

## Curriculum Vitae



### Personal information

First name(s) / Surname(s)	Stelian Ion
E-mail	ro_diff@yahoo.com
Nationality	romanian
Date of birth	January 04, 1957
Gender	male
Research interests	fluid mechanics, inverse problems, numerical analysis, applied mathematics in environmental sciences, biophysics, biostatistics, numerical ecology, data mining

### Work experience

Institution	„Gheorghe-Mihoc-Caius Iacob” Institute of Mathematical Statistics and Applied Mathematics of Romanian Academy,
Address	Calea 13 Septembrie, no 13, 050711 Bucharest, Romania, <a href="http://www.ismma.ro">www.ismma.ro</a>
Position held	Senior Researcher
Responsibilities	Researcher, deputy director
Team	Analysis and Control of Differential Systems

### Education and training

Dates	1999
Title of qualification awarded	PhD in Mathematics
Principal subjects covered	Discontinuous surface in continuum mechanics
Name and type of organisation providing education and training	University of Bucharest
Level in national or international classification	8844 (ISCED-2011)
Dates	1978-1983
Title of qualification awarded	Certificate in Mathematics- Mechanics
Principal subjects covered	Mathematical Analysis, Functional Analysis, Partial and Ordinary Differential Equation, Numerical Analysis, Scientific Computing, Fluid Mechanics, Magnetohydrodynamics etc.
Name and type of organisation providing education and training	Faculty of Mathematics, University of Bucharest
Level in national or international classification	8746 (ISCED-2011)
Personal skills and competences	

Languages proficiency	english, french
Computer skills and competences	<ul style="list-style-type: none"> <li>• advanced C language programming</li> <li>• UNIX computer graphics (Gnuplot, GIMP, Xfig)</li> <li>• web design (HTML )</li> <li>• Latex editing</li> </ul>
Professional membership	<ul style="list-style-type: none"> <li>• ROMAI</li> </ul>
Awards	Spiru Haret Prize of the Romanian Academy in the domain of mathematical sciences

## Main activities

Project coordinator	<ul style="list-style-type: none"> <li>• Modeling tools of the Water-Soil-Plant-Air interface processes for the intelligent and sustainable management of watersheds and ecosystems dependent on underground water, <b>INTERASPA</b>, CCCDI - UEFISCDI PNIII-P1-1.2-PCCDI-2017-0721, contract 34PCCDI/2018, ISMMA coordinator</li> <li>• Accounting for the Service-providing units of Plants in the environmental Assessment of plans and projects with Biogeochemical Impact at multiple scales in River basins, ANCS, CNDI - UEFISCDI PNII programme, Contract 50/2012, ISMMA coordinator</li> <li>• Phytoremediation procedure and risk assessment in areas contaminated with metals, Grant MEDC 31012/2007, ISMMA coordinator</li> <li>• The economic evaluation procedure of the retention of stable toxic pollutants in fluvial systems, Grant MEDC 31043/2007, ISMMA coordinator</li> <li>• Mathematical Modelling in Continuum Mechanics. Applications in Material Sciences, Grant MedC 2-CEX06-11-12 /2006, ISMMA coordinator</li> </ul>
Editorial activity	<ol style="list-style-type: none"> <li>1. <i>Topics in Mathematical Modelling of Life Sciences Problems</i>, Eds. Stelian Ion and Constantin Popa, Ed. Matrix Rom, 2011, ISBN 978-973-755-772-8</li> <li>2. <i>Topics in Applied Mathematics and Mathematical Physics</i>, Eds. Cecil Pompiliu Grunfeld, Stelian Ion and Gabriela Marinoschi, Editura Academiei Romane, 2008, ISBN 978-973-27-1719-6</li> <li>3. <i>Series on Mathematical Modelling and Life Sciences Problems</i>, vol 1, 2, 3, 4, 5, Eds. Stelian Ion, Gabriela Marinoschi, Constantin Popa, Editura Academiei Romane, 2003, 2004,2006, 2008, 2010</li> <li>4. Associate editor to: <i>Applied Mathematics in Science and Engineering</i>, Taylor&amp;Francis</li> </ol>

## List of publications

### Chapters in books

Books	<ol style="list-style-type: none"> <li>1. <i>Contributions to the theoretical foundations of integrated modeling in biogeochemistry and their application in contaminated areas</i>, V. Iordache, R. Lacatusu, D. Scradeanu, M. Onete, Stelian Ion, I. Cobzaru, A. Neagoe, F. Bodescu, D. Jianu, D. Purice, in "Biogeointeractions in contaminated soils", Eds. Kothe E, Varma A, Springer, 2012</li> <li>2. <i>Mathematical modelling of metals mobility in the soil root zone</i>, Stelian Ion, in "Topics in Mathematical Modelling of Life Sciences Problems, Eds. Stelian Ion and Constantin Popa, Ed. Matrix Rom, 2011.</li> <li>3. <i>Diffusion Processes. Physical Models and Numerical Approximation</i>, Stelian Ion, in "Topics in Applied Mathematics and Mathematical Physics", Eds. C. P. Grunfeld, S. Ion, G. Marinoschi, pp. 169-200, Editura Academiei Romane, 2008</li> </ol>
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4. *Elastic properties of BLMs and pore formation*, D.Popscu, S. Ion, A. Popescu, and Liviu Movileanu, in "Planar Lipid Bilayers (BLMs) and Their Applications, Eds. H.T. Tien and A. Ottova-Leitmannova, Elsevier, 2003
5. *Analytical and Numerical Approach to Richards' Equation*, Stelian Ion, Gabriela Marinoschi and Dorin Marinescu, in "Curent Topics in Continuum Mechanics. I", editor Lazar Dragos, Editura Academiei Române, 2002.

## Articles

1. Neagoe, A., Manu, M., Onete, Mihai, Luiza-Silvia, Dincă, George, Jianu, Denisa, **Ion, Stelian**, Iordache, Virgi, *Increasing the fungal inoculation of mine tailings from 1 to 2% decreases plant oxidative stress and increases the soil respiration rate*. Sci Rep 15, 30030 (2025). <https://doi.org/10.1038/s41598-025-14973-2>
2. **Stelian Ion**, Dorin Marinescu, Stefan Gicu Cruceanu, *ASTERIX: Module for modeling the water flow on vegetated hillslopes*, Environmental Modelling & Software, Volume 186, 2025, 106336, ISSN 1364-8152, <https://doi.org/10.1016/j.envsoft.2025.106336>.
3. Cristian Paltineanu, Sorina Dumitru, Olga Vizitiu, Victoria Mocanu, Anca-Rovena Lăcătușu, **Stelian Ion**, Horia Domnariu, *Soil organic carbon and total nitrogen stocks related to land use and basic environmental properties – assessment of soil carbon sequestration potential in different ecosystems*, CATENA, Vol. 246,2024,108435,ISSN
4. **Stelian Ion**, Dorin Marinescu, Ștefan-Gicu Cruceanu, *Analysis of the Effects of Curvature on the Solutions of Shallow Water Equations*, 2023 13th International Symposium on Advanced Topics in Electrical Engineering (ATEE), Bucharest, Romania, 2023, pp. 1-6, doi: 10.1109/ATEE58038.2023.10108117.
5. **Stelian Ion**, Dorin Marinescu, Stefan Gicu-Cruceanu, *Fluid Flow on Vegetated Hillslope: a Mathematical Model*, ROMAI J., v.19, no.1(2023), 73–105.
6. **Stelian Ion**,Dorin Marinescu, Ștefan-Gicu Cruceanu, *Numerical Scheme for Solving a Porous Saint-Venant Type Model for Water Flow on Vegetated Hillslopes*, Applied Numerical Mathematics 172 (2022), pp. 67–98, DOI:10.1016/j.apnum.2021.09.019
7. **Stelian Ion**,Dorin Marinescu, Ștefan-Gicu Cruceanu, *Interpolation of Large and Noisy Scatter Data*, IEEE Xplore: 12 May 2021, doi:10.1109/ATEE52255.2021.9425043,
8. **Stelian Ion**, Dorin Marinescu, Anca Veronica Ion, Stefan-Gicu Cruceanu, Virgil Iordache, *Spline Wavelet Multiresolution of Scatter Data*, Proc. Rom. Acad. Ser. A Math. Phys. Tech. Sci. Inf. Sci. Volume 21, Number 4/2020, pp. 311–318
9. **Stelian Ion**, Stefan-Gicu Cruceanu, Dorin Marinescu, *Constructive Approach of the Solution of Riemann Problem for Shallow Water Equations with Topography and Vegetation*, An. St. Univ. Ovidius Constanta Vol. 28(2),2020, 93-114, DOI: 10.2478/auom-2020-0021
10. Paula Constantinescu, Aurora Neagoe, Andrei Nicoara, Anja Grawunder, **Stelian Ion**, Marilena Onete, Virgil Iordache, *Implications of spatial heterogeneity of tailing material and time scale of vegetation growth processes for the design of phytostabilisation*, Science of The Total Environment, 692(2019), pp. 1057-1069, <https://doi.org/10.1016/j.scitotenv.2019.07.299>
11. **Stelian Ion**, Dorin Marinescu, Stefan Gicu Cruceanu, *Data Porting Technique Across Scales*, IEEE Xplore: 30 May 2019, DOI: 10.1109/ATEE.2019.8724935
12. **Stelian Ion**, Dorin Marinescu, Stefan-Gicu Cruceanu, *Riemann Problem for Shallow Water Equation with Vegetation*, An. St. Univ. Ovidius Constanta, Vol. 26(2),2018, pp. 145-173
13. **Stelian Ion**, Gabriela Marinoschi, *A self-organizing criticality mathematical model for contamination and epidemic spreading*, Discret and Continous Dynamical Systems B, 22(2), 383-406, 2017, FI. 0.994
14. Aurora Neagoe, Gabriela Tenea, Natalia Cucu, **Stelian Ion**, Virgil Iordache, *Coupling Nicotiana tabaccum Transgenic Plants with Rhizophagus irregularis for Phytoremediation of Heavy Metal Polluted Areas*, REV.CHIM.(Buchares) 68 No. 4, 2017, 789-795.
15. **Stelian Ion**, Dorin Marinescu, Anca Veronica Ion, Stefan Gicu Cruceanu, Virgil Iordache, *Water flow on vegetated hill. 1D shallow water equation type model*, Analele Universitatii Ovidius, Vol. 23(3),2015, 83-96.
16. **Ion, S.** ; Marinescu, D. ; Cruceanu, S.G., *Mathematical modeling of the erosion processes in hydrographic basins*, Advanced Topics in Electrical Engineering (ATEE), 2015 Publication Year: 2015, Page(s):552- 555
17. Minodora Manu, **Stelian Ion**, *Characterisic soil mite's communities (Acari: Gamasina) for some natural forests from Bucegi Natural Park Romania*, PERIODICUM BIOLOGORUM, VOL. 116, No 3, 303312, 2014
18. **Stelian Ion**, Dorin Marinescu, Stefan-Gicu Cruceanu, Virgil Iordache, *A data porting tool for coupling models with different discretization needs*, Environmental Modelling \& Software, Vol. 62, December 2014, Pages 240-252.
19. **Stelian Ion**, Anca Veronica Ion, *A finite volume method for solving generalized Navier Stokes Equation*,Annals of the Academy of Romanian Scientists, Series on Mathematics and its Applications, vol.3,

no.1, 2011, pp. 145-163

20. Virgil Iordache, **Stelian Ion** and Alin Pohoata, *Integrated modeling of metals biogeochemistry: potential and limits*, *Chimie der Erde-Geochemistry*, Vol. 69, Supplement 2, pp.125--169, 2009
21. Liliana Vasiliu-Oromulu, Daniela Barbuceanu, and **Stelian Ion**, *The Ecological Study of Thrips Populations in a Southern Romanian Vineyard (Insecta: Thysanoptera)*, *Acta entomologica serbica*, vol. 14,nr. 1, pp. 1-11, 2009.
22. **Stelian Ion**, Anca Ion and Dorin Marinescu, *Discret approximatio of Nonlinear Diffusion Equation*, in series Mathematical Modelling on Environmental and Life Sciences Problems, editors S. Ion, G. Marinoschi and C. Popa, Editura Academiei Romane, 2008, pp. 105-114.
23. **Stelian Ion** and Dorin Marinescu, *On a convergent method of approximation of the solutions for a quantum kinetic model*, *Bul. Inst. Polit. Iasi. t. LIII (LVII)*, f. 5, 2007, pp.155- 162.
24. **Stelian Ion**, *Computational techniques for time dependent non-Newtonian fluid flow*, *ROMAI Journal*, vol. 3(2007), nr. 1, 115-140.
25. Liviu Movileanu, Dumitru Popescu, **Stelian Ion** and Aurel I. Popescu, *Transbilayer pores induced by thickness fluctuations*, *Bulletin of Mathematical Biology*, 68(6), 2006, pp. 1231-1255.
26. **Stelian Ion**, *Quasimonotone ODE Approximation of Nonlinear Diffusion Process*, in Series on Mathematical Modelling of Environmental and Life Sciences Problems, Proceeding of Fourth workshop, Septembrie 2005, Constanta, Ed. Academiei Romane, 2006, pp. 87-94
27. **Stelian Ion** and Dumitru Popescu, *Minimum Free Energy Configuration of the Planar Lipidic Bilayer. Analytical Solutions*, in Series on Mathematical Modelling of Environmental and Life Sciences Problems, Proceeding of Fourth workshop, Septembrie 2005, Constanta, Ed. Academiei Romane, 2006, pp. 95-102.
28. D. Popescu, **S. Ion**, A.G. Popescu, Nicoleta Neacsu, M.L.Flonta, *The effect of lipid bilayer hydration on transbilayer pores appearance*, *Romanian J. Biophys.*, vol.16, 2006, nr.1, 39-5?
29. **Stelian Ion**, Anca Veronica Ion and Dorin Marinescu, *A Comparative Study of Non-Fickian Diffusion in Binary Fluids*, *Anal. Univ. Bucuresti, series Mathematics*, anul LV(2006), pp. 91-98.
30. D. Popescu, **Stelian Ion**, A.G. Popescu, Nicoleta Neacsu, *The effect of lipid bilayer hydration on transbilayer pores appearance*, 2005, *Romanian Biophys. J.*, vol.15, nr.3-4,
31. D. Popescu, C.N. Zaharia, **S. Ion**, M.L.Flonta, *Compensation of the neurotransmitters deficiency in the synaptic cleft*, *Romanian J. Biophys.*, vol.16, nr.3, pp. 189-204.
32. Stelian Ion and Dorel Homentcovschi, *Fundamental Solutions of Oscillatory Compressible Stokes Equations*, *Anal. Univ. Bucuresti, series Mathematics*, anul LV(2006), pp. 99-110.
33. **Stelian Ion** and Anca-Veronica Ion , *On the Semigroup Properties of a Discrete Diffusion Process*, in Series on Mathematical Modelling of Environmental and Life Sciences Problems, editura Academiei Romane, 2004, pp. 159-167.
34. Dumitru Popescu and **Stelian Ion**, *The Effect of Structural Heterogeneity on the Thermoporation of Plan*, in Series on Mathematical Modelling of Environmental and Life Sciences Problems, editura Academiei Romane, 2004, pp. 255-266.
35. **Stelian Ion**, Romeo Bercia and Victor Neicu, *Inverse estimations of the parameters: Phosphorus cycle in an aquatic ecosystem*, *BSG Proceedings* 8, pp. 81-86, Geometry Balkan Press, 2003.
36. **Stelian Ion** and Dorin Marinescu, *Unsaturated water flow through layered media*, *Proc. of 11-th conference on applied and industrial mathematics*, pp. 144-148, ed. Universitati din Oradea, 2003.
37. B. Amuzescu, **S. Ion**, D. Popescu, L. Movileanu, Beatrice Macri, and Maria-Luiza Flonta, *Thermal group motion creates stochastic pores in plane phosphatidylcholine bilayers*, *Romanian J. Biophys.* Vol. 12, no. 1-2, 2002.
38. Dorel Homentcovschi and **Stelian Ion**, *A Paradox in the Motion of a Viscous Fluid Having a Boundary Discontinuity Point for the Velocity*, *Math. Rep.*, Tom 54, vol. 4, No. 3, 2002
39. **Stelian Ion** and Dorin Marinescu, *Spline Wavelets Analysis of Reticulated functions on Bounded Interval* , *Math. Rep.*, Tom 54, vol. 4, No. 2, 2002.
40. **Stelian Ion**, *Numerical Simulation of the Water Infiltration into a Layered Soil*, *Proceedings of the First Workshop on Mathematical Modelling of Environmental Problems*, ed. Academiei Române, Bucuresti, pp. 15-30, 2002.
41. Dorin Marinescu, **Stelian Ion** and Dorel Homentcovschi, *Qualitative Properties of a Discretized Form of Richards' Equation*, *Proceedings of the First Workshop on Mathematical Modelling of Environmental Problems*, ed. Academiei Române, Bucuresti, pp. 47-56, 2002.
42. **Stelian Ion**, Dorel Homentcovschi, Dorin Marinescu, *Method of Lines for Solving Richards equation*, *Proc. 5th Intern. Semin. GCM* , Septembrie 26-28 2001, Sinaia, Romania pp. 125-132.
43. **Stelian Ion**, *A numerical method for Richards equation*, *Analele Universitatii Bucuresti nr 2* , 2001
44. D. Popescu, M. L. Flonta, **Stelian Ion**, *Attraction energy through van der Waals dispersion forces between*

*two coplanar unparallel and hydrophobic chaires*, Rom. J. Biophys, vol. 10, pp. 83-88, 2000.

45. Dumitru Popescu, **Stelian Ion**, Liviu Movileanu, Florentina Pluteanu, Speranta Avram, Maria Luiza Flonta, *The Elastic waves induce the appearance of pores in a lipid bilayer membrane*, Romanian J. Biophys. vol 11, nr 3, 2001.
46. Dumitru Popescu, **Stelian Ion**, Maria Luiza Flonta, *Appearance of pores through black lipid membranes due to collective thermic movement of lipid molecules*, Analele Universitatii Bucuresti nr 2 , 2001
47. D. Popescu, L. Movileanu, **Stelian Ion**, M. L. Flonta, *Hydrodynamic effects on the solute transport across endothelial pores and hepatocyte membranes*, Physics in Medicine and Biology, 45, no. 11 pp.N157-N165, 2000.
48. H. Dumitrescu, **S. Ion**, A. Dumitrache, *Eddy viscosity Entrainment Correlation*, J. of Aircraft, vol. 30, No. 3, 1993.
49. H. Dumitrescu, **S. Ion**, A. Dumitrache, *A Turbulent Intensity Eddy Viscosity Model*, Rev. Rom. Sci. Tech-Mec. Appl., 36, 6, 1991.
50. H. Dumitrescu, **S. Ion**, A. Dumitrache, *Prediction of Mean and Structure Characteristics of Attached and Separated Turbulent Boundary Layers*, Rev. Rom. Sci. Tech-Mec. Appl., 35, 2, 1990.
51. H. Dumitrescu, **S. Ion**, A. Dumitrache, *Soluții similare pentru o curgere de tip Coandă*, St. Cerc. Mec.Apl., 47, 1988.