

## LISTA DE LUCRARI ȘTIINȚIFICE

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Catedra de Electrotehnică și mașini electrice

### I. Cărți (manuale, monografii, tratate, îndrumare etc.) publicate în țară, la edituri recunoscute CNCSIS

1. *Mașini asincrone bifazate*, L. LIVADARU, AL. SIMION, Ed. Junimea, IAȘI, 2003, 134 pag., ISBN 973-37-0880-1.

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1. *Mathematical Model of the Three-Phase Induction Machine for the Study of Steady-State and Transient Duty Under Balanced and Unbalanced States*, AL. SIMION, L. LIVADARU, A. MUNTEANU, Book Chapter “Induction Motors – Modelling and Control”, Edited by Rui Esteves Araújo, InTech, Rijeka, Croatia, 2012, p.(3-44), 546pag., ISBN 978-953-51-0843-6, available on <http://dx.doi.org/10.5772/2498>
2. *Soluții de proiectare integrată a mașinilor electrice în scopul utilizării raționale a resurselor naturale și artificiale*, N. VASILE, I. VNCOLĂ, L. MELCESCU, M. RĂDULESCU, AL. SIMION, M. CHEFNEUX, L. LIVADARU, Ed. CIT-TE ICPE, BUCUREȘTI, 2008, 162 pag., ISBN 978-973-7728-84-5.
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### III. Lucrări științifice publicate în reviste cotate ISI

1. Study on the Fault-Tolerance Concept of the Five-Phase Permanent magnet Synchronous Generator  
L. LIVADARU, A. MUNTEANU, AL. SIMION, B. VIRLAN, S. BENELGHALI  
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2. Induction Motor with Outer Rotor and Ring Stator Winding for Multispeed Applications  
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3. Study of the Three-Phase Induction Machine under Dynamic Braking  
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4. Dual Cage High Power Induction Motor with Direct Start-up. Design and FEM Analysis  
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5. Study of a Direct Current (DC) Machine Used on Automotive Low Environmental Impact Applications  
R. HANGANU, A. MUNTEANU, AL. SIMION, L. LIVADARU, A. MALANCIUC, B. ANGHEL  
Environmental Engineering and Management Journal, Vol. 11, No. 9, p. (1725-1729), Sept. 2012, ISSN 1582-9596 (ImpactFactor-1.004)
6. FEM-based Analysis of a Hybrid Synchronous Generator with Skewed Stator Slots  
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Advances in Electrical and Computer Engineering, Vol. 11, Iss. 4, p. (9-14), nov. 2011, ISSN 1582-7445
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S. MIHAI, AL. SIMION, L. LIVADARU, A. MUNTEANU  
Advances in Electrical and Computer Engineering, Vol. 11, Iss. 2, p. (113-118), may 2011, ISSN 1582-7445
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Cojan M., Simion Al., Livadaru L., Domnişoru C.  
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#### IV. Lucrări științifice indexate în baze de date BDI si ISI Web of Knowledge

1. Comparative Finite Element Analysis of Two PM Fractional Slot Machines with 9/8 and 9/10 Structure  
M. BODEA, AL. SIMION, L. LIVADARU, A. MUNTEANU, B. VÎRLAN  
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2. Design and Finite Element Analysis of High-Density Torque Induction Motor for Traction Applications  
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*Database: IEEE XPLORE, DOI:10.1109/ICEPE.2014.6969916, ISI Web of Knowledge*
4. Special Three-Phase to Multiple Different Polyphase Systems Electric Transformer  
A. MUNTEANU, AL. SIMION, D. HAGIANU, L. LIVADARU, D. BIDEI  
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5. Coupled Software Analysis of a 9/10 Poles BLDC Machine  
F. LAZAR, AL. SIMION, L. LIVADARU, Andreea ZBANTȚ  
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6. F.E.M. Analysis of a 3 kW Line-Start Permanent Magnet Synchronous Machine  
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*Database: IEEE XPLORE, DOI: 10.1109/OPTIM.2014.6850954*
8. Study of a Skewed Rotor Cage Synchronous Reluctance Motor using Finite Element Analysis  
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  10. The Control of a 6/4 Switched Reluctance Motor by means of a DC Voltage Supply with DC High Voltage Intermediary Circuit  
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  12. Design and FEM Analysis of Five-Phase Permanent Magnet Generators for Gearless Small-Scale Wind Turbines  
A.M. MIHAI, S. BENELGHALI, AL. SIMION, R. OUTBIB, L. LIVADARU  
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  14. FEM Analysis upon Significance of Different Permanent Magnet Types Used in a Five-Phase PM Generator for Gearless Small-Scale Wind  
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  15. Sinusoidal Control of a 6/4 Variable Reluctance Machine without Rotor Position Sensor  
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  16. Modeling and Simulation of an Axial Field Single-Pole Single-Phase Switched Reluctance

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17. FEM Analysis of a Low Speed Permanent Magnet Synchronous Machine with External Rotor for a Wind Generator  
S. VLASCEANU, AL. SIMION, L. LIVADARU, N.D. IRIMIA, F. LAZAR  
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18. Dual FEM-Simulink Analysis of Induction Motor Operating under Unbalanced State  
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19. The Induction Machine with Ring Stator Winding as a Possible Solution for Speed Regulation  
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20. Mathematical Model of the Reversing Two-Phase Induction Machine  
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21. Performance Analysis of a Hybrid Synchronous Machine under Generating and Motoring Duty  
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23. Considerations on the Experimental Performance Developed by a Hybrid Synchronous Motor  
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26. Performance analysis of a two-phase induction motor with salient stator poles and radial  
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2. Comparative analysis on two models of reluctance motor  
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## VI. Lucrări științifice publicate în reviste din țară, recunoscute CNCSIS

1. Comparative FEM-based Analysis of Multiphase Induction Motors  
L. LIVADARU, C. NUȚESCU, A. MUNTEANU, Al. SIMION, M. COJAN  
*Analele Universității « Eftimie Murgu »*, Nr.2/2014 (B+), p.(223-230), ISSN 1453-7397
2. Rotor Pole Pitch Factor Influence on the Operation Parameters of a 9/10 Pole Permanent Magnet Synchronous Machine  
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5. Comparative Study Based on FEM Analysis Between Squirrel Cage and Wound Rotor of a Three-Phase Induction Motor  
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8. Study of induction machine under transient duty and steady-state as synchronized machine  
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9. Two-phase induction machine with toroidal winding and improved performance  
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10. Control of a 6/4 switched reluctance generator using two different voltage sources  
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  11. FEM analysis of a motor-generator assembly for a hybrid electric vehicle  
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  12. Influence of permanent magnets design over the performance of axial flux synchronous motors  
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  13. Design and FEM-based simulation of a high-power induction motor with severe start-up constraints  
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17. Experimental evaluation of the neutral line at D.C. machines

Al. SIMION, L. LIVADARU, M. COJAN, S. CĂLUGĂREANU

Proceedings of the international workshop ELECTRICAL MACHINE'S PARAMETERS, 26 May, 2001, Cluj, p.(63-68).

18. Benefits in didactic field determined by the TEMPUS project carried on the Technical University of Iași

Al. SIMION, L. LIVADARU

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19. FEM analysis – Helpful tool in teaching the design of electrical machines

L. LIVADARU, Al. SIMION, E. ROMILA, M. COJAN

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20. FEM Analysis of the Third Order Harmonics of a Two-Phase Induction Machine

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21. FEM Based Analysis of an Induction Motor with Ring Winding and Multiple Number of Pole Pairs  
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Simpozionul Național de Electrotehnică Teoretică, București, SNET 2007, 12-14 oct. 2007, p.(459-464), ISBN 978-973-718-899-1.
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23. Performance evaluation of a hybrid synchronous motor used as integrated starter-alternator  
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24. Study of the dynamic behaviour during start-up and reversal at the two-phase induction machine  
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25. The Mathematical Model with Total Fluxes of the Two-Phase Induction Machine  
Al. SIMION, L. LIVADARU  
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26. Evaluation and Performance Analysis of a Dual-Rotor Hybrid Synchronous Machine  
A. MUNTEANU, Al. SIMION, L. LIVADARU  
Simpozionul Național de Electrotehnică Teoretică, București, SNET'09, 27 nov. 2009, p. 21/263-26/263, ISSN 2067-4147.
27. Analysis of three-phase induction machine under transient dynamic braking by using the mathematical model in total fluxes  
Al. SIMION, L. LIVADARU, R.-V. COCIU, A. MUNTEANU  
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28. Control of single phase SRM of special topology using two power supplies  
N.-D. IRIMIA, Al. SIMION, L. LIVADARU, O. DABIJA, S. VLASCEANU  
Simpozionul Național de Electrotehnică Teoretică, București, SNET'12, 14 DEC. 2012, p. 74-79, ISSN 2067-4147.
29. Transient and steady-state analysis through simulations of a single-pole single-phase switched reluctance motor prototype  
O. DABIJA, Al. SIMION, L. LIVADARU, N.-D. IRIMIA, A. MUNTEANU  
Simpozionul Național de Electrotehnică Teoretică, București, SNET'12, 14 DEC. 2012, p.228-233, ISSN 2067-4147.

## VIII. Invenții

1. Metodă și instalație de măsură și reglaj a grosimii de ulei - Brevet de invenție nr.100640.

R. GROSU, L. LIVADARU

2. Sistem de alimentare și evacuare a semifabricatelor pentru utilaje de ambutisare hidrostatica - Brevet de invenție nr.100001.

L. CIUPERCA, R. GROSU, L. LIVADARU

## VIII. Contracte de cercetare

1. **Proiectarea și realizarea standurilor de încercare a motoarelor electrice de tracțiune din R.A.T.C.Iași**

Contract nr.14254/1992. Valoare: 2.000.000 lei

Beneficiar: R.A.T.C. IAȘI

- Director: **Cojan M.**

2. **Efectuarea de probe tip pentru motor electric asincron monofazat cu spira în scurtcircuit**

Contract nr.4202/1993, Valoare: 500.000 lei

Beneficiar: RETROM SA PASCANI.

- Director: **Livadaru L.**

3. **Oportunitatea tehnico-economică a echipării motoarelor trifazate cu traductoare de alunecare.**

Contract nr. 12478/1993 Valoare: 3.000.000 lei

Beneficiar: ICPE-ME BUCURESTI.

- Director: **Simion Al.**

4. **Cercetări privind creșterea performanțelor tehnice și economice ale mașinilor și transformatoarelor electrice și ale sistemelor de comandă aferente (I)**

Grant 528/1995, Valoare:2.500.000 lei

Beneficiar: CNCSU- M.I.S.

- Director: **Simion Al.**

5. **Studii asupra posibilităților de utilizare a motoarelor asincrone bifazate în acționările reglabile**

Contract de cercetare științifică cu CNCSU - Grant 600/cod11.2.1,1996, Valoare:4.000.000 lei

6. **Cercetări privind creșterea performanțelor tehnice și economice ale mașinilor și transformatoarelor electrice și ale sistemelor de comandă aferente (II) Faza I-a**

Grant 3002-10116,C80; 1995, Valoare: 2.000.000 lei

Beneficiar: Ministerul Învățământului

- Director: **Simion Al.**

7. **Cercetări privind creșterea performanțelor tehnice și economice ale mașinilor și transformatoarelor electrice și ale sistemelor de comandă aferente (II). Faza a II-a**

Grant 598/1996 Valoare: 3.000.000 lei

Beneficiar: CNCSU- M.I.

- Director: **Simion Al.**

**8. Studii asupra posibilităților de utilizare a motoarelor asincrone bifazate în acționările electrice**

Grant 600/1996, Valoare: 4.000.000 lei

Beneficiar CNCSU

- Director: **Simion Al.**

**9. Studii asupra posibilităților de utilizare a motoarelor asincrone cu înfășurări bifazate. Proiectare, realizare de prototip, încercări experimentale**

Grant 7002/1997, cod 611/32, Valoare: 15.000.000 lei

Beneficiar CNCSU

- Director: **Simion Al.**

**10. O nouă calitate în pregătirea practică a studenților folosind laboratoare multifuncționale de electrotehnică (PRELAB), (program multiinstituțional, cu U T Cluj N.)**

Grant cu Banca Mondială, prin CNFIS, cod 98, P.I.P., Valoare: 24.4000 USD

- Director: **Simion Al.**

**11. O nouă calitate în pregătirea practică a studenților folosind laboratoare multifuncționale de electrotehnică (PRELAB), (program multiinstituțional, cu U T Cluj N.)**

Grant cu Banca Mondială, prin CNFIS, cod 98, Program Major 1999 – 2001, Valoare: 158.602 USD

- Director: **Simion Al.**

**12. Calculul câmpului, proiectarea și experimentarea unor motoare sincrone de construcție specială, (2001 – 2003)**

Contract nr. 35259/2001, Cod 247 CNCSIS / Tema 43

-Director **Simion Al.**

**Faza I pe 2001.** Calculul câmpului, proiectarea, realizarea și încercarea pe stand a unor modele experimentale de motoare sincrone cu reluctanță variabilă, cu rotor anizotrop și colivie  
Valoare 42.400 mii lei

**Faza1 pe 2002.** Realizarea unui model experimental de motor sincron cu magneti permanenți .

**Faza 2 pe 2002.** Stand de incercari pentru studiul modelului experimental.

Contract nr. 33479/2002, Cod 406 CNCSIS / Tema 14, Valoare: 46.000 mii lei

**Faza1 pe 2003.** Proiectarea si realizarea unui model experimental de motor sincron reactiv .

**Faza 2 pe 2003.** Stand de incercari pentru studiul modelului experimental

Contract nr. 33557/2003, Cod 336 CNCSIS / Tema 37, Valoare: 72.000 mii lei

**13. Studiul câmpului, proiectarea și realizarea unor modele experimentale de motoare electrice de construcție specială, - SCAPREME**

Contr.nr.6177/2000 cu ANSTI

-Director **Simion Al.**

**Etapa I 2000**

Studiul câmpului magnetic în vederea optimizării geometriei motoarelor de mică putere *cu înfășurare toroidală (în inel)*.

Tema B-23, Valoare: 37.000 mii lei

## **Etapa II 2001**

Calculul câmpului, proiectarea și realizarea unui model experimental de motor asincron (cu alimentare monofazată - bifazată, trifazată) cu înfășurare statorică toroidală (în inel) și rotor cilindric cu colivie  
Tema A-26, Valoare: 57.400 mii lei

## **Etapa III 2002**

Faza 1. Realizarea unui model experimental de motor asincron de constructie specială

Faza 2. Studiul câmpului cu programe specializate

Contract nr.33479/2002, Tema 85, Cod CNCSIS 106 Valoare: 50.000 mii lei

## **14. Încercări experimentale asupra motoarelor rebobinate la firma SC DEMITROS SRL**

Contract nr. 5698/2003

Beneficiar S.C. DEMITROS S.R.L.

Valoare: 2.000.000 lei

Director: **Livadaru L**

## **15. Sistem inteligent alternator – demaror – integrat pentru autovehicule**

Contract nr. 27637/2005, Tema 35, Cod CNCSIS: 530, Valoare : 280.000.000 ROL

Director : **Lucache Dorin**

## **16. Studiul sistemelor mecanice cu rulmenți situate în câmpuri electromagnetice**

Contract nr. 27637/2005, Tema 48, Cod CNCSIS: 546, Valoare : 100.000.000 ROL

Director : **Racocea Cristina**

## **17. Modele matematice și soluții de proiectare integrată a mașinilor electrice în scopul utilizării raționale a resurselor naturale și artificiale**

CEEX 285/P3/2006 – partener P3 cu ICPE SA București, Valoare etapa I: 7000 RON

Responsabil contract: **Simion Al.**

- Etapa II și III (2007): Valoare: 55000 RON

- Etapa IV și V (2008): Valoare: 113000 RON