

# NICUȘOR COSTEA

## Academic Experience

- *October 2021 -* : **Associate Professor** at the Department of Mathematics and Computer Science, Faculty of Applied Sciences, POLITEHNICA University of Bucharest.
- *October 2017 - September 2021*: **Lecturer** at the Department of Mathematics and Computer Science, Faculty of Applied Sciences, POLITEHNICA University of Bucharest.
- *February 2015 - September 2017*: **Assistant Professor** at the Department of Mathematics and Computer Science, Faculty of Applied Sciences, POLITEHNICA University of Bucharest.
- *October 2014 - February 2015*: **Associate Assistant Professor** at the Department of Mathematics and Computer Science, Faculty of Applied Sciences, POLITEHNICA University of Bucharest.
- *October 2011 - September 2016 & July 2017 - December 2019*: **Researcher** at the SIMION STOILOW Institute of Mathematics of the Romanian Academy (member of the Research Group of the Projects PN-III-P4-ID-PCE-2016-0035, PN-II-ID-PCE-2012-4-0021, PN-II-ID-PCE-2011-3-0075, PN-II-RU-TE-2011-3-0157 and PN-II-RU-PD-2011-3-0032).

## Research Projects

- **Director of the research project**: *Sisteme Cuplate de Inegalități Hemivariationale și Aplicații* (National Program for Research of the National Association of Technical Universities - GNAC ARUT 2023), October 2023 - December 2025.
- **Director of the research project**: *Hemivariational-Like Inequalities* (UPB - Excellence Research Grants), GEX-358, September 2016 - September 2017.
- **Director of the research project**: *Differential Inclusions and Nonsmooth Variational Problems in Nonlinear Analysis and Applications* (CNCS-UEFISCDI), PN-II-RU-PD-2011-3-0032, October 2011 - September 2013.
- **Member in the research project**: *The Infinity-Laplace Operator* (CNCS-UEFISCDI), PN-III-P1-1.1.-TE-2019-0456, September 2020 - September 2022, project director: Denisa Stancu-Dumitru.
- **Member in the research project**: *Typical and Nontypical Eigenvalue Problems for Some Classes of Differential Operators* (CNCS-UEFISCDI), PN-III-P4-ID-PCE-2016-0035, July 2017 - December 2019, project director: Mihai Mihăilescu.
- **Member in the research project**: *Variable Exponent Analysis: Partial Differential Equations and Calculus of Variations* (CNCS-UEFISCDI), PN-II-ID-PCE-2012-4-0021, September 2013 - September 2016, project director: Mihai Mihăilescu.

- **Member in the research project:** *Analysis, Control and Numerical Approximations of Partial Differential Equations* (CNCS-UEFISCDI), PN-II-ID-PCE-2011-3-0075, October 2011 - September 2014, project director: Ioan-Liviu Ignat.
- **Member in the research project:** *Critical point theory and degree theory for nonlinear problems with relativistic Laplacians* (CNCS-UEFISCDI), PN-II-RU-TE-2011-3-0157, October 2011- September 2014, project director: Cristian Bereanu.

## Education

- **September 2015 Ph.D.** at Central European University, Budapest, Hungary  
 Thesis title: *Existence results for some differential inclusions and related problems*  
 Supervisor: Gheorghe Moroşanu  
 Examiners: Miklos Abert (Central European University, Budapest), Alexandru Kristaly (Babeş-Bolyai University, Cluj-Napoca), Adrian Petruşel (Babeş-Bolyai University, Cluj-Napoca).  
 Grade: summa cum laude
- **October 2010 Ph.D.** at University of Craiova, Romania  
 Thesis title: *Unilateral problems in mathematical physics*  
 Supervisor: Vicenţiu Rădulescu  
 Examiners: Constantin Niculescu (University of Craiova), Radu Precup (Babeş-Bolyai University, Cluj-Napoca), Radu Purice ("Simion Stoilow" Institute of Mathematics of the Romanian Academy), Csaba Varga (Babeş-Bolyai University, Cluj-Napoca)
- **July 2009 M.Sc.**, *Dynamical systems and evolution problems*, University of Craiova, Romania  
 Dissertation thesis: *Hemivariational inequalities and eigenvalue problems*  
 Adviser: Vicenţiu Rădulescu
- **July 2007 B.Sc.**, *Faculty of Mathematics and Computer Science*, University of Craiova, Romania  
 Graduation thesis: *Maximum principles for partial differential equations*  
 Adviser: Vicenţiu Rădulescu
- **July 2003 High School Graduate**, National College "Al. I. Cuza", Corabia, Romania

## Awards

- *Award for Advanced Doctoral Students*, 2013/2014 academic year, at the Central European University  
<http://mathematics.ceu.edu/article/2015-02-03/we-are-proud-them#sthash.1TSFE0Gz.dpuf>

## Fields of interest

- variational and hemivariational inequalities
- differential inclusions
- critical point theory
- contact mechanics
- calculus of variations
- nonlinear analysis.

## Foreign languages

- English, 637 points at the TOEFL ITP Test on March 12, 2011.
- French, beginner.

## Publications

1. N. COSTEA, Weighted Steklov eigenvalue problems for the  $\phi$ -Laplacian, *Analysis and Applications* (2026), DOI: 10.1142/S021953052650051X, in press.
2. N. COSTEA, Existence and multiplicity results for differential inclusions with Orlicz growth and mixed boundary conditions, *Set-Valued and Variational Analysis* **34** (2026), article number 5.
3. J. CEN, N. COSTEA, Weak solvability for a class of double phase variable exponents inclusion problems, *Communications in Nonlinear Science and Numerical Simulation* **144** (2025), article number 108664.
4. J. CEN, N. COSTEA, D. DUMITRESCU & M. STANCIU, A set-valued approach for quasi-variational-hemivariational inequality systems, *Journal of Fixed Point Theory and Applications* **27** (3) (2025), article number 27.
5. J. CEN, N. COSTEA & J. PAN, Elliptic inclusion systems with nonlocal functions and multivalued convection terms, *Journal of Nonlinear and Convex Analysis* **26** (1) (2025), 169-185.
6. X. CHEN, N. COSTEA & S. ZENG, A generalized penalty method for quasi-variational-hemivariational inequalities, *Discrete and Continuous Dynamical Systems - Series S* **18** (6) (2025), 1574-1590.
7. Y. BAI, N. COSTEA & S. ZENG, Existence results for variational-quasi-hemivariational inequality systems with nonlinear couplings, *Communications in Nonlinear Science and Numerical Simulation* **134** (2024), article number 108026.

8. N. COSTEA, Coupled systems of nonlinear variational inequalities and applications, *Communications in Nonlinear Science and Numerical Simulation* **118** (2023), article number 107046.
9. J. CEN, N. COSTEA, C. MIN & J.C. YAO, Stability analysis for a recovered fracturing fluid model in the wellbore of shale gas reservoir, *Hecettepe Journal of Mathematics & Statistics* **52** (6) (2023), 1533-1549.
10. N. COSTEA & S. ZENG, Existence results for Dirichlet double phase differential inclusions, *Studia Universitatis Babeş-Bolyai – Mathematica* **68** (1) (2023), 51-61.
11. N. COSTEA, A. KRISTÁLY & C. VARGA, *Variational and Monotonicity Methods in Nonsmooth Analysis*, Birkhäuser (Springer Nature), Frontiers in Mathematics series, 2021, ISBN 978-3-030-81670-4.
12. N. COSTEA & A. PITEA, Existence results for mixed hemivariational-like inequalities involving set-valued maps, *Optimization* **70** (2) (2021), 269-305.
13. N. COSTEA, G. MOROŞANU & C. VARGA, Weak solvability for Dirichlet partial differential inclusions in Orlicz-Sobolev spaces, *Advances in Differential Equations* **23** (2018), 523-554.
14. N. COSTEA & G. MOROŞANU, Steklov-type eigenvalues for  $\Delta_p + \Delta_q$ , *Pure and Applied Functional Analysis* **3** (1) (2018), 75-89.
15. N. COSTEA, M. CSIRIK & C. VARGA, Linking-type results in nonsmooth critical point theory and applications, *Set-Valued and Variational Analysis* **25** (2017), 333-356.
16. N. COSTEA, M. CSIRIK & C. VARGA, Weak solvability via bipotential method for contact models with nonmonotone boundary conditions, *Zeitschrift für angewandte Mathematik und Physik* **66** (5) (2015), 2787-2806.
17. N. COSTEA & C. VARGA, Multiple critical points for non-differentiable parametrized functionals and applications to differential inclusions, *Journal of Global Optimization* **56** (2) (2013), 399-416.
18. N. COSTEA & G. MOROŞANU, A multiplicity result for an elliptic anisotropic differential inclusion involving variable exponents, *Set-Valued and Variational Analysis* **21** (2013), 311-332.
19. I. ANDREI, N. COSTEA & A. MATEI, Antiplane shear deformation of piezoelectric bodies in contact with a conductive support, *Journal of Global Optimization* **56** (1) (2013), 103-119.
20. N. COSTEA & C. VARGA, Systems of nonlinear hemivariational inequalities and applications, *Topological Methods in Nonlinear Analysis* **41** (1) (2013), 39-67.
21. N. COSTEA, I. FIROIU & F. PREDA, Elliptic boundary value problems with nonsmooth potential and mixed boundary conditions, *Complex Variables and Elliptic Equations* **58** (9) (2013), 1201-1213.
22. N. COSTEA, D.A. ION & C. LUPU, Variational-like inequality problems involving set-valued maps and generalized monotonicity, *Journal of Optimization Theory and Applications* **155** (1) (2012), 79-99.

23. N. COSTEA & V. RĂDULESCU, Inequality problems of quasi-hemivariational type involving set-valued operators and a nonlinear term, *Journal of Global Optimization* **52** (2012), 743-756.
24. N. COSTEA & A. MATEI, Contact models leading to variational-hemivariational inequalities, *Journal of Mathematical Analysis and Applications* **386** (2012), 647-660.
25. N. COSTEA, Existence and uniqueness results for a class of quasi-hemivariational inequalities, *Journal of Mathematical Analysis and Applications* **373** (2011), 305-315.
26. N. COSTEA & C. LUPU, On a class of variational-hemivariational inequalities involving set valued mappings, *Advances in Pure and Applied Mathematics* **1** (2) (2010), 233-246.
27. N. COSTEA & V. RĂDULESCU, Hartman-Stampacchia results for stably pseudomonotone operators and nonlinear hemivariational inequalities, *Applicable Analysis* **89** (2) (2010), 175-188.
28. N. COSTEA & A. MATEI, Weak solutions for nonlinear antiplane problems leading to hemivariational inequalities, *Nonlinear Analysis: Theory, Methods and Applications* **72** (2010), 3669-3680.
29. I. ANDREI & N. COSTEA, Nonlinear hemivariational inequalities and applications to nonsmooth mechanics, *Advances in Nonlinear Variational Inequalities* **13** (1) (2010), 1-17.
30. N. COSTEA & M. MIHĂILESCU, On an eigenvalue problem involving variable exponent growth conditions, *Nonlinear Analysis: Theory, Methods and Applications* **71** (9) (2009), 4271-4278.
31. N. COSTEA & M. MIHĂILESCU, Nonlinear, degenerate and singular eigenvalue problems on  $\mathbb{R}^N$ , *Nonlinear Analysis: Theory, Methods and Applications* **71** (3-4) (2009), 1153-1159.
32. N. COSTEA & V. RĂDULESCU, Existence results for hemivariational inequalities involving relaxed  $\eta - \alpha$  monotone mappings, *Communications in Applied Analysis* **13** (3) (2009), 293-304.
33. N. COSTEA, Continuous family of eigenvalues concentrating in a small neighborhood at the right of the origin for a class of discrete boundary value problems, *Annals of the University of Craiova, Math. Comp. Sci. Ser.* **35** (2008), 85-93.

## Talks

- *Steklov eigenvalue problems with weights for the  $\phi$ -Laplacian*, **The 16th French-Romanian Colloquium on Applied Mathematics**, National University of Science and Technology Politehnica Bucharest, Bucharest, Romania, 26-30th August, 2024.  
<https://16colfrro.sciencesconf.org/?lang=en/>
- *Existence results for coupled systems of variational inequalities*, **33rd European Conference on Operational Research**, Technical University of Denmark, Copenhagen, Denmark, June 30-July 03, 2024.  
<https://euro2024cph.dk/>

- *Steklov-like eigenvalues for the  $\Phi$ -Laplacian*, **Sixth Romanian Itinerant Seminar on Mathematical Analysis and its Applications (RISMAA 2024)**, Babeş-Bolyai University, Cluj-Napoca, Romania, May 30-31, 2024.  
<https://www.cs.ubbcluj.ro/rismaa-2024/>
- *Systems of variational inequalities with nonlinear coupling functions*, **International Conference on Applied Mathematics and Numerical Methods (ICAMNM 2022)**, University of Craiova, Romania, June 29-July 02, 2022.  
<https://cis01.central.ucv.ro/ICAMNM/>
- *On the existence of solutions for coupled systems of variational inequalities*, **The Fourth Romanian Itinerant Seminar on Mathematical Analysis and its Applications (RISMAA'22)**, Transilvania University of Brasov, Romania, May 19-21, 2022.  
<https://mateinfo.unitbv.ro/ro/admitere/admitere-masterat/520-rismaa-participants.html>
- *Existence results for mixed hemivariational-like inequalities*, **International Conference on Applied Mathematics and Numerical Methods**, University of Craiova, Romania, October 29-31, 2020.  
<https://cis01.central.ucv.ro/ICAMNM/>
- *Mixed hemivariational-like inequalities involving set-valued maps and applications*, **7th International Conference on Mathematics and Informatics**, Sapientia Hungarian University of Transylvania, Târgu Mureş, Romania, September 2-4, 2019.  
<https://mathinfo.ms.sapientia.ro/2019/>
- *Producing bounded Palais-Smale sequences for locally Lipschitz functionals and applications to PDE's*, **First Romanian Itinerant Seminar on Mathematical Analysis and its Applications (RISMAA)**, Babeş-Bolyai University, Cluj-Napoca, Romania, April 20-21, 2018.  
<http://www.cs.ubbcluj.ro/1st-rismaa/>
- *Producing bounded Palais-Smale sequences for locally Lipschitz functionals and applications to PDE's*, **Differential Equations Workshop**, Central European University, Budapest, Hungary, April 4-6, 2018.  
<https://mathematics.ceu.edu/workshop-differential-equations-april-4-6-2018-central-european-university-budapest>
- *Inclusion problems involving inhomogeneous differential operators*, **Workshop on Pure and Applied Analysis**, University of Craiova, Romania, October 21, 2017.  
<https://sites.google.com/site/workshoppaa2017/>
- *Existence results for hemivariational-like inequalities involving set-valued maps*, **11th International Conference on Parametric Optimization and Related Topics (ParaoptXI)**, Prague, Czech Republic, September 19-22, 2017.  
<http://paraoptxi.utia.cas.cz/?id=0>
- *Partial differential inclusions involving  $\Phi$ -Laplace operators*, **6th International Conference on Mathematics and Informatics**, Sapientia Hungarian University of Transylvania, Târgu Mureş, Romania,

September 7-9, 2017.

<http://mitis.ro/mathinfo/2017/>

- *Partial differential inclusions involving  $\Phi$ -Laplace operators*, **Workshop Geometry and PDE's**, West University of Timișoara (Bulevardul Vasile Pârvan nr. 4, 300223 Timișoara, Romania), June 13-14, 2017.  
<https://math.uvt.ro/v2/documents/cercetare/Afis%20Geometry%20and%20PDEs.pdf>
- *Partial differential inclusions in reflexive Orlicz-Sobolev spaces*, **Workshop Applied Mathematics: Methods and Modeling**, University of Craiova (A.I. Cuza 13, Craiova Romania), May 7-8, 2017.  
<http://math.ucv.ro/wammm2017/program.html>
- *Weak solvability for Dirichlet partial differential inclusions in Orlicz-Sobolev spaces*, **Workshop on Applied Mathematics**, "Alexandru Ioan Cuza" University (Bulevardul Carol I 11, Iași 700506, Romania), April 04, 2017.  
<http://www.math.uaic.ro>
- *Partial differential inclusions in reflexive Orlicz-Sobolev spaces*, **Happy PDE's Days**, Institute of Mathematics of the Romanian Academy, 21 Calea Griviței, Bucharest, December 8 - 9, 2016.  
<http://www.imar.ro/~dtimotin/Ignat/afis%20Happy%20PDE.pdf>
- *Bounded saddle point methods for locally Lipschitz functionals*, **XIII<sup>ème</sup> Colloque Franco-Roumain de Mathématiques Appliquées**, Session VIII: *Analyse non-lisse et optimisation*, "Alexandru Ioan Cuza" University (Bulevardul Carol I 11, Iași 700506, Romania), August 25-29, 2016.  
<http://www.math.uaic.ro/cfr2016/index.php?talks&anlo#anlo>
- *Bounded saddle point methods for locally Lipschitz functionals*, **Workshop for Young Researchers in Mathematics**, Ovidius University (Faculty of Mathematics and Computer Science, 124 Mamaia Bd., 900527, Constanța, România), May 19-22, 2016.  
<http://math.univ-ovidius.ro/Workshop/2016/WYRM/#/>
- *On the weak solvability for some contact models with nonmonotone boundary conditions*, **Workshop for Young Researchers in Mathematics**, Ovidius University (Faculty of Mathematics and Computer Science, 124 Mamaia Bd., 900527, Constanța, România), May 21-24, 2015.  
<http://math.univ-ovidius.ro/Workshop/2015/WYRM/>
- *On the existence of solutions for inequality problems of hemivariational type*, **Workshop for Young Researchers in Mathematics**, Ovidius University (Faculty of Mathematics and Computer Science, 124 Mamaia Bd., 900527, Constanța, România), May 22-23, 2014.  
<http://math.univ-ovidius.ro/Workshop/2014/WYRM/>
- *Nonlinear Hemivariational Inequalities: Formulation, Existence of Solutions and Applications*, **Research Seminar on Nonlinear Operators and Differential Equations**, Babeș-Bolyai University (Faculty of Mathematics and Computer Science, Cluj-Napoca, Romania), March 13, 2014.  
<http://www.math.ubbcluj.ro/~nodeacj/soned.html>

- *Nonlinear hemivariational inequalities and applications*, **CINTI 2013, 14th IEEE International Symposium on Computational Intelligence and Informatics WORKSHOP: Analytical and Geometrical Methods for Solving Engineering Problems**, Óbuda University (Bécsi ut 96/B, H-1034 Budapest, Hungary), November 19-21, 2013.  
<http://conf.uni-obuda.hu/cinti2013/>
- *Multiplicity of critical points for non-smooth parametrized functionals*, **Joint international meeting of the American Mathematical Society and the Romanian Mathematical Society in partnership with Simion Stoilow Institute of Mathematics of the Romanian Academy, "1 Decembrie 1918"** University of Alba Iulia (Alba Iulia, Romania), June 27 - 30, 2013.  
<http://imar.ro/ams-ro2013/description.php>
- *Differential inclusions depending on a real parameter*, **Workshop for Young Researchers in Mathematics**, Ovidius University (Faculty of Mathematics and Computer Science, 124 Mamaia Bd., 900527, Constanța, România), May 9 -10, 2013.  
<http://math.univ-ovidius.ro/Workshop/2013/WYRM/GeneralInfo.htm>
- *Differential inclusions depending on a real parameter*, **Advances in Differential Equations: symmetrizations and related topics**, Babes-Bolyai University (Faculty of Mathematics and Computer Science, Cluj-Napoca, Romania), March 14 – 15, 2013.  
<https://sites.google.com/site/idei0241/mini-workshop>
- *On a non-smooth elliptic eigenvalue problem*, **Departmental Seminar**, Central European University (Department of Mathematics and its Applications Nador u. 9, 1051 Budapest, Hungary), January 22<sup>nd</sup>, 2013.  
<http://mathematics.ceu.hu/node/20184>
- *On an elliptic differential inclusion involving variable exponents*, **Departmental Seminar**, Central European University (Department of Mathematics and its Applications Nador u. 9, 1051 Budapest, Hungary), October 2<sup>nd</sup>, 2012.  
<http://mathematics.ceu.hu/node/20184>
- *Existence results for hemivariational inequalities*, **Departmental Seminar**, Central European University (Department of Mathematics and its Applications Nador u. 9, 1051 Budapest, Hungary), November 15<sup>th</sup> 2011.  
<http://mathematics.ceu.hu/node/20184>
- *Inequality problems involving set-valued mappings and generalized monotonicity*, **Workshop on “Applied Mathematics”, dedicated to the 20th Anniversary of CEU**, Central European University (Department of Mathematics and its Applications Nador u. 9, 1051 Budapest, Hungary), May 26<sup>th</sup> 2011.  
<http://mathematics.ceu.hu/news/2011-05-21/workshop-on-applied-mathematics-dedicated-to-the-20th-anniversary-of-ceu>

- *Existence results for quasi-hemivariational inequalities governed by multi-valued operators*, **Workshop for Young Researchers in Mathematics**, Ovidius University (Faculty of Mathematics and Computer Science, 124 Mamaia Bd., 900527, Constanța, România), May 12-13, 2011.  
<http://math.univ-ovidius.ro/workshop/2011/WYRM/GeneralInfo.htm>
- *Existence and uniqueness results for a class of quasi-hemivariational inequalities*, **Workshop on Partial Differential Equations**, Institute of Mathematics of the Romanian Academy, 21 Calea Griviței, Bucharest, November 25 - 26, 2010.  
<http://sites.google.com/site/liviuignat/works/workshop-2010>.
- *Spectral problems for some nonlinear perturbations of the Laplace operator*, **The Fifth Conference on Nonlinear Analysis and Applied Mathematics**, Valahia University of Târgoviște, December 7-8, 2007.

## Member of the organizing committee

- Workshop for Young Researchers in Mathematics, 9th edition, Faculty of Mathematics and Computer Science of the University of Bucharest, 03-04 June 2019.  
<https://math.univ-ovidius.ro/workshop/2019/WYRM/#/Organizers>
- Workshop for Young Researchers in Mathematics, 8th edition, Simion Stoilow Institute of Mathematics of the Romanian Academy (IMAR), 17-18 May 2018.  
<https://math.univ-ovidius.ro/Workshop/2018/WYRM/index.html#/Organizers>

## Reviewer for

**Abstract and Applied Analysis** (ISSN: 1085-3375), **Advances in Calculus of Variations** (ISSN: 1864-8258), **Advances in Nonlinear Analysis** (ISSN: 2191-950X), **AIMS Mathematics** (ISSN: 2473-6988), **Analele Științifice ale Universității Ovidius din Constanța** (ISSN: 1224-1784), **Applicable Analysis** (ISSN: 0003-6811), **Boundary Value Problems** (ISSN: 1687-2770), **Complex Variables and Elliptic Equations** (ISSN: 1747-6933), **Communications in Nonlinear Science and Numerical Simulation** (ISSN: 1007-5704) **Journal of Global Optimization** (ISSN: 0925-5001), **Journal of Inequalities and Applications** (ISSN: 1029-242X), **Journal of Mathematical Analysis and Applications** (ISSN: 0022-247X), **Journal of Optimization Theory and Applications** (ISSN: 0022-3239), **Mathematical Modelling and Analysis** (ISSN: 1392-6292), **Mathematics and Mechanics of Solids** (ISSN: 1081-2865), **Mathematical Reviews**, **Nonlinear Analysis: Theory, Methods and Applications** (ISSN: 0362-546X), **Nonlinear Analysis: Real World Applications** (ISSN: 1468-1218), **Nonlinear Differential Equations and Applications NoDEA** (ISSN: 1021-9722), **Nonlinearity** (ISSN: 1361-6544), **Open Mathematics** (former **Central European Journal of Mathematics**) (ISSN: 2391-5455), **Optimization** (ISSN: 0233-1934), **Set-Valued and Variational Analysis** (ISSN: 1877-0533), **SIAM Journal on Control and Optimization** (ISSN: 0363-0129), **SIAM Journal on Mathematical Analysis** (ISSN: 0036-1410), **Zentralblatt MATH**.

Nicușor Costea

Date:

13.07.2026