

Aram H. Markosyan

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Personal Information

Date of Birth: December 03, 1985
Citizenship: Armenian

Education

PhD degree, Eindhoven University of Technology 2010 - 2014

Doctor at TU/e, Department of Applied Physics.
Thesis title: Modeling multiple time scales in streamer discharges.
Thesis Advisors: prof.dr. U.M. Ebert and dr. S. Dujko

Master 2, University Pierre and Marie Curie, Paris 6 2008 - 2009

Master of Sciences and Technologies, Mathematics and Applications, Numerical Analysis and Partial Differential Equations.
Thesis title: SVI implied variance parameterization.
Thesis Advisors: Dr. C. Martini (Zeliade Systems), Prof. O. Pironneau (Paris 6), Prof. H. Berestycki (Paris 6)

Master degree, Yerevan State University, Armenia 2006 - 2008

Faculty of Mathematics.
Thesis title: Existence of the Minimal Element of the Class of Supersolutions in the One - Phase Parabolic Free Boundary Problem in Convex Domain.
Thesis Advisors: Assoc. Prof. Michael Poghosyan

Bachelor degree, Yerevan State University, Armenia 2002 - 2006

Faculty of Mathematics. Diploma earned with excellence.

Skills

Spoken Languages

Armenian, Russian, English, French

Technical Skills

C++(STL, QT), C#, Python, HTML, JavaScript, MS Visual Studio (2005, 2008), Xcode, Matlab, Gnuplot, Mac OS X, Mathematica, FreeFem++, Tex, Windows (all versions), Linux (Mandriva, Suse, Ubuntu).

Other Employments

Internship in "Zeliade Systems"	01.03.2009 – 30.09.2009
PhD candidate at CWI, Amsterdam	01.05.2010 – 31.05.2014

Activities and Hobbies

Music, modern art, philosophy, psychology, literature, digital photography, computing and technology.

Referee/Reviewer

Computer Physics Communications, Plasma Science and Technology.

Fellowships, Grants, and Awards

1. Short visit grant from European Science Foundation (ESF) No. 5297 (13-20.01.2013) within the activity entitled 'Thunderstorm effects on the atmosphere-ionosphere system'. Collaborating Research with F. J. Gordillo-Vázquez and A. Luque.
2. Short visit grant from European Science Foundation (ESF) No. 5697 (23-29.06.2013) within the activity entitled 'Thunderstorm effects on the atmosphere-ionosphere system'. Collaborating Research with F. J. Gordillo-Vázquez and A. Luque.
3. Short visit grant from European Science Foundation (ESF) No. 5698 (01-08.06.2013) within the activity entitled 'Thunderstorm effects on the atmosphere-ionosphere system'. Collaborating Research with F. J. Gordillo-Vázquez and A. Luque.

Publications and Talks

Papers in international journals

1. S. Dujko, A.H. Markosyan, R.D. White, U. Ebert, High order fluid model for streamer discharges: I. Derivation of model and transport data, *J. Phys. D: Appl. Phys.* **46** 475202 (2013).
2. A.H. Markosyan, S. Dujko, U. Ebert, High order fluid model for streamer discharges: II. Numerical solution and investigation of planar fronts, *J. Phys. D: Appl. Phys.* **46** 475203 (2013).
3. S. Nijdam, E. Takahashi, A.H. Markosyan and U. Ebert, Investigation of positive streamers by double pulse experiments, effects of repetition rate and gas mixture, *Plasma Sources Sci. Technol.* **23** 025008 (2014).
4. A.H. Markosyan, A. Luque, F. J. Gordillo-Vázquez, U. Ebert, PumpKin: A tool to find principal pathways in plasma chemical models, *Computer Physics Communications* **185**, pp. 2697-2702, (2014).
5. J. Zhang, A.H. Markosyan, M. Seeger, E.M. van Veldhuizen, E.J.M. van Heesch and U. Ebert, Numerical and experimental investigation of recovery in super-critical N₂, submitted to *Plasma Sources Sci. Technol.*
6. S. Dujko, A.H. Markosyan and U. Ebert, Streamers in rare gases, to be submitted (end of this month) to *J. Phys. D*.
7. A.H. Markosyan, J. Teunissen, S. Dujko and U. Ebert, Comparing fluid models for streamer discharges, to be submitted (end of this month) to *Plasma Sources Sci. Technol.*

Contributed papers and abstracts at international conferences

Full refereed proceedings:

1. S. Dujko, A.H. Markosyan, U. Ebert, Propagation of negative planar streamer fronts in noble

gases; proceedings of the 27th Summer School and Int. Symposium on the Physics of Ionized Gases, [SPIG 2014](#), August 26 - 29, 2014, Belgrade, Serbia. [4 pages]

2. E.J.M. van Heesch, Jin Zhang, A.H. Markosyan, Takao Namihira, F.J.C.M. Beckers, T. Huiskamp, W.F.L.M. Hoebe, A.J.M. Pemen, U. Ebert, Supercritical Fluids for High-power Switching; proceedings of IEEE International Power Modulator and High Voltage Conference, [IPMHVC 2014](#), June 1 - 5, 2014, Santa Fe, NM, USA. [4 pages]
3. S. Dujko, A. Markosyan, U. Ebert, High order fluid model for negative planar streamer fronts in rare gases, Proceedings of the 9th EU-Japan Joint Symposium on Plasma Processing, JSPP2014, January 19-23, 2014, Bohinjka Bistrica, Slovenia. [4 pages]
4. S. Dujko, D. Bošnjaković, J. Mirić, I. Simonović, Z.M. Raspopović, R.D. White, A.H. Markosyan, U. Ebert, Z.Lj. Petrović, Recent results from studies of non-equilibrium electron transport in modeling of low-temperature plasmas and particle detectors, Proceedings of the 9th EU-Japan Joint Symposium on Plasma Processing, JSPP2014, January 19-23, 2014, Bohinjka Bistrica, Slovenia. [4 pages]
5. A.H. Markosyan, A. Luque, F. J. Gordillo-Vázquez, U. Ebert, Analyzing atmospheric kinetic pathways using PumpKin, Proceedings of the European Planetary Science Congress 2013, EPSC2013, September 08-13, 2013, London, United Kingdom; Vol. 8, EPSC2013-655. [2 pages]
6. A.H. Markosyan, J. Zhang, B. van Heesch, U. Ebert, Streamer to spark transition in supercritical N₂, Proceedings of the XXth Symposium on Physics of Switching Arc, FSO 2013, September 2-6, 2013, Nove Mesto na Morave, Czech Republic. [4 pages]
7. A.H. Markosyan, A. Luque, F. J. Gordillo-Vázquez, U. Ebert, PumpKin: A tool to find principal pathways in plasma chemical models, Proceedings of the XXXI International Conference on Phenomena in Ionized Gases, ICPIG 2013, July 14-19, 2013, Granada, Spain. [2 pages]
8. A. Markosyan, S. Dujko, U. Ebert, Derivation and test of high order fluid model for streamer discharges, Proceedings of the Scientific Computing in Electrical Engineering, SCEE2012, September 11-14, 2012, ETH Zurich, Switzerland; pp. 107-108. [2 pages]
9. S. Dujko, A. Markosyan, R.D. White, U. Ebert, High order fluid model for streamer discharges, Proceedings of the 26th Summer School and International Symposium on the Physics of Ionized Gases, SPIG 2012, August 27-31, 2012, Zrenjanin, Serbia; ISBN: 978-86-7031-244-9, pp. 345-348. [4 pages]
10. A. Markosyan, S. Dujko, U. Ebert, High order fluid model for ionization fronts in streamer discharges, Proceedings of the XXI Europhysics Conference on Atomic and Molecular Physics of Ionized Gases, XXIth ESCAMPIG, July 10-14, 2012, Viana do Castelo, Portugal. [2 pages]

Talks:

1. A.H. Markosyan, J. Teunissen, S. Dujko, U. Ebert, Comparison of various fluid models for streamer discharge; proceedings of the Plasma Processing Science Gordon Research Seminar, [GRS 2014](#), July 26 - 27, 2014, Bryant University, Smithfield, RI, USA
2. *Comparison of various fluid models for streamer discharge*, A.H. Markosyan, J. Teunissen, S. Dujko, U. Ebert; proceedings of the Plasma Processing Science Gordon Research Seminar, [GRS 2014](#), July 26 - 27,

3. A.H. Markosyan, A. Luque, F. J. Gordillo-Vázquez, U. Ebert, PumpKin: A tool to find principal pathways in plasma chemical models, Proceedings of the Physics@FOM, January 21 - 22, 2014, Veldhoven, Netherlands.
4. A.H. Markosyan, A. Luque, F. J. Gordillo-Vázquez, U. Ebert, PumpKin: A tool to find principal pathways in plasma chemical models, Bulletin of the American Physical Society, 66th Annual Gaseous Electronics Conference, GEC 2013, September 30 - October 4, 2013, Princeton, New Jersey, USA; vol. 58, No. 8, p. 72.
5. A.H. Markosyan, J. Zhang, B. van Heesch, U. Ebert, Numerical investigation of voltage recovery after breakdown supercritical nitrogen, Proceedings of the XXth Symposium on Physics of Switching Arc, FSO 2013, September 2-6, 2013, Nove Mesto na Morave, Czech Republic.
6. *[invited talk]* A.H. Markosyan, S. Dujko, U. Ebert, Challenges in fluid modeling of streamer discharges, Proceedings of the Werkgemeenschap Scientific Computing spring meeting 2013, WSC Spring Meeting 2013, May 17, 2013, Amsterdam, Netherlands.
7. A. Markosyan, S. Dujko, U. Ebert, Numerical study of high order fluid model for streamer discharges, Proceedings of the 25th Symposium Plasma Physics & Radiation Technology, March 5 - 6, 2013, Lunteren, Netherlands.
8. A. Markosyan, S. Dujko, R. White, J. Teunissen, U. Ebert, High order fluid model for streamer discharges, Bulletin of the American Physical Society, 65th Annual Gaseous Electronics Conference, GEC 2012, October 22-26, 2012, Austin, Texas, USA; vol. 57, No. 8, p. 53.

Posters

1. A.H. Markosyan, J. Teunissen, S. Dujko, U. Ebert, Comparison of various fluid models for streamer discharge; proceedings of the Plasma Processing Science Gordon Research Conference, GRC 2014, July 27 - August 1, 2014, Bryant University, Smithfield, RI, USA
2. A.H. Markosyan, J. Teunissen, S. Dujko, U. Ebert, Comparison of various fluid models for streamer discharge, Proceedings of the Plasma Processing Science Gordon Research Conference (GRC 2014), July 27 - August 1, 2014, Bryant University, Smithfield, RI, USA.
3. A.H. Markosyan, J. Teunissen, S. Dujko, U. Ebert, Comparison of various fluid models for streamer discharge, Proceedings of the Plasma Processing Science Gordon Research Seminar (GRS 2014), July 26-27, 2014, Bryant University, Smithfield, RI, USA.
4. A.H. Markosyan, J. Teunissen, S. Dujko, U. Ebert, Fluid models and the reality, Proceedings of the 26th Symposium Plasma Physics & Radiation Technology, March 11 - 12, 2014, Lunteren, Netherlands; A19.
5. A.H. Markosyan, J. Teunissen, S. Dujko, U. Ebert, Comparing fluid model for streamer discharges, Bulletin of the American Physical Society, 66th Annual Gaseous Electronics Conference, GEC 2013, September 30 - October 4, 2013, Princeton, New Jersey, USA; vol. 58, No. 8, p. 20.
6. A.H. Markosyan, J. Zhang, B. van Heesch, U. Ebert, Investigating streamer to spark transition in supercritical N₂, Bulletin of the American Physical Society, 66th Annual Gaseous Electronics Conference,

7. S. Dujko, Z.Lj. Petrović, R.D. White, D. Bošnjaković, J. Mirić, A.H. Markosyan, U. Ebert, Non-conservative electron transport in gases and its application in modelling of non-equilibrium plasmas and particle detectors, Proceedings of the XVII International Workshop on Low-Energy Positron and Positronium Physics and the XVIII International Symposium on Electron-Molecule Collisions and Swarms, POSMOL 2013, July 19-21, 2013, Kanazawa, Japan.
8. A.H. Markosyan, S. Dujko, R. U. Ebert, High order fluid model for streamer discharges in rare gases, Proceedings of the XVII International Workshop on Low-Energy Positron and Positronium Physics and the XVIII International Symposium on Electron-Molecule Collisions and Swarms, POSMOL 2013, July 19-21, 2013, Kanazawa, Japan.
9. A. Markosyan, J. Zhang, B. van Heesch, U. Ebert, Investigating heating dynamics in sparks, Proceedings of the European Geoscience Union General Assembly 2013, EGU2013, April 07-12, 2013, Vienna, Austria.
10. A. Markosyan, J. Zhang, B. van Heesch, U. Ebert, On the heating dynamics in sparks, Proceedings of the Physics@FOM, January 22 - 23, 2013, Veldhoven, Netherlands; p.41.
11. A. Markosyan, J. Zhang, B. van Heesch, U. Ebert, Investigating voltage recovery after breakdown supercritical nitrogen, Bulletin of the American Physical Society, 65th Annual Gaseous Electronics Conference, GEC 2012, October 22-26, 2012, Austin, Texas, USA; vol. 57, No. 8, p. 84.
12. A. Markosyan, S. Dujko, R. White, J. Teunissen, U. Ebert, High order fluid model for streamer discharges, Bulletin of the American Physical Society, 65th Annual Gaseous Electronics Conference, GEC 2012, October 22-26, 2012, Austin, Texas, USA; vol. 57, No. 8, p. 53.
13. [award for poster] A. Markosyan, S. Dujko, U. Ebert, Why do we need high order fluid model for streamer discharges? Proceedings of the 37th Woudschoten conference, WSC Conference 2012, October 3-5, 2012, Zeist, Netherlands.
14. A. Markosyan, S. Dujko, U. Ebert, High order fluid model for simulations of streamer and sprites, Proceedings of the 1st Thunderstorm Effects on the Atmosphere-Ionosphere System Summer School, TEA-IS, June 17-22, 2012, Los Alamos, Torremolinos (Malaga), Spain.
15. S. Dujko, A. Markosyan, R.D. White, Z.Lj. Petrovic, U. Ebert, High-order fluid model of streamer discharges in molecular nitrogen, Bulletin of the American Physical Society, 43rd Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, DAMOP 2012, June 4-8, 2012, Anaheim, California; vol. 57, No. 5, p. 118.
16. A. Markosyan, S. Dujko, U. Ebert, High order fluid model for ionization fronts in streamer discharges, Proceedings of the 24th Symposium Plasma Physics & Radiation Technology, March 6 - 7, 2012, Lunteren, Netherlands; p. B7.
17. A. Markosyan, S. Dujko, W. Hundsdorfer, U. Ebert, A high order density model for streamer discharges, Proceedings of the Physics@FOM, January 17 - 18 2012, Veldhoven, Netherlands; p. 250.
18. A. Markosyan, S. Dujko, W. Hundsdorfer, U. Ebert, A high order density model for streamer discharges, Proceedings of the 14th Euregional WELTPP Workshop on the Exploration of Low Temperature Plasma

