Dushan Boroyevich

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EDUCATION:

Ph.D. EE	1986	Virginia Tech, Blacksburg, VA
M.S. EE	1982	University of Novi Sad, Yugoslavia
Dipl. Ing. EE	1976	University of Belgrade, Yugoslavia

EMPLOYMENT:

2006 - present	American Electric Power Professor, Bradley Department of Electrical and Computer Engineering, Virginia Tech, Blacksburg, VA (***VT***)
2006	Fall semester sabbatical at Massachusetts Institute of Technology, Cambridge, MA
2004	Summer sabbatical at Università degli Studi Roma Tre, Rome, Italy
1998 - present	Co-Director, NSF Engineering Research Center for Power Electronics Systems (***CPES***)
1998	Six-month sabbatical at Universitat Politècnica de Catalunya, Barcelona, Spain
1999 - 2005	Professor, ***VT***
1996 - 1998	Associate Director, Virginia Power Electronics Center, ***VT***
1990 - 1998	Associate Professor, ***VT***
1989	Acting Head of the Inst. for Power and Electronic Eng., University of Novi Sad, Yugoslavia (***UNS***)
1986 - 1990	Assistant Professor, ***UNS***
1982 - 1986	On educational leave from ***UNS*** for doctoral studies at ***VT***
1982	Assistant Head of the Inst. for Power and Electronic Eng., ***UNS***
1976 - 1982	Instructor, Inst. for Power and Electronic Eng., ***UNS***

HONORS AND AWARDS:

2010	Best Paper Award at *Grand Challenges in Modeling and Simulation Conference (GCMS)*
2009	Outstanding Paper Award at *IEEE Electric Ship Technologies Symposium (ESTS)*
2007 - 2010	Distinguished Lecturer, IEEE Power Electronics Society
2007	IEEE William E. Newell Power Electronics Technical Field Award
2006	IEEE Fellow
2004	European PE-PEMC Council Award for Outstanding Achievements and Service to Profession
2004	*2003 Transactions* Prize Paper Award, IEEE Power Electronics Society
2004	Dean's Award for Research Excellence, College of Engineering, ***VT***
2003	*2002 Transactions* Prize Paper Award, IEEE Power Electronics Society
2002	*2001 Transactions* Prize Paper Award, IEEE Power Electronics Society
1999	Dean's Award for Teaching Excellence, College of Engineering, ***VT***
1993	Outstanding Teacher Award, Virginia Tech Student Chapter of HKN
1990	First Prize Paper Award at 34th Yugoslav Conf. on Electronics, Comm., Automation, and Nuclear Eng.
1983 - 1985	General Electric Co. Fellowship
1985 -	Member of ΦΚΦ Honor Society

SCHOLARSHIP AND RESEARCH:

Publications:

- 4 collections of selected papers (co-editor)
- 45 invited state-of-the-art or review papers and/or presentations
- 106 papers in refereed archival international journals
- 305 papers in refereed international conference proceedings
- 203 papers in other conference proceedings
- 81 project, government, and other reports

Cited over 1250 times by other authors in archival publications according to *Thomson Reuters ISI Science Citation Index*, and over 9000 times according to *Google Scholar*; h-index: 43; g-index: 79.

Sponsored research:

At ***VT***: – PI or co-PI on 104 projects worth over $33 million, with his share of around $16 million in 23 years

At ***UNS***: – PI or co-PI on 10 projects worth $488,000, with his share of around $200,000 in 4 years

TEACHING:

Graduate student advising

- 34 Ph.D. and 39 M.S. (graduated)
- 9 Ph.D. and 2 M.S. (current)

Other advising

- 29 international exchange students and 20 international exchange visitors
- 23 undergraduate students in research experience

Courses developed or improved

At ***VT***:
- *Power Electronics System Integration, Modeling and Control of Three-Phase PWM Converters*
- *Power Electronics, Electronics II, Electronic Circuit Design II, Industrial Electronics Laboratory*

At ***UNS***:
- *Introductory Electronics, Digital Electronics, Microprocessors*
- *Electronic Elements Lab, Linear Electronics Lab, Digital Electronics Lab*

Courses taught

At ***VT***:
- *Modeling and Control of Three-Phase PWM Converters, Power Electronics, Power Electronics System Integration, DC-DC Power Converter Modeling and Control, Resonant Power Conversion, Electronic Circuit Design I* and *II, Electronics I* and *II, Industrial Electronics*
- *Power Electronics Lab, Electronic Networks Lab, Industrial Electronics Lab, Electric Machines Lab*

At ***UNS***:
- *Introductory Electronics, Pulse Electronics, Digital Electronics, Microprocessors*
- *Electronic Elements Lab, Linear Electronics Lab, Digital Electronics Lab*

Short courses organized and taught

At ***VT***:
- *Modeling and Control Design of DC-DC Converters*, co-authored and co-taught 18 times
- *Analysis and Design of Power Factor Correction Circuits*, co-authored and co-taught 10 times

At ***UNS***:
- *μP Family 6800, μP Basics, Applied Digital Control, Applied Industrial Electronics* – 2 times

SERVICE:

Professional society activities

2013	Member of *Proceedings of the IEEE* Editorial Board
2011 - 2012	President of IEEE Power Electronics Society
2007 - 2010	Membership and Publicity Chair and AdCom member of IEEE Power Electronics Society
2001 - 2010	Member of several IEEE Power and Energy Society working groups on standards for MV DC systems
1995 - 1999	Membership and Publicity Chair and AdCom member of IEEE Power Electronics Society
1991 - present	Member of numerous technical and administrative committees in IEEE Technical Activities and IEEE Societies: Industry Applications, Industrial Electronics, Power Electronics, Power and Energy
1981 - present	Member of IEEE

Tutorials:
- 7 in conjunction with major international conferences and 7 specially organized for industry

Conference organization

- Member of Program or Organizing Committees of 26 international conferences
- Chaired sessions at 40 international conferences

Invited presentations

- 74 invited lectures and talks at other universities and industry
- Member of 15 round-table discussion panels at major international conferences

Manuscript and grant proposals reviewed

- 45 papers for journals
- 180 digests for conferences
- 16 grant proposals for government agencies

Committee memberships

At ***VT***:
- Member of departmental Promotion and Tenure Committee (2010 – present)
- Member of departmental Honorifics Committee (2006 – present)
- Chair of departmental Computing committee (2007-2009)
- Member of College of Engineering Dean Search Committee
- Chair of departmental Electronics and Circuits committee (1997/98)
- Member of 14 departmental committees (at various times)

At ***UNS***:
- Member of 7 departmental committees (at various times)
- Member of 4 college committees (at various times)
- Member of University Assembly and of University Commission on Education

PERSONAL: US citizen since July 1999; one son; married with Milia since 1973; born in 1952 in Zagreb, Yugoslavia.

SELECTED PUBLICATIONS:

1. Dong Dong, I. Cvetkovic, D. Boroyevich, Wei Zhang, Ruxi Wang, Fang Luo, Xuning Zhang, P. Mattavelli, "Grid-Interface Bidirectional Converter for Residential DC Distribution Systems – Parts 1 & 2," *IEEE Trans. on Power Electronics*, vol. 28, no. 4, pp. 1655-1679, Apr. 2013.
2. H. Bishnoi, A.C. Baisden, P. Mattavelli, D. Boroyevich, "Analysis of EMI Terminal Modeling of Switched Power Converters," *IEEE Trans. on Power Electronics*, vol. 27, no. 9, pp. 3924-3933, Sep. 2012.
3. G. Francis, R. Burgos, D. Boroyevich, F. Wang, K. Karimi, "An algorithm and implementation system for measuring impedance in the D-Q domain," *ECCE 2011 – IEEE Energy Conversion Congress and Expo.*, pp. 3221-3228, Phoenix, AZ, 17-22 Sept. 2011.
4. I. Cvetkovic, M. Jaksic, D. Boroyevich, P. Mattavelli, F.C. Lee, Zhiyu Shen, S. Ahmed, Dong Dong, "Un-terminated, low-frequency terminal-behavioral d-q model of three-phase converters," *ibid.*, pp. 791-798.
5. Ruxi Wang, Fei Wang, D. Boroyevich, R. Burgos, Rixin Lai, Puqi Ning, K. Rajashekara, "A High Power Density Single-Phase PWM Rectifier With Active Ripple Energy Storage," *IEEE Trans. on Power Electronics*, vol. 26, no. 5, pp. 1430-1443, May 2011.
6. D. Boroyevich, I. Cvetkovic, Dong Dong, R. Burgos, Fei Wang, F. Lee, "Future electronic power distribution systems – A contemplative view," *OPTIM 2010 – 12th Int. Conf. on Optimization of Electrical and Electronic Equip.*, pp. 1369-1380, Brasov, Romania, May 20-22, 2010.
7. Di Zhang, F. Wang, R. Burgos, Rixin Lai, D. Boroyevich, "Impact of Interleaving on AC Passive Components of Paralleled Three-Phase Voltage-Source Converters," *IEEE Trans. on Industry Applications*, vol. 46, no. 3, pp. 1042-1054, May-June 2010.
8. Z. Chen; D. Boroyevich, R. Burgos, and F. Wang, "Characterization and modeling of 1.2 kV, 20 A, SiC MOSFETs," *ECCE 2009 – IEEE Energy Conversion Congress and Exposition*, pp. 1480-1487, San Jose, CA, Sep. 2009.
9. R. Lai, F. Wang, P. Ning, D. Zhang, D. Jiang, R. Burgos, D. Boroyevich, K. J. Karimi, and V. D. Immanuel, "Development of a 10 kW high power density three-phase ac-dc-ac converter using SiC devices," *EPE '09 – 13th European Conf. on Power El. and Appl.*, 12 pages, Barcelona, Spain, Sep. 2009.
10. X. Yuan, F. Wang, D. Boroyevich, Y. Li, and R. Burgos, "DC-link voltage control of a full power converter for wind generator operating in weak-grid systems," *IEEE Trans. on Power Electronics*, vol. 24, no. 9, pp. 2178-2192, Sep. 2009.
11. L. Arnedo, R. Burgos, D. Boroyevich, and F. Wang, "System-level black-box dc-to-dc converter models," *APEC '09 – IEEE Appl. Power Elec. Conf. and Expo.*, pp. 1476-1481, Washington, DC, Feb. 2009.
12. P. Rodriguez, J. Pou, J. Bergas, J. I. Candela, R. P. Burgos, and D. Boroyevich, "Decoupled double synchronous reference frame PLL for power converters control," *IEEE Trans. on Power Electronics*, vol. 22, no. 2, pp. 584-592, Mar. 2007.
13. S. Busquets-Monge, J. Bordonau, D. Boroyevich, and S. Somavilla, "The nearest three virtual space vector PWM – A modulation for the comprehensive neutral-point balancing in the three-level NPC inverter," *IEEE Power Electronics Letters*, vol. 2, no. 1, pp. 11-15, March 2004.
14. Z. Liang, J. D. van Wyk, F. C. Lee, D. Boroyevich, E. P. Scott, Z. Chen, and Y. Pang, "Integrated packaging of a 1 kW switching module using a novel planar integration technology," *IEEE Trans. on Power Electronics*, vol. 19, no. 1, pp. 242-250, Jan. 2004.
15. Jia Wu, F. C. Lee, D. Boroyevich, Heping Dai, Kun Xing, and Dengming Peng, "A 100 kW high-performance PWM rectifier with a ZCT soft-switching technique," *IEEE Trans. on Power Electronics*, vol. 18, no. 6, pp. 1302-1308, Nov. 2003. **(Prize Paper)**
16. Z. Ye, D. Boroyevich, J.-Y. Choi, and F. C. Lee, "Control of circulating current in two parallel three-phase boost rectifiers," *IEEE Trans. on Power Electronics*, vol. 17, no. 5, pp. 609-615, Sep. 2002.
17. R. Zhang, V. H. Prasad, D. Boroyevich, and F. C. Lee, "Three-dimensional space vector modulation for four-leg voltage-source converters, *IEEE Trans. on Power Electronics*, vol. 17, no. 3, pp. 314-326, May 2002. (**Prize Paper)**
18. N. Ćelanović and D. Boroyevich, "A fast space-vector modulation algorithm for multilevel three-phase converters," *IEEE Trans. on Industry Applications*, vol. 37, no. 2, pp. 637-641, Mar.-Apr. 2001.
19. S. K. Mazumder, A. H. Nayfeh, and D. Boroyevich, "Theoretical and experimental investigation of the fast- and slow-scale instabilities of a DC-DC converter," *IEEE Trans. on Power Electronics*, vol. 16, no. 2, pp. 201-216, Mar. 2001. **(Prize Paper)**
20. N. Ćelanović and D. Boroyevich, "A comprehensive study of neutral-point voltage balancing problem in three-level neutral-point-clamped voltage source PWM inverters," *IEEE Trans. on Power Electronics*, vol. 15, no. 2, pp. 242-249, Mar. 2000.
21. X. Feng, Z. Ye, K. Xing, F.C. Lee, and D. Borojević, "Individual load impedance specification for a stable DC distributed power system," *APEC '99 – IEEE Appl. Power Elec. Conf.*, vol. 2, pp. 923-929, Dallas, TX, Mar. 1999.
22. H. Mao, F. C. Lee, X. Zhou, H. Dai, M. Cosan, and D. Boroyevich, "Improved zero-current transition converters for high-power applications," *IEEE Trans. on Industry Applications*, vol. 33, no. 5, pp. 1220-1232, Sep.-Oct. 1997.
23. H. Mao, F. C. Y. Lee, D. Boroyevich, and S. Hiti, "Review of high-performance three-phase power-factor correction circuits," *IEEE Trans. on Industrial Electronics*, vol. 44, no. 4, pp. 437-446, Aug. 1997.
24. S. Hiti and D. Boroyevich, "Small-signal modeling of three-phase PWM modulators," *PESC '96 – IEEE Power Elec. Spec. Conf.*, vol. 1, pp. 550-555, Baveno, Italy, June 1996.
25. V. Vlatković, D. Borojević, and F. C. Lee, "Input filter design for power factor correction circuits," *IEEE Trans. on Power Electronics*, vol. 11, no. 1, pp. 199-205, Jan. 1996.
26. L. Huber and D. Borojević, "Space vector modulated, three-phase to three-phase matrix converter with power factor correction," *IEEE Trans. on Industry Applications*, vol. 31, no. 6, pp. 1234-1246, Nov.-Dec. 1995.
27. S. Hiti, V. Vlatković, D. Borojević, and F. C. Lee, "A new control algorithm for three-phase PWM buck rectifier with input displacement factor compensation," *IEEE Trans. on Power Electronics*, vol. 9, no. 2, pp. 173-180, Mar. 1994.