Europass
Curriculum Vitae

Personal information

First name / Surname: Ioan Liviu IGNAT

LinkedIn / Website: www.imar.ro/lignat

Work experience

01/04/2016 – Present
Researcher CS-I, Institute of Mathematics of the Romanian Academy

01/09/2018 – 30/08/2020, 01/07/2022 – 30/05/2024
Researcher, ICUB - University of Bucharest

01/10/2014 – 31/03/2016
Associate Professor, University of Bucharest

01/01/2014 – 31/03/2016
Researcher CS-II, Institute of Mathematics of the Romanian Academy

12/2012 – 09/2013
Group Leader of Analysis and PDE research line, Basque Center for Applied Mathematics, Spain

30/10/2011 – 30/09/2013
Researcher, Basque Center for Applied Mathematics

01/05/2008 – 31/12/2013
Researcher CS-III, Institute of Mathematics of the Romanian Academy

01/07/2006 – 31/04/2008
Researcher, Institute of Mathematics of the Romanian Academy

01/04/2006 – 31/09/2007
Assistant Professor, Universidad Autónoma de Madrid

Education and training

May 31, 2013
Habilitation Thesis, IMAR

September 15, 2006
Ph.D., Universidad Autónoma de Madrid

July 2001
Bachelor's degree, Universitatea din Craiova, Romania

09/1998 – 05/1999
Student, University of Pittsburgh, USA

Personal skills

Languages: Romanian (native), English (fluent), Spanish (fluent)

Digital skills: Latex, MS Office, MATLAB, Python (basic), HTML

Additional information

See Annexes for full list of:

- Publications

- Research Projects

Annexes

Annex 1: List of Publications

1. M. M. González et al., Concentration limit for non-local dissipative convection-diffusion kernels on the hyperbolic space, Nonlinear Anal. **248** (2024), Paper No. 113618, 28 pp.; MR4781094

2. F. Della Pietra et al., Finite element approximation of the Hardy constant, J. Convex Anal. **31** (2024), no. 2, 497–523; MR4734734

3. J. Endal, L. I. Ignat and F. Quirós Gracián, Heat equations with fast convection: source-type solutions and large-time behaviour, Discrete Contin. Dyn. Syst. Ser. S **17** (2024), no. 4, 1497–1512; MR4725026

4. J. Endal, L. I. Ignat and F. Quirós Gracián, Large-time behaviour for anisotropic stable nonlocal diffusion problems with convection, J. Math. Pures Appl. (9) **179** (2023), 277–336; MR4659287

5. C. M. Cazacu, L. I. Ignat and D. Manea, The Hardy inequality and large time behaviour of the heat equation on $\mathbb{R}^{N-k} \times (0,\infty)^k$, J. Differential Equations **375** (2023), 682–705; MR4643775

6. A. Fernández-Bertolin, A. Grecu and L. I. Ignat, Hardy uncertainty principle for the linear Schrödinger equation on regular quantum trees, J. Fourier Anal. Appl. **28** (2022), no. 2, Paper No. 17, 34 pp.; MR4387410

7. C. M. Cazacu et al., A convection-diffusion model on a star-shaped graph, NoDEA Nonlinear Differential Equations Appl. **29** (2022), no. 2, Paper No. 17, 37 pp.; MR4372591

8. A. Gárriz and L. I. Ignat, A non-local coupling model involving three fractional Laplacians, Bull. Math. Sci. **11** (2021), no. 2, Paper No. 2150007, 35 pp.; MR4304014

9. L. I. Ignat, J. D. Rossi and A. San Antolín, Asymptotic behaviour for local and nonlocal evolution equations on metric graphs with some edges of infinite length, Ann. Mat. Pura Appl. (4) **200** (2021), no. 3, 1301–1339; MR4242130

10. L. Beznea, L. I. Ignat and J. D. Rossi, From Gaussian estimates for nonlinear evolution equations to the long time behavior of branching processes, Rev. Mat. Iberoam. **35** (2019), no. 3, 823–846; MR3960260

11. A. Grecu and L. I. Ignat, The Schrödinger equation on a star-shaped graph under general coupling conditions, J. Phys. A **52** (2019), no. 3, 035202, 26 pp.; MR3899706

12. C. M. Cazacu, L. I. Ignat and A. F. Pazoto, Null-controllability of the linear Kuramoto-Sivashinsky equation on star-shaped trees, SIAM J. Control Optim. **56** (2018), no. 4, 2921–2958; MR3842915

13. L. I. Ignat and D. Stan, Asymptotic behavior of solutions to fractional diffusion-convection equations, J. Lond. Math. Soc. (2) **97** (2018), no. 2, 258–281; MR3789847

14. L. I. Ignat and A. Pozo, A splitting method for the augmented Burgers equation, BIT **58** (2018), no. 1, 73–102; MR3771437

15. L. I. Ignat and A. Pozo, A semi-discrete large-time behavior preserving scheme for the augmented Burgers equation, ESAIM Math. Model. Numer. Anal. **51** (2017), no. 6, 2367–2398; MR3745175

16. C. M. Cazacu, L. I. Ignat and A. F. Pazoto, On the asymptotic behavior of a subcritical convection-diffusion equation with nonlocal diffusion, Nonlinearity **30** (2017), no. 8, 3126–3150; MR3685664

17. L. I. Ignat and T. I. Ignat, Long-time behavior for a nonlocal convection diffusion equation, J. Math. Anal. Appl. **455** (2017), no. 1, 816–831; MR3665134

18. L. I. Ignat, The dispersion property for Schrödinger equations, in *PDE's, dispersion, scattering theory and control theory*, 59–67, Sémin. Congr., 30, Soc. Math. France, Paris; MR3587234

19. C. N. Beli, L. I. Ignat and E. Zuazua, Dispersion for 1-D Schrödinger and wave equations with BV coefficients, Ann. Inst. H. Poincaré C Anal. Non Linéaire **33** (2016), no. 6, 1473–1495; MR3569238

20. L. I. Ignat, A. Pozo and E. Zuazua, Large-time asymptotics, vanishing viscosity and numerics for 1-D scalar conservation laws, Math. Comp. **84** (2015), no. 294, 1633–1662; MR3335886

21. L. I. Ignat, T. I. Ignat and D. Stancu-Dumitru, A compactness tool for the analysis of nonlocal evolution equations, SIAM J. Math. Anal. **47** (2015), no. 2, 1330–1354; MR3328145

22. V. Banica and L. I. Ignat, Dispersion for the Schrödinger equation on the line with multiple Dirac delta potentials and on delta trees, Anal. PDE **7** (2014), no. 4, 903–927; MR3254348

23. L. I. Ignat and A. F. Pazoto, Large time behaviour for a nonlocal diffusion—convection equation related with gas dynamics, Discrete Contin. Dyn. Syst. **34** (2014), no. 9, 3575–3589; MR3190994

24. L. I. Ignat et al., Decay estimates for nonlinear nonlocal diffusion problems in the whole space, J. Anal. Math. **122** (2014), 375–401; MR3183531

25. L. I. Ignat and E. Zuazua, Asymptotic expansions for anisotropic heat kernels, J. Evol. Equ. **13** (2013), no. 1, 1–20; MR3020134

26. L. I. Ignat and E. Zuazua, Convergence rates for dispersive approximation schemes to nonlinear Schrödinger equations, J. Math. Pures Appl. (9) **98** (2012), no. 5, 479–517; MR2980459

27. L. I. Ignat, J. D. Rossi and A. San Antolín, Lower and upper bounds for the first eigenvalue of nonlocal diffusion problems in the whole space, J. Differential Equations **252** (2012), no. 12, 6429–6447; MR2911841

28. L. I. Ignat, A. F. Pazoto and L. Rosier, Inverse problem for the heat equation and the Schrödinger equation on a tree, Inverse Problems **28** (2012), no. 1, 015011, 30 pp.; MR2864510

29. V. Banica and L. I. Ignat, Dispersion for the Schrödinger equation on networks, J. Math. Phys. **52** (2011), no. 8, 083703, 14 pp.; MR2858075

30. L. I. Ignat and D. Stan, Dispersive properties for discrete Schrödinger equations, J. Fourier Anal. Appl. **17** (2011), no. 5, 1035–1065; MR2838118

31. L. I. Ignat, A splitting method for the nonlinear Schrödinger equation, J. Differential Equations **250** (2011), no. 7, 3022–3046; MR2771254

32. L. I. Ignat, Strichartz estimates for the Schrödinger equation on a tree and applications, SIAM J. Math. Anal. **42** (2010), no. 5, 2041–2057; MR2684310

33. L. I. Ignat and J. D. Rossi, Asymptotic expansions for nonlocal diffusion equations in L^q-norms for $1 \leq q \leq 2$, J. Math. Anal. Appl. **362** (2010), no. 1, 190–199; MR2557678

34. L. I. Ignat and J. D. Rossi, Decay estimates for nonlocal problems via energy methods, J. Math. Pures Appl. (9) **92** (2009), no. 6, 613–638; MR2554283

Annex 2: Research Projects and Grants

Director of Research Projects

a. Analysis of Schrodinger equations, ANCS-UEFICDI, PN-II-RU-TE- 2014-4-0007, 01/10/2015-30/09/2017, 550000RON

b. Analysis, Control and Numerical Approximations of Partial Differential Equations, CNCS, PN II, PN-II-ID-PCE-2011-3-0075, 01/10/2011-30/09/2016, 1500000RON

c. Qualitative properties of partial differential equations and their numerical approximations, CNCSIS, PN II, TE-4/2010, 28/07/2010 - 27/07/2013, 750000RON

d. Qualitative properties of difussion and dispersion in the study of the nonlinear problems and their numerical approximations, CNCSIS, PN II, RP-3,10/2007-09/2009, 500000 RON.

Member in Research Projects

a. NSF-UEFISCDI: Linear and Nonlinear Stability of Physical Flows (LNSPF), Complex bilateral research collaboration between U.S. and Romanian researchers, NSF PI: Alexandru Ionescu (Princeton University), UEFISCDI project code ROSUA-2024-0001, October 1, 2024 - September 30, 2027

b. Sharp analysis of partial differential operators, Project code: PN-III-P1-1.1-TE-2021-1539, UEFISCDI, P.I. Cristian Cazacu

c. Noi abordari in inegalitatile functionale si ecuatii de evolutie. PN-III-P1-1.1-TE2016-2233, ANCS-UEFICDI, P.I. Cristian Cazacu

d. Typical and Nontypical Eigenvalue Problems for Some Classes of Differential Operators, ANCS-UEFICDI, PN-III-P4-ID-PCE-2016-0035, P.I. Mihai Mihailescu

e. Dynamics, Control And Numerics For Fractional Partial Differential Equations, University of Pueto Rico, FA9550-15-1-0027, P.I. Mahamawi Warma, AFOSR Grant FA9550-15-1-0027, December 2014–November 2017 (Total: $450,438)

f. Methods and platforms for numerical simulation and control of environmental flows, MTM2014-52347-C2-01-R, financed by MICIN, SPAIN, 2015-2017, IP E. Zuazua

g. New analytical and numerical methods in wave propagation, NUMERIWAVES, FP7 - 246775, financed by European Research Council - ERC, IP E. Zuazua (Total: 1662999 euros)

h. Partial Differential Equations: Analysis, Control, Numerics and Applications, MTM2011-29306, financed by the MICINN SPAIN, 2012-2014, IP E. Zuazua

i. Ecuaciones en Derivadas Parciales: Análisis, Control, Numérico y Aplicaciones, MTM2008-03541, MEC Spain, 2009-2011, 182300 euros, Grant Director Enrique Zuazua.

j. Dezvoltarea unui parteneriat european pentru studiul unor probleme actuale de analiza matematica, IMAR, CEx06-M3-102/01.08.2006, August 2006 - Iulie 2008, Grant Director: Prof. Dr. Florin Rădulescu.

k. Desarrollo de aplicacion informatica para el diseno optimo aeronautico mediante tecnicas novedosas, Universidad Autonoma de Madrid, (CIT-370200-2005-10) MEC- Spain, 1/11/2005 - 30/10/2008, Grant Directors: Francisco Palacios, Instituto Nacional de Tecnica Aeroespacial, Enrique Zuazua Iriondo, UAM, 240000 euro.

l. Analisis, aproximacion numerica y diseno optimo de ecuaciones en derivadas parciales, MTM 2005-00714, Universidad Autonoma de Madrid, MEC, 01/11/2005 - 31/10/2008, Grant Director Enrique Zuazua Iriondo, 192 000 euro.

m. Analisis, Control y Simulacion Numerica en medios heterogeneos y en la interaccion fluido-estructura, BFM2002-03345, Universidad Autónoma de Madrid, MCYT, Grant Director Enrique Zuazua Iriondo, 171 000 euro.

n. Smart system, new materials, adaptive systems and their nonlinearities modelling, control and numerical simulation, HPRN-CT-2002-00284, Universidad Autónoma de Madrid, EU, Grant Director: Enrique Zuazua Iriondo, 130000 euro Spanish group.

o. Homogenization and Multiple Scales, HPRN-CT-2000-00109, Universidad Autónoma de Madrid, EU, Grant Director Enrique Zuazua Iriondo, 180 000 euros Spanish group.

25.09.2025 Ignat Liviu

L I S T A

lucrărilor ştiinţifice în domeniul disciplinelor din postul didactic

1. M. M. González et al., Concentration limit for non-local dissipative convection-diffusion kernels on the hyperbolic space, Nonlinear Anal. **248** (2024), Paper No. 113618, 28 pp.; MR4781094
2. F. Della Pietra et al., Finite element approximation of the Hardy constant, J. Convex Anal. **31** (2024), no. 2, 497–523; MR4734734
3. J. Endal, L. I. Ignat and F. Quirós Gracián, Heat equations with fast convection: source-type solutions and large-time behaviour, Discrete Contin. Dyn. Syst. Ser. S **17** (2024), no. 4, 1497–1512; MR4725026
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16. C. M. Cazacu, L. I. Ignat and A. F. Pazoto, On the asymptotic behavior of a subcritical convection-diffusion equation with nonlocal diffusion, Nonlinearity **30** (2017), no. 8, 3126–3150; MR3685664

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32. L. I. Ignat, Strichartz estimates for the Schrödinger equation on a tree and applications, SIAM J. Math. Anal. **42** (2010), no. 5, 2041–2057; MR2684310

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34. L. I. Ignat and J. D. Rossi, Decay estimates for nonlocal problems via energy methods, J. Math. Pures Appl. (9) **92** (2009), no. 2, 163–187; MR2542582

35. L. I. Ignat and E. Zuazua, Convergence of a two-grid algorithm for the control of the wave equation, J. Eur. Math. Soc. (JEMS) **11** (2009), no. 2, 351–391; MR2486937

36. L. I. Ignat and E. Zuazua, Numerical dispersive schemes for the nonlinear Schrödinger equation, SIAM J. Numer. Anal. **47** (2009), no. 2, 1366–1390; MR2485456

37. L. I. Ignat and J. D. Rossi, Refined asymptotic expansions for nonlocal diffusion equations, J. Evol. Equ. **8** (2008), no. 4, 617–629; MR2460931

38. L. I. Ignat and J. D. Rossi, Asymptotic behaviour for a nonlocal diffusion equation on a lattice, Z. Angew. Math. Phys. **59** (2008), no. 5, 918–925; MR2442958

39. L. I. Ignat and J. D. Rossi, A nonlocal convection-diffusion equation, J. Funct. Anal. **251** (2007), no. 2, 399–437; MR2356418

40. L. I. Ignat, Global Strichartz estimates for approximations of the Schrödinger equation, Asymptot. Anal. **52** (2007), no. 1-2, 37–51; MR2337026

41. L. I. Ignat, Fully discrete schemes for the Schrödinger equation. Dispersive properties, Math. Models Methods Appl. Sci. **17** (2007), no. 4, 567–591; MR2316299

42. L. I. Ignat, Qualitative properties of a numerical scheme for the heat equation, in *Numerical mathematics and advanced applications*, 593–600, Springer, Berlin, ; MR2303688

43. L. I. Ignat and E. Zuazua, Dispersive properties of numerical schemes for nonlinear Schrödinger equations, in *Foundations of computational mathematics, Santander 2005*, 181–207, London Math. Soc. Lecture Note Ser., 331, Cambridge Univ. Press, Cambridge, ; MR2277106

44. L. I. Ignat and E. Zuazua, A two-grid approximation scheme for nonlinear Schrödinger equations: dispersive properties and convergence, C. R. Math. Acad. Sci. Paris **341** (2005), no. 6, 381–386; MR2169157

45. L. I. Ignat and E. Zuazua, Dispersive properties of a viscous numerical scheme for the Schrödinger equation, C. R. Math. Acad. Sci. Paris **340** (2005), no. 7, 529–534; MR2135236

46. L. I. Ignat, C.-G. Lefter and V. D. Rădulescu, Minimization of the renormalized energy in the unit ball of $\bold R^2$, Nieuw Arch. Wiskd. (5) **1** (2000), no. 3, 278–280; MR1782239

25.09.2025

Ignat Liviu