

## 6. Rezultatele cercetării desfășurate în anul 2019

### Articole ISI publicate în reviste din străinătate = 26

1. **Viorel Barbu**, L. Tubaro, Exact controllability of stochastic differential equations with multiplicative noise, *Systems & Control Letters*, 122 (2018), 19–23. FI=2.624, SRI=2.217, SNIP=1.485. ISSN= 0167-6911. (neraportat in 2018)
2. **Viorel Barbu**, The dynamic programming equation for a stochastic volatility optimal control problem, *Automatica*, 107(2019), 119-124. FI=6.355, SRI=4.827, SNIP=3.107.
3. **Viorel Barbu**, Michael Röckner, From nonlinear Fokker-Planck equations to solutions of distribution dependent SDE. *Annals of Probability*, (2019) on line, 1-27. FI=2.085, SRI=3.372
4. **Dorin Ieșan**, Deformation of microstretch elastic beams loaded on the lateral surfaces. *Mathematics and Mechanics of Solids*, 24(2019), 2274-2294. (FI=2.545; SRI=1.324)
5. **Dorin Ieșan**, Torsion of Chiral Porous Elastic Beams, *J. Elasticity*, 134 (2019), 103-118. (FI=1.100; SRI=2.044)
6. **Dorin Ieșan**, [Ramon Quintanilla](#), Viscoelastic materials with a double porosity structure, *C.R. Mecanique*, 347(2018), 124-140. (FI=0.966; SRI=1.21)
7. **Dorin Ieșan**, On the prestressed thermoelastic porous materials, *J. Thermal Stresses*, 91(2018), 1212-1224. (FI=1.852; SRI=1.000).
8. **Constantin Zălinescu**, On unconstrained optimization problems solved using the canonical duality and triality theories, *Optimization* (doi:10.1080/02331934.2019.1672072).
9. **S. Anița**, V. Capasso, G. Dimitriu, Controlling an alien predator population by regional controls, *Nonlinear Analysis: Real World Applications* 46 (2019), 82-97, DOI: 10.1016/j.nonrwa.2018.09.004. FI=2.085, SRI=1.505.
10. **S. Anița**, V. Capasso, A.-M. Moșneagu, Global eradication for spatially structured populations by regional control, *Discrete and Continuous Dynamical Systems, Series B* 24 (6) (2019), 2511-2533, DOI: 10.3934/dcdsb.2018263. FI=1.008, SRI=0.950.
11. **S. Anița**, S. Behringer, A.-M. Moșneagu, T. Upmann, Optimal harvesting of a spatially distributed renewable resource with endogenous pricing, *Mathematical Modelling of Natural Phenomena* 14 (1) (2019), 13 pages, DOI: 10.1051/mmnp/2018050. FI=0.949, SRI=0.893.
12. N. Hegoburu, **S. Anița**, Null controllability via comparison results for nonlinear age-structured population dynamics, *Mathematics of Control, Signals, and Systems* 31(2)(2019), 38 pp, DOI: 10.1007/s00498-019-0232-x. FI=0.800, SRI=1.977.

13. S. Bilal, **O. Carjă**, T. Donchev, A. Lazu, Nonlocal problem for evolution inclusions with one-sided Perron nonlinearities, *Revista De La Real Academia De Ciencias Exactas Fisicas Y Naturales Serie A, Matematicas*, 113 (3) (2019), 1917-1933, FI=1.028, SRI=0,756.
14. S. Bilal, **O. Carjă**, T. Donchev, N. Javaid, A.I. Lazu, Relaxation of nonlocal m-dissipative differential inclusions, *Analele stiintifice ale Universitatii Ovidius din Constanta, seria Matematica*, 27 (3) (2019), FI=0.452, SRI= 0.272.
15. T. Chelmuş, **M. Durea**, E.-A. Florea, Directional Pareto efficiency: concepts and optimality conditions, *Journal of Optimization Theory and Applications*, 182 (2019), 336-365. FI= 1.600. SRI= 1.447.
16. **M. Durea**, R. Strugariu, A barrier method in convex vector optimization with generalized constraints, *Optimization Letters*, DOI: 10.1007/s11590-019-01393-1. FI=1.399. SRI= 1.020.
17. R. Cibulka, **M. Durea**, M. Panțiruc, R. Strugariu, On the stability of the directional regularity, *Set-Valued and Variational Analysis*, doi: 10.1007/s11228-019-00507-2. FI=1.120. SRI=1.602.
18. F. Cordoni, L. Di Persio, L. Maticiuc, **A. Zalinescu**, A stochastic approach to path-dependent nonlinear Kolmogorov equations via BSDEs with time-delayed generators and applications to finance, *Stochastic Processes and their Applications*, in press, available online June 2019, FI= 1.342, SRI=1.673.
19. K. Bui, J. Fauman, D. Kes, L. Torres Mandiola, **Adina Ciomaga (Ralea)**, R. Salazar, A.L. Bertozzi, J. Gilles, D.P. Goronzy, A.I. Guttentag, P.S. Weiss, Segmentation of scanning tunneling microscopy images using variational methods and empirical wavelets, *Pattern Analysis and Applications* (2019), doi:10.1007/s10044-019-00824-0, FI=1.410, SRI=0.648.
20. M. Birsan, **I.D. Ghiba**, R.J. Martin, P. Neff, Refined dimensional reduction for isotropic elastic Cosserat shells with initial curvature, *Mathematics and Mechanics of Solids*, 24 (2019), 4000-4019. ISI, FI=1.791 , SRI= 1.211.
21. S. Owczarek, **I.D. Ghiba**, M.V. d'Agostino, P. Neff, Nonstandard micro-inertia terms in the relaxed micromorphic model: well-posedness for dynamics, *Mathematics and Mechanics of Solids*, 24 (2019), 3200-3215. ISI, FI=1.791, SRI=1.211.
22. R.J. Martin, **I.D. Ghiba**, P. Neff, A polyconvex extension of the logarithmic Hencky strain energy, *Analysis and Applications*, 17 (2019), 349-361. ISI, FI=1.231, SRI=1.427.
23. R.J. Martin, J. Voss, **I.D. Ghiba**, P. Neff, Quasiconvex relaxation of isotropic functions in incompressible planar hyperelasticity, in print, *Proceedings of the Royal Society of Edinburgh*, Section: A Mathematics, doi: 10.1017/prm.2019.35, 2019. ISI, FI=1.045 , SRI= 1.796.
24. Pierluigi Colli, Gianni Gilardi, **Ionuț Munteanu**, Stabilization of a linearized Cahn–Hilliard system for phase separation by proportional boundary feedbacks, *Internat. Journal of Control*, doi: [10.1080/00207179.2019.1597280](https://doi.org/10.1080/00207179.2019.1597280). FI=2.101, SRI=1.249. Print ISSN: 0020-7179. Online ISSN: 1366-5820.

25. **Ionuț Munteanu**, Exponential stabilization of the stochastic Burgers equation by boundary proportional feedback, *Discrete and Continuous Dynamical Systems Series A* 39 (4) (2019), 2173-2185. (FI=1.14; SRI=1.541)
26. **Ionuț Munteanu**, Boundary stabilization to non-stationary solutions for deterministic and stochastic parabolic-type equations, *Int. J. Control*, 92 (8) (2019), 1720-1728. (FI=2.101; SRI=1.249).

### **Articole non-ISI publicate în reviste din Baze de Date Internaționale (B+)= 0**

### **Cărți sau capitole de cărți publicate în străinătate = 2**

1. **Ionuț Munteanu**, *Boundary Stabilization of Parabolic Equations*, Birkhäuser-Springer, 2019.
2. **Marius Durea**, E.-A. Florea, R. Strugariu, *Efficiencies and optimality conditions in vector optimization with variable ordering structure*, capitol in cartea *Variational Analysis and Set Optimization: Developments and Applications in Decision Making*, C. Tammer, A. Khan, E. Koebis (Eds.), CRC Press (Taylor & Francis), 2019, 158-209.
3. *Topological Methods in Nonlinear Analysis*, volum special dedicat prof. I.I. Vrabie, **Cătălin-George Lefter** (Editor invitat).

### **Comunicări prezentate la conferințe internaționale = 28**

1. **Viorel Barbu**, *The H-theorem for the nonlinear Fokker-Planck equations*, conferința *New Perspectives in Nonlinear PDE*, The Center for Mathematical Sciences (CMS), Technion, Israel, 31 mai – 07 iunie 2019.
2. **Viorel Barbu**, *Stochastic Differential Equations* (16 conferințe de o oră în vederea diseminării rezultatelor științifice din tematica proiectului PN-III-P4-ID-PCE-2016-0011), Universitatea din Trento, Italia (Departamentul de Matematică), 6 aprilie-7 mai 2019.
3. **Viorel Barbu**, *Asymptotic feedback controllability of Fokker-Planck equations*, „Special Semester on Optimization 2019”, RICAM, Linz, Austria, 28-30 nov. 2019.
4. **Viorel Barbu**, *Nonlinear Fokker-Planck equations; wellposedness and asymptotic behavior*, IMAR70. Continuant sept décades d'excellence en mathématiques, 4-5 oct. 2019, București.
5. **Cătălin-George Lefter**, *Parabolic regularity, anisotropic Sobolev embeddings and global Carleman estimates in  $L^q(L^p)$  spaces*, IMAR70. Continuant sept décades d'excellence en mathématiques, 4-5 oct. 2019, București.
6. **Constantin Zălinescu**, *Lagrange multipliers in convex entropy minimization*, Workshop on Nonsmooth and Variational Analysis, Viena, Austria, 28 ianuarie - 1 februarie, 2019.

7. **Constantin Zălinescu**, *Minimal point theorems and variational principles in set-valued optimization*, 4th International Conference on Set Optimization and Set-Valued Variational Analysis with Applications to Economics, Finance, Statistics, Jena, Germania, 11-16 februarie, 2019.
8. **Constantin Zălinescu**, *On unconstrained optimization problems solved using CDT and triality theory*, 3rd International Conference and Summer School Numerical Computations: Theory and Algorithms, Le Castella – Isola Capo Rizzuto Crotone, Italia, 15-21 iunie, 2019.
9. **Constantin Zălinescu**, *On constrained optimization problems solved using the canonical duality theory*, 6th World Congress on Global Optimization, Metz, Franta, 8-10 iulie, 2019.
10. **Constantin Zălinescu**, *On unconstrained optimization problems solved using CDT and triality theory*, Workshop on Games, Dynamics and Optimization, Cluj-Napoca, 9-11 aprilie, 2019.
11. **S. Anița**, *Population dynamics and their regional control*, The Ninth Congress of Romanian Mathematicians, Galați, 28 June-3 July, 2019.
12. **S. Anița**, *Regional control problems for structured population dynamics*, Viennese Vintage Workshop 2019, Heterogeneous Dynamic Models of Economic and Population Systems, Vienna, Austria, 5-6 December 2019, Vienna, Austria.
13. **S. Anița**, G. Dimitriu, *A regional control problem in epidemiology*, International Symposium on Differential Models in Geometry, Computer Science and Hydrotechnics, Iași, 22-25 May, 2019.
14. **S. Anița**, E. Beretta, V. Capasso, *Malaria models and their control*, BIOMATH 2019, Bedlewo, Poland, 16-20 June, 2019.
15. **O. Cârjă**, A. Lazu, *Minimum time and minimum energy for linear systems*, International Conference on Applied and Pure Mathematics, October 31 – November 3, 2019, Iași, Romania.
16. **M. Durea**, *Barrier methods for optimization problems with convex constraint*, International Conference on Continuous Optimization, Berlin, Germania, 3-8 august 2019.
17. **Aurel Rascanu**, *Existence and continuity of the viscosity solutions via generalized Feynman-Kac representation formula*, International Conference on Applied and Pure Mathematics, Iași, Romania, October 31 - November 3, 2019.
18. **A. Zălinescu**, *A probabilistic approach for solving path-dependent nonlinear parabolic equations*, Functional Differential Equations and Applications Conference, Ariel University, Israel, Sept. 23-27, 2019.
19. **A. Rălea**, *Segmentation of molecular images*, International Conference on Applied and Pure Mathematics, 31.10.2019-3.11.2019, Iasi, Romania.
20. **A. Rălea**, *Combined variational methods and empirical wavelets in segmentation of STM images*, Image processing group 11-16.11.2019, Cambridge University.
21. **C. Stamate**, *Aumann types integrals for real multifunctions*, The Ninth Congress of Romanian Mathematicians, 28 iunie-3 iulie 2019, Galati.
22. **C. Stamate**, *Pettis type integrals for multifunctions*, The 27th Conference on Applied and Industrial Mathematics, 19-22 septembrie 2019, Targoviste.

23. **G. Lițcanu**, *atterns in reaction diffusion systems*. International Conference on Applied and Pure Mathematics, 31 oct. – 3 nov. 2019, Iași.
24. **I.D. Ghiba**, *Well-posedness of nonstandard relaxed models including novel microinertia terms*, 2019 EMI International Conference-Lyon. 3-5.07.2019.
25. **Ionuț Munteanu**, *Boundary stabilization of parabolic type equations via fixed point theorem*, International Conference on Elliptic and Parabolic Problems, Gaeta, Italy.
26. **E.A. Melnig**, *Stability in inverse source problems and nonlinear reaction-diffusion systems*, Congresul Matematicienilor Romani, 29 iunie 2019, Galati.
27. **E.A. Melnig**, *Carleman inequalities and applications to source estimates in parabolic inverse problems*, International Conerence on Applied and Pure Mathematics, 31 octombrie – 3 noiembrie 2019, Iasi.
28. **E.A. Melnig**, *Stability in  $L^q$ -norm for inverse source parabolic problems*, Workshop of Young Researchers, 4 iunie 2019, Bucuresti, Romania.

### Comunicări prezentate la conferințe naționale = 16

1. **D. Ieșan**, *Medii termoelastice pretensionate*, Zilele Academice Ieșene, Institutul de Matematică Octav Mayer, 19 octombrie 2019.
2. **Cătălin-George Lefter**, *Carleman estimates for parabolic systems and applications to control problems*, 2<sup>nd</sup> Workshop on Analysis, PDEs and Mechanics, 30 mai 2019.
3. **Cătălin Lefter**, *Regularitate parabolică, teoreme de scufundare pentru spații Sobolev anizotrope și inegalități Carleman în  $L^q(L^p)$* . Zilele Academice Ieșene, Institutul de Matematică Octav Mayer, 19 octombrie 2019.
4. **Marius Durea**, *On the sensitivity of Pareto efficiency in set-valued optimization problems*, Zilele Academice Ieșene, Institutul de Matematică Octav Mayer, 19 octombrie 2019.
5. **Aurel Rascanu**, *Continuity of viscosity solutions via Jakubowski topology*, Zilele Academice Ieșene, Institutul de Matematică Octav Mayer, 19 octombrie 2019.
6. **S. Anița**, *Regional control for a spatially structured problem in epidemiology*, Second Romanian Itinerant Seminar on Mathematical Analysis and its Applications, Constanța, 10-12 May, 2019.
7. **Ovidiu Cârjă**, *Asupra problemei timpului optimal pentru sisteme liniare infinit dimensionale*, Zilele Academice Ieșene, Institutul de Matematică Octav Mayer, 19 octombrie 2019.
8. **Teodor Havârneanu, Cătălin-George Popa, Armen Shirikyan**, *Exact internal controllability of the three-dimensional magnetohydrodynamic equations with five or four scalar control functions*. Zilele Academice Ieșene, Institutul de Matematică Octav Mayer, 19 octombrie 2019.
9. **C. Stamate**, *A unified approach for nonlinear integrals*, Zilele Academice Ieșene, Institutul de Matematică Octav Mayer, 19 octombrie 2019.
10. **C. Stamate**, *Choquet type integrals for multifunctions*, Zilele Universitatii Al.I. Cuza, 25 octombrie 2019.
11. **G. Lițcanu**, *Turing instability in reaction-diffusion systems*. Zilele Academice Ieșene, Institutul de Matematică Octav Mayer, 19 octombrie 2019.

12. **Adrian Zălinescu**, *O formula de reprezentare pentru ecuații parabolic neliniare funcționale prin intermediul unor EDS retrograde cu coeficienți cu întârziere*. Zilele Academice Iașene, Institutul de Matematică Octav Mayer, 19 octombrie 2019.
13. **I.D. Ghiba**, *Policonvexitate vs convexitate de rang unu în 2D*, Zilele Universitatii Alexandru Iona Cuza, Sesiune speciala dedicate domnului prof. Stan Chirita la implinirea varstei de 70 ani, 25 octombrie 2019.
14. **E.A. Melnig**, *Carleman estimates and stability in inverse source parabolic problems*, Sesiunea de comunicari studentesti de matematica, Iasi, 5 iulie 2019.
15. **E.A. Melnig**, *Stability in inverse source problems for nonlinear reaction-diffusion systems inverse problems*, Zilele Academice Iașene, Institutul de Matematică Octav Mayer, 19 octombrie 2019.
16. **E.A. Melnig**, *Stabilizarea sistemelor parabolice cu numar redus de controale*, Zilele Universitatii, 25 octombrie 2019, Iasi.

## Lucrări elaborate/acceptate/trimise spre publicare = 27

### Lucrări elaborate acceptate = 2

1. M.V. d'Agostino, G. Barbagallo, **I.D. Ghiba**, B. Eidel, P. Neff, A. Madeo, Effective description of anisotropic wave dispersion in mechanical band-gap metamaterials via the relaxed micromorphic model, acceptata, *Journal of Elasticity*, 2019.
2. **Catalin-George Lefter**, **Elena-Alexandra Melnig**, On the parabolic regularity, Sobolev embeddings and global Carleman estimates in  $L^q(L^p)$  spaces, *Pure and Applied Functional Analysis*, accepted for publication. ISSN 2189-3756 (PRINT) ISSN 2189-3764 (ONLINE).

### Lucrări elaborate/trimise spre publicare = 24

1. **Viorel Barbu**, Michael Röckner, *The evolution to equilibrium of solutions to nonlinear Fokker-Planck equation*.
2. **Viorel Barbu**, Michael Röckner, Optimal feedback controllers for the stochastic reflection problem in  $\mathbb{R}^d$ .
3. **Viorel Barbu**, Michael Röckner, Uniqueness nonlinear Fokker-Planck equations and weak uniqueness for McKean-Vlasov SDEs.
4. **Constantin Zălinescu**, On quadratically constrained quadratic optimization problems and canonical duality theory, *Optim. Lett.* (trimisa spre publicare).
5. **S. Anița**, E. Beretta, V. Capasso, Optimal control strategies for a class of vector borne diseases, exemplified for a toy model for malaria, *BIOMATH*, trimisă la publicat.
6. **O. Cârjă**, A. Lazu, Minimum time and minimum energy for linear control systems (trimisă spre publicare).
7. T. Chelmuș, **M. Durea**, *Exact penalization and optimality conditions for constrained directional Pareto efficiency*, trimisa spre publicare.
8. L. Maticiuc, **A. Rășcanu**,  *$L^p$ -Variational Solutions of Multivalued Backward Stochastic Differential Equations*, 1-63, (trimisa la *The Annals of Applied Probability*).

9. **Aurel Rășcanu**, *On the maximal monotonicity of subdifferential operators*, 1-6, <https://arxiv.org/abs/1910.03847>, 2019.
10. L. Di Persio, L. Maticiuc, **A. Zalinescu**, *Parameter dependence of time-delayed BSDEs with Stieltjes integral* (trimisă spre publicare în Stochastics and Dynamics)
11. F. Cordini, L. Di Persio, L. Maticiuc, **A. Zalinescu**, *A stochastic approach to path-dependent nonlinear Kolmogorov equations with Neumann nonlinear boundary conditions via BSDEs with time-delayed generators and applications to finance*.
12. **A. Zalinescu**, *Oblique reflected SDEs with jumps*.
13. **A. Ciomaga**, D. Ghilli, E. Topp, *Periodic homogenisation for Hamilton-Jacobi equations with critical fractional diffusion*.
14. **Teodor Havârneanu, Cătălin-George Popa**, Armen Shirikyan, Exact controllability of the three-dimensional magnetohydrodynamic equations with five or four scalar control functions.
15. **C. Stamate**, A unified approach for nonlinear integrals.
16. **C. Stamate**, Choquet type integrals for multifunctions.
17. **C. Stamate**, Aumann-Pettis-Sugeno integrals of vector multifunctions relative to a fuzzy measure (trimisă spre publicare la Fuzzy sets and Systems).
18. **C. Stamate**, *Is the Pettis method useful for vector nonlinear integrals?*
19. **G. Lițcanu**, *Pattern initiation in a reaction diffusion system*.
20. **G. Lițcanu**, *Large time behaviour of solutions to a parabolic-degenerate system*.
21. **Ionuț Munteanu**, Michael Röckner, *Global solutions for random vorticity equations perturbed by gradient dependent noise, in two and three dimensions* (trimisă spre publicare).
22. **Elena-Alexandra Melnig**, Stability in  $L^q$ -norm for inverse source parabolic problems, (trimisă spre publicare la *Journal of Inverse and Ill Posed Problems*).
23. **Elena-Alexandra Melnig**, Stability in inverse source problems for nonlinear reaction-diffusion systems, *Nonlin. Diff. Eqns. Appls.* (trimisă spre publicare).
24. **Ștefana-Lucia Anița**, O problemă de control stochastic cu coeficient de difuzie neconstant. (în lucru).

## Granturi derulate prin institut = 1

1. **PN-III-P4-ID-PCE-2016-0011**. *Analiza și controlul ecuațiilor stochastice Schrödinger și a unor modele de difuzie neliniară*. Director de proiect: **V. Barbu**. Membri în echipă: **I. Munteanu, A.E. Melnig**. Contract 49/2017, durata 30 luni (12.07.2017-31.12.2019). Finantator: UEFISCDI. Valoare totală: 850.000 lei. Valoare **2019: 340.994 lei**.

## Stagii de cercetare-documentare

1. **Viorel Barbu**, Stagiul de cercetare cu grupul “Taming uncertainty and profiting from randomness and low regularity in analysis, stochastic and their applications” din

- cadrul Universitatii din Bielefeld, în perioada 05 august – 05 septembrie 2019, din grantul 0011.
2. **Ionuț Munteanu**, Stagiul de cercetare împreună cu P. Colli, 14-20 Octombrie 2019, Universitatea din Pavia, Italia, din grantul 0011.
  3. **Ionuț Munteanu**, Stagiul de cercetare, Aprilie 2019, Universitatea din Bielefeld, Germania.

### **Premii = 1**

1. **Ionuț Munteanu**, Premiul *Nicolae Dinculeanu* oferit de Academia Română.

### **Manifestări științifice organizate de institut = 3**

1. *International Conference of Applied and Pure Mathematics, 31 octombrie-3 noiembrie 2019*. <http://math.etc.tuiasi.ro/apm2019/>. Conferința este organizată cu periodicitate de 2 ani în colaborare cu Departamentul de matematică de la Universitatea Tehnică Gh. Asachi din Iași.
2. *Sesiunea de comunicări științifice a Institutului de Matematică O. Mayer și a Comisiei de automatică teoretică și teoria controlului, 19 octombrie 2019*. Sesiunea se organizează anual în cadrul Zilelor Academice Ieșene.
3. **Ordinary and Partial Differential Equations, Controlled Differential Systems, Sectiune la The Ninth Congress of Romanian Mathematicians, 28.06-3.07.2019**, Galați, Romania, Membru în Comitetul științific al secțiunii : Cătălin-George Lefter.

### **Citări = 1559**

1. V. Barbu:	764	
2. C. G. Lefter:		22
3. C. Zălinescu:	220	
4. D. Ieșan:	123	
5. M. Durea :	78	
6. A. Rășcanu:	75	
7. S. Anița:	61	
8. A. Zălinescu:	6	
9. O. Cârjă:	34	
10. G. Lițcanu:	9	
11. I.D. Ghiba:	160	
12. I. Munteanu:	7	

**DIRECTOR,**

**Prof.dr. Cătălin-George Lefter**