Daniel IOAN. Effective Modeling of HF Integrated Components with Domain Partitioning and Order Reduction. Proceedings of the 8th International Symposium on Advanced Topics in Electrical Engineering, May 23-25, 2013, Bucharest, Romania, 4 pages. IEEE catalog no CFP1314P-CDR , ISBN 978-1-4673-5978-8, **ISI** (and IEEEExplore). http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=6563446
3. O. Tolga ALTINOZ; A. Egemen YILMAZ; **Gabriela CIUPRINA** A Multiobjective Optimization Approach via Systematical Modification of the Desirability Function Shapes Proceedings of the 8th International Symposium on Advanced Topics in Electrical Engineering, May 23-25, 2013, Bucharest, Romania, 6 pages, IEEE catalog no CFP1314P-CDR , ISBN 978-1-4673-5978-8, **ISI** (and IEEEExplore) http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=6563481
4. O. Tolga ALTINOZ; A. Egemen YILMAZ; **Gabriela CIUPRINA** Impact of Problem Dimension on the Execution Time of Parallel Particle Swarm Optimization Implementation. Proceedings of the 8th International Symposium on Advanced Topics in Electrical Engineering, May 23-25, 2013, Bucharest, Romania, 6 pages. ISSN IEEE catalog no CFP1314P-CDR , ISBN 978-1-4673-5978-8 , **ISI** (and IEEEExplore) http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=6563482
5. Daniel Ioan, **Gabriela Ciuprina**, Cosmin-Bogdan Dita, Mihail-Iulian Andrei, Electromagnetic Models of Integrated Circuits with Coupled Magnetic Circuits, Proceedings of the International Conference on Electromagnetics in Advanced Applications (ICEAA 2012), Sept. 2-7, Cape Town, South Africa, pp.768-771. <http://www.iceaa-offshore.org/> <http://ieeexplore.ieee.org/xpl/articleDetails.jsp?arnumber=6328732>
6. **Gabriela Ciuprina**, Daniel Ioan - *Efficient Modeling of Homogenous Layers in High Frequency Integrated Circuits*, Proceedings of the 7th International Symposium on Advanced Topics in Electrical Engineering, May 12-14, 2011, Bucharest, Romania, pp. 19-24. ISSN 2068-7966, BDI (IEEEExplore) http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=5952144
7. Ioan-Alexandru Lazar, Mihail-Iulian Andrei, Emanuela Caciulan, **Gabriela Ciuprina**, Daniel Ioan, *Parallel Algorithms for the Efficient Extraction of*

Fitting Based Reduced Order Models, Proceedings of the 7th International Symposium on Advanced Topics in Electrical Engineering, May 12-14, 2011, Bucharest, Romania, pp. 385-390. ISSN 2068-7966, BDI (IEEEExplore) http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=5952147

8. Jorge Fernández Villena, **Gabriela Ciuprina**, Daniel Ioan, Luis Miguel Silveira, *On the Efficient Reduction of Complete EM based Parametric Models*, Design Automation and Test in Europe, DATE 2009, Acropolis, Nice, France, 20-24 April 2009, pp. 1172 - 1177, Book Series: Design Automation and Test in Europe Conference and Expo, ISSN: 1530-1591, ISBN: 978-1-4244-3781-8
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9. Niehof, H.H.J.M. Janssen, W.H.A. Schilders, W. Schoenmaker, Daniel Ioan, **Gabriela Ciuprina** and W. Pflanzl, *Domain decomposition via electromagnetic hooks for the modelling of electromagnetic effects of complete RF blocks*, IEEE Workshop on signal propagation on interconnects, pp. 64-67, 2008. ISBN: 978-1-4244-2317-0,
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10. A. Stefanescu, **G. Ciuprina** and D. Ioan, *Models for variability of transmission line structures*, IEEE Workshop on signal propagation on interconnects, pp. 232-235, 2008. ISBN: 978-1-4244-2317-0,
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11. D. Ioan, **G. Ciuprina** and S. Kula, *Reduced order models for HF interconnect over lossy semiconductor substrate*, IEEE Workshop on signal propagation on interconnects, pp. 233-236, 2007. ISBN: 978-1-4244-1223-5,
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12. Daniel Ioan, **Gabriela Ciuprina** and Marius Radulescu, *Theorems of Parameter Variations Applied for the Extraction of Compact Models of On-chips Passive Structures*, Proceedings of the International Symposium on Signals, Circuits and Systems, ISSCS 2005, Iasi, Romania, vol.1, pp.147-150, 2005. ISBN: 0-7803-9029-6,
http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=1509872

D – Lucrari publicate in reviste si volume de conferinte cu referenti (neindexate)

Reviste

1. Aurel-Sorin Lup and **Gabriela Ciuprina**, Analysis of membrane perforations on the RF behavior of capacitive MEMS switches, Acta Electrotehnica, ISSN 1841-3323 vol. 54, no.5, pp. 252-255, 2013. – CNCSIS categoria B+

2. Iulian Andrei, Emanuela Caciulan, Daniel Dan, **Gabriela Ciuprina**, Daniel Ioan, *Matlab Based Parallel Deterministic Optimization of the Loney's Solenoid*, Acta Electrotehnica, ISSN 1841-3323, vol. 51, no. 5, pp. 9-14, 2010. – CNCSIS categoria B+
3. Daniel Ioan, **Gabriela Ciuprina**, Wil Schilders, Wim Schoenmaker, Michele Stucchi, Ehrenfried Seebacher, Daniel De Zutter, Joseph Maubach, *Compact Modeling of Passive on-chip Components - European Research Project FP5/IST/CODESTAR*, Revue Roumaine des Sciences Technique - Electrotechnique et Energetique, vol. 51, no. 3, pp. 303-310, 2006.
4. Daniel Ioan, **Gabriela Ciuprina**, *Improved Algorithms for Solving Nonlinear Equations of the Magnetic Field*, Revue Roumaine des Sciences Technique - Electrotechnique et Energetique, vol. 48, no.2-3, pp. 209-220, 2003.
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6. G.Atanasiu, P.Brad, D.Ioan, **G.Ciuprina**, *Air Gap magnetic permeance estimation for a switched reluctance motor*, Revue Roumaine des Sciences Technique - Electrotechnique et Energetique, vol. 43, no.3, pp. 385-390, 1998.

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1. **Gabriela Ciuprina**, Daniel Ioan, Cosmin Bogdan Dita, Mihail Iulian Andrei, Frequency Parameterized Models for Planar On-chip Inductors, Proceedings of the International Conference on Scientific Computing in Electrical Engineering (SCEE 2012), Sept 11-14, Zurich, Switzerland, pp.143-144. <http://scee2012.ethz.ch/>
2. **Gabriela Ciuprina**, Daniel Ioan, Cosmin Bogdan Dita, Mihail Iulian Andrei, Optimal Terminals Identification for Domain Partitioning of Electro-Magnetic Circuit Elements, Proceedings of the XII International Workshop on Optimization and Inverse problems in Electromagneticsm (OIPE 2012), Sept 19-21, Ghent, Belgium, 2012, pp.182-183. <http://www.oipe2012.com/>
3. **Gabriela Ciuprina**, Aurel Sorin Lup, Alina Tomescu, Parametri S in aplicatiile de inalta frecventa. Revista Lucrările Simpozionului Național de Electrotehnică Teoretică (SNET 2012), cod identificare ISSN 2067-4147 (online), pp.216-221
4. **Gabriela Ciuprina**, Daniel Ioan, Ioan-Alexandru Lazar, Iulian Andrei, *Adaptive Frequency Sampling for the Effective Extraction of Reduced Order*

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6. **Gabriela Ciuprina**, Alexandra Ștefănescu, Daniel Ioan and Radu Popescu *Extraction of reduced parametric circuit models for passive on-chip components*, 6th Japanese-Mediterranean Workshop on Applied Electromagnetic Engineering for Magnetic, Superconducting and Nano Materials, JAPMED6, Politehnica University of Bucharest, Romania, July27-29, 2009, pp.101-102.
7. **Gabriela Ciuprina** and Daniel Ioan, *Importance of the Terminal Excitation Type on System Representation for Model Order Reduction Procedures*, 6th Symposium on Advanced Techniques in Electrical Engineering, ATEE 08, Bucuresti, pp. 121-125, 2008. ISBN 978-606-521-137-7
8. **Gabriela Ciuprina**, *From interconnected circuits to interconnected systems: the importance of a correct excitation* , prezentare la Symposium on Recent Advances in Model Order Reduction, 23 Nov. 2007, Centre for Analysis, Scientific Computing and Applications (CASA), Eindhoven University of Technology, available at <http://www.win.tue.nl/casa/meetings/special/mor07/>
9. Daniel Ioan, **Gabriela Ciuprina** , *Parametric Models for Electromagnetic Field Systems Related to Passive Integrated Components*, PIERS 2007, Beijing, China, 26-30 March, 2007, pp.1497-1501
10. **G. Ciuprina**, *Course on Model Order Reduction, Introduction to Matlab ROM workbench, Hands-on experience with ROM workbench* , April 10-12, 2006. prezentare la Centre for Analysis, Scientific Computing and Applications (CASA), Eindhoven University of Technology, disponibilă la <http://www.win.tue.nl/casa/meetings/special/mor07/mor/>
11. Daniel Ioan, **Gabriela Ciuprina**, *Very Fast Simulation Strategy (VFSS) developed by PUB/LMN team within the CODESTAR project*, Symposium on Advanced Topics in Electrical Engineering (ATEE) – Workshop on Compact Modelling of ON-chip Passive Structures at High Frequencies, 6 pages, Bucharest, 2004.
12. **Gabriela Ciuprina**, Daniel Ioan, *ALLROM strategy for Order Reduction on On-Chip Passive Structures at High Frequencies*, Symposium on Advanced Topics in Electrical Engineering (ATEE) – Workshop on Compact Modelling of ON-chip Passive Structures at High Frequencies, 6 pages, Bucharest, 2004.

13. Melinda Mandruta, **Gabriela Ciuprina**, Daniel Ioan, Peter Meuris, *Reduced-Order Macromodel Extracted from the Frequency Domain Simulator of Passive On-Chip Components*, Symposium on Advanced Topics in Electrical Engineering (ATEE) – Workshop on Compact Modelling of ON-chip Passive Structures at High Frequencies, 4 pages, Bucharest, 2004.
14. Diana Mihalache, **Gabriela Ciuprina**, Daniel Ioan, *Codestar Benchmarks Structures: Comparison between Measurements and Simulations*, Symposium on Advanced Topics in Electrical Engineering (ATEE) – Workshop on Compact Modelling of ON-chip Passive Structures at High Frequencies, 6 pages, Bucharest, 2004.
15. Anca Tomescu, Sorin Antoniu, **Gabriela Ciuprina**, Stefan Coller, *Integrated Magnetically Actuated Microrelay*, Symposium on Advanced Topics in Electrical Engineering (ATEE), pp. 163-167 , Bucharest, 2004.
16. Anca Tomescu, Sorin Antoniu, **Gabriela Ciuprina**, Petru Gabriel Taflan, *Electrostatic Angular Microactuator*, Symposium on Advanced Topics in Electrical Engineering (ATEE), pp. 201-206 , Bucharest, 2004.
17. Florin Ciuprina, **Gabriela Ciuprina**, and Daniel Ioan, *Error Estimation in the Numerical Analysis of a Nonlinear Inductor* – Proceedings of the International Aegean Conference on Electrical Machines and Power Electronics, ACEMP'01, pp.613-619, Kusadasi, Turkey, 2001
18. **Gabriela Ciuprina** and Daniel Ioan, *Evolutionary strategies used in optimisation of electromagnetic field devices*, Proceedings of the 7th International Conference on Optimization of Electrical and Electronic Equipments, OPTIM 2000, 4 pages, Brasov, Romania, 2000.
19. Daniel Ioan, **Gabriela Ciuprina**, Suzana Stanescu, Mihai Rebican, *HPC Techniques used in Electromagnetic Field Numerical Computation*. Proceedings of 12th International Conference on Control System and Computer Science, CSCS-12, vol.II, pp.177-182, Bucharest, Romania, 1999.
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21. **Gabriela Ciuprina**, Suzana Stanescu, Daniel Ioan, *Efficiency and Accuracy of Field Evaluation in TEAM Problem No. 25*, Proceedings of the TEAM Workshop, 8th Round, Graz, Austria, pp. 581-584, 1998.
22. **Gabriela Ciuprina**, Daniel Ioan, *TEAM Problem 22 Solved by a Distributed Stochastic-Deterministic Algorithm with Accuracy Control*, Proceedings of the TEAM Workshop, 7th Round, Tucson, Arizona, pp.2-4, 1998.

23. **Gabriela Ciuprina**, Suzana Stanescu, Daniel Ioan, *Efficiency and Accuracy in the Optimization of a Die Press Model*, Symposium on Advanced Topics in Electrical Engineering (ATEE), pp. 49-53, Bucharest, 1998.
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25. **G.Ciuprina**, D.Ioan, P.J.Leonard, D.Rodger, *Solution of TEAM Problem no.21*, Proceedings of TEAM Workshop, Graz, Austria, pp 17-19, 1996.
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E – Brevete - n/a

F – Contracte (cele mai importante din ultimii 10 ani)

1. Cercetator: **CODESTAR** - *Compact modeling of on-chip passive structures at high frequencies*, FP5-IST, Area: Microelectronics technologies: processes, equipment and devices, Contract no:34058, 2002-2004
<http://www.magwel.com/codestar/>

Acest proiect de cercetare a fost dedicat modelarii componentelor pasive integrate ce functioneaza la frecvente inalte. Proiectul a fost ghidat de principiul "More Moore" definit in Platforma Tehnologica PT5 - Nano-electronica (ENIAC). Pe masura ce viteza semnalelor creste simultan cu micșorarea dimensiunilor in circuitele integrate digitale moderne (VLSI), modelarea corecta a componentelor de pe cipuri si a interconexiunilor a devenit din ce in ce mai importanta. La frecvente inalte, un model de circuit integrat trebuie sa fie obtinut din simularea electromagnetica a partilor sale constitutive. Un astfel de model este urias, avand un numar de grade de libertate care poate atinge si ordinul milioanei. De aceea trebuie aplicate proceduri de reducere a ordinului care transforma un model cu un numar foarte mare de grade de libertate intr-unul mult mai mic, echivalent intr-o masura mai mare sau mai mica cu modelul initial, permitand insa o simulare rapida. Principala mea activitate in cadrul acestui proiect a constat in dezvoltarea unei platforme software numita ROMWorkbench (RWB). Platforma RWB consta intr-un set de probleme de test, un set de metode de reducere a ordinului (bazate pe abordari de tip Krylov, Laguerre, interpolare sau metode combinate) si criterii pentru evaluarea rezultatelor si comparatie. Chiar daca aceea a fost un instrument pentru realizarea de prototipuri, a fost

folosit si in scop educational (a se vedea de exemplu cursul MOR <http://www.win.tue.nl/casa/meetings/special/mor/> tinut in 2006, unde am avut o prelegere/demonstratie invitata).

2. Cercetator: **CHAMELEON RF** *Comprehensive High-Accuracy Modelling of Electromagnetic Effects in Complete Nanoscale RF Blocks*, FP6-IST, Area: Nanoelectronics, Contract no: 027378, 2005-2008. <http://www.hitech-projects.com/euprojects/chameleon%20RF/>

Proiect de cercetare dedicat modelarii complete cu acuratete ridicata a efectelor electromagnetice din nano-blocurile circuitelor integrate de radio-frecventa. Acest proiect a continuat cercetarea desfasurata in proiectul CODESTAR. In blocurile de radio-frecventa, componentele pasive si cele active nu mai pot fi tratate in mod izolat. Blocurile de RF trebuie considerate ca o singura entitate, si trebuie tratate ca atare de instrumentele de proiectare automata. In acel moment nu era posibil sa se faca analiza blocurile complete de RF. De aceea proiectul a urmarit dezvoltarea unei metodologii si a unor instrumente software prototip care sa porneasca de la descrierea layout-ului unui bloc functional tipic care sa functioneze la frecvente de pana la 60 GHz si sa le transforme in modele suficient de precise, care sa ia in considerare si variabilitatea. Principala mea responsabilitate a constat in extinderea platformei RWB cu trasaturi care sa ia in considerare parametrizarea. Aceasta a necesitat de asemenea proceduri adecvate pentru modelarea campului electromagnetic tinand cont de parametrizare.

3. Cercetator - *Metodologii si instrumente pentru proiectarea nano-electronica automata* - **nEDA**, CEEX – Modul I, nr 03 / 06.10.2005, <http://neda.lmn.pub.ro/>, 2005-2008

Proiectul complex nEDA a avut o serie de obiective cu caracter științific, tehnic, economic și social, toate în acord cu obiectivele platformei PT5, ale programului național CEEX, dar și cu strategiile programelor cadru europene de cercetare, strategia națională în domeniu și a instituțiilor participante. Din punct de vedere științific, obiectivul principal dorit și atins a constat in dezvoltarea teoriilor, metodelor, tehnicilor și modelelor necesare realizării noii generații de instrumente de proiectare electronică automată in industria nanoelectronica (in acord cu cerintele platformei tehnologice europene ENIAC). S-au avut în vedere mai ales instrumentele software de verificare fizică, a integrității semnalelor, de extragere a parametrilor concentrați (R, L, C), dar și de aproximare finită a elementelor cu parametri distribuiți prin modelare electromagnetice și reducerea ordinului, precum și instrumentele de optimizare.

4. Director de proiect - *Promovarea participării la programele europene de cercetare a comunității științifice naționale implicată în domeniul calculului științific în ingineria electrică* - **proSCEE**, CEEEX – Modul III, nr 261 / 01.08.2006, <http://proscee.lmn.pub.ro/>, 2006-2008

Obiectivul principal al acestui proiect a fost creșterea vizibilității internaționale a comunității științifice românești din universități și institute de cercetare, implicată în domeniul calculului științific în ingineria electrică, domeniu abreviat pe plan internațional cu sigla SCEE (Scientific Computing in Electrical Engineering), prin promovarea participării la programele europene de cercetare a comunității științifice naționale. În acest scop, proiectul a susținut activități de sprijin pentru dezvoltarea parteneriatului dintre echipele românești și cele cu preocupări similare din spațiul european. În cadrul acestui proiect am organizat în România, a șasea ediție a conferinței internaționale Scientific Computing in Electrical Engineering SCEE 2006 (<http://www.lmn.pub.ro/~scee>), la care au fost invitați participanți de înalt prestigiu din comunitatea științifică recunoscută pe plan internațional. Rezultatul acestei conferințe a fost publicarea unui volum de lucrări la prestigioasa editură Springer, disponibil la <http://www.springer.com/math/cse/book/978-3-540-71979-3>

5. Director de proiect - *Instrumente software avansate pentru modelarea câmpului electromagnetic în blocurile de radio-frecvență* - **STAR**, CNCIS (UEFISCSU) nr 609 / 16.01.2009, <http://idei.lmn.pub.ro/star/>, 2009-2011

Acest proiect a completat proiectul de cercetare FP6/IST/CHAMELEON-RF obiectivele principale țintite fiind modelarea cuplajului electromagnetic dintre componentele integrate prin intermediul interconectorilor electrici și magnetici, concepte noi la nivel mondial; dezvoltarea unor instrumente care să permită extragerea automată a modelelor parametrice, o cerință a proiectanților impusă de creșterea variabilității noilor tehnologii nano-electronice; o metodologie ierarhică de modelare bazată pe descompunerea în domenii, care să fie capabilă să facă față complexității noilor aplicații.

6. Director de proiect - *Instrumente avansate și metodologii pentru modelarea multifizică și simularea microcomutatoarelor de radio-frecvență* - **ToMeMS**, (PN-II-PT-PCCA-2011-3.1-0842)nr 5 / 03.07.2012, <http://mems.lmn.pub.ro>, 2012-2015 - în curs de desfășurare