Curriculum vitae

INFORMAŢII PERSONALE

Liviu-Petru Zarbo

Str. Donat nr. 67-103, 400293 Cluj-Napoca Cluj-Napoca (România)

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liviu.zarbo@itim-cj.ro

POZIŢIA

Cercetator Stiintific 1

EXPERIENŢA PROFESIONALĂ

04/11/2014–Prezent

Cercetator Stiintific (CS, CS2, CS1)

INCDTIM Cluj-Napoca, Cluj (România)

- activitati CDI
- coordonarea unei echipe de cercetare
- formularistica

01/01/2010–31/03/2014

Postdoctorand

Institutul de fizica al Academiei Republicii Cehe, Praga (Republica Cehă)

- activitati CDI

01/08/2007–31/12/2009

Postdoctorand

Texas A&M University, College Station (Statele Unite ale Americii)

- activitati CDI
- activitati didactice

01/09/2002–31/08/2007

Asistent/Asistent cercetator

University of Delaware, Newark (Statele Unite ale Americii)

- activitati didactice
- activitati CDI

01/09/2001–31/08/2002

Profesor de fizica

Scoala Gen. Nr. 5, Zalau (Romania)

- activitati didactice

Experienta Didactica Universitara

2009 Toamna: Instructor PHYS201 la *Texas A&M University.*

2002 Toamna: Asistent pentru PHYS201 la *University of Delaware*

EDUCAŢIE ŞI FORMARE

09/2002–08/2007

Doctorat

University of Delaware, Newark (Statele Unite ale Americii)

10/2000–06/2001

Diploma de Studii Aprofundate

Universitatea Babes-Bolyai, Cluj-Napoca (România)

10/1996–06/2000

Diploma de Licenta

Universitatea Babes-Bolyai, Cluj-Napoca (România)

09/1992–06/1996

Bacalaureat

Liceul Teoretic, Zalau (România)

COMPETENŢE PERSONALE

Limba(i) maternă(e): română

Alte limbi străine cunoscute

	ÎNȚELEGERE		VORBIRE		SCRIERE
	Ascultare	Citire	Participare la conversaţie	Discurs oral	
engleză	C2	C2	C2	C2	C2

Competenţe organizaţionale/manageriale

- director de proiect: coordonarea unei echipe de cercetatori (4 proiecte nationale)
- 2021- lider al echipei E11/INCDTIM Inginerie cuantica.

Alte competenţe

- Linux. MS Windows, high performance computing
- programare in Fortran 77/95, C, C++, JAVA, python
- Scientific software: Mathematica, Maple, Turbomole

INFORMAŢII SUPLIMENTARE

Proiecte castigate

director de proiect: 2015-2017: *Universal Multiscale Simulations for Hydrogen Storage in Novel Materials*, UEFISCDI, PN-II-RU-TE-2014-4-1309, Romania.

Responsabil de proiect 2017-2021 QUTECH-RO, UEFISCDI, PN-III-P1-1.2-PCCDI-2017-0338, 79PCCDI/2018.

Responsabil proiect 2023-2025 *Romanian National Quantum Communication Infrastructure* RoNaQCI – EU grant 101091562.

Alte proiecte ca manager

2018-2022: PN-III-P4-ID-PCCF-2016-0047 Controlul proprietatilor electronice in heterostructuri bazate pe perovskite feroelectrici: de la teorie la aplicatii (castigat de Daniel Bilc).

2017-2019 Materiale cu performanță inaltă pentru generația următoare de generatoare termoelectrice spațiale (MatSpaceTEG) STAR193/2017 (castigat de Daniel Bilc).

Afilieri profesionale

Membru, American Physical Society.

Directii de cercetare

2002-2014 spintronica, semiconductori magnetici, efect Hall de spin, transport electronic (semiclasic si cuantic)

2014-2017 stocare de hydrogen in sisteme MOF

2014-2022 feroelectrici

2017- informatie cuantica: qubiti supraconductori, moduri Majorana, comunicatii cuantice

Publicatii (peste 1k citari)

1. B. K. Nikolic, S. Souma, L. P. Zarbo, and J. Sinova, *Nonequilibrium spin Hall accumulation in ballistic semiconductor nanostructures*, Phys. Rev. Lett. **95**, 046601 (2005).

2. B. K. Nikolic, L. P. Zarbo, and S. Welack, *Transverse spin-orbit force in the spin Hall effect in ballistic quantum wires*, Phys. Rev. B **72**, 075335 (2005).

3. B. K. Nikolic, L. P. Zarbo, and S. Souma, *Mesoscopic spin Hall effect in multiprobe spin-orbit coupled ballistic semiconductor bridges*, Phys. Rev. B **72**, 075361 (2005).

4. B. K. Nikolic, L. P. Zarbo, and S. Souma, *Imaging mesoscopic spin Hall flow: Spatial distribution of local spin currents and spin densities in and out of multiterminal spin-orbit coupled semiconductor nanostructures*, Phys. Rev. B **73**, 075303 (2006).

5. B. K. Nikolic and L. P. Zarbo, *Extrinsically Versus Intrinsically Driven Spin Hall Effect in Disordered Mesoscopic Multiterminal Bars*, Europhys. Lett. **77**, 47004 (2007).

6. L. P. Zarbo and B. K. Nikolic, *Spatial distribution of local currents of massless Dirac fermions in quantum transport through graphene nanoribbons*, Europhys. Lett. **80**, 47001 (2007).

7. Alexey A. Kovalev, Liviu P. Zarbo, Y. Tserkovnyak, G. E. W. Bauer, Jairo Sinova, *Piezospin Polarization of Currents in Nanostructures*, Phys. Rev. Lett. **101**, 036401 (2007).

8. R. L. Dragomirova, L. P. Zarbo and B. K. Nikolic, *Spin and Charge Shot Noise in Mesoscopic Spin Hall Systems*, Europhys. Lett. **84**, 37004 (2008).

9. B. K. Nikolic, L. P. Zarbo, and S. Souma, *Spin Currents in Semiconductor Nanostructures: A Nonequilibrium Green-Function Approach*, Chapter 24, page 814 in Volume I of "The Oxford Handbook on Nanoscience and Technology: Frontiers and Advances," Eds. A. V. Narlikar and Y. Y. Fu (Oxford University Press, Oxford, 2010).

10. J. Wunderlich, A. C. Irvine, Jairo Sinova, B. G. Park, L. P. Zarbo, X. L. Xu, B. Kaestner, V. Novak, T. Jungwirth, *Spin-injection Hall effect in a planar photovoltaic cell*, Nature Physics **5**, 675 (2009).

11. Liviu P. Zarbo, Jairo Sinova, Irena Knezevic, J.Wunderlich, T. Jungwirth, *Modeling of diffusion ofinjected electron spins in spin-orbit coupled microchannels*, Phys. Rev. B **82**, 205320 (2010).

12. J. Wunderlich, B. G. Park, A. C. Irvine, L. P. Zarbo, E. Rozkotova, P. Nemec, V. Novak, Jairo Sinova, T. Jungwirth, *Spin Hall effect transistor*, Science **330**, 1801 (2010).

13. D. Fang, H. Kurebayashi, J. Wunderlich, K. Vyborny, L. P. Zarbo, R. P. Campion, A. Casiraghi, B. L. Gallagher, T. Jungwirth, and A. J. Ferguson, *Spin-orbit driven ferromagnetic resonance*, Nature Nanotechnology **6**, 413 (2011).

14. C. Ciccarelli, L. P. Zarbo, A. C. Irvine, R. P. Campion, B. L. Gallagher, J. Wunderlich, T. Jungwirth, A. J. Ferguson, *Spin gating electrical current* APL **101**, 122411 (2012).

15. H. Kurebayashi, Jairo Sinova, D. Fang, A. C. Irvine, J. Wunderlich, V. Novak, R. P. Campion, B. L. Gallagher, E. K. Vehstedt, L. P. Zarbo, K. Vyborny, A. J. Ferguson, T. Jungwirth, *An anti-damping spin-orbit torque originating from the Berry curvature*, Nature Nanotechnology **9**, 211 (2014).

16. Gonzalez-Zalba, MF, Ciccarelli, C., Zarbo, LP, Irvine, AC, Campion, RC, Gallagher, BL, Jungwirth, T, Ferguson, AJ, Wunderlich, J., *Reconfigurable Boolean Logic Using Magnetic Single-Electron Transistors*, PLOS ONE, **10**, 4, e0125142 (2015).

17. Hang Li, H. Gao, Liviu P. Zârbo, K. Výborný, Xuhui Wang, Ion Garate, Fatih Doğan, A. Čejchan, Jairo Sinova, T. Jungwirth, and Aurélien Manchon, *Intraband and interband spin-orbit torques in noncentrosymmetric ferromagnets*, Phys. Rev. B **91**, 134402 (2015).

18. Daniel Bilc, Liviu P. Zarbo, Sorina Garabagiu, Eric Bousquet, and Liliana Mitoseriu,

High field properties of typical perovskite ferroelectrics by first-principles modeling, submitted (2016).

19. Spin Injection Hall effect, Spin Current, second edition (2017).

20. Electrically Enhanced Hydrogen Adsorption in Metal-Organic Frameworks, Liviu Zarbo, Marius Oancea, Emmanuel Klontzas, Emmanuel Tylianakis, Ioana G. Grosu, George E. Froudakis, 10.26434/chemrxiv.8209304.v1.

21. Application of fluorescence spectroscopy using classical right angle technique in white wine classification, Scientific Reports, 9, 18250 (2019).

22. Crystal and Molecular structure of ostarine and andarine, Journal of Molecular Structure, 1199, 126973 (2020).

23. New solid forms of the diuretic compound 4-Chloro Salicylic Acid-5-Sulfonamide, Journal of Molecular Structure, 1241, 130682 (2021).

24. Quantum transport through a quantum dot side-coupled to a Majorana bound state pair in presence of electron-phonon interaction, Levente Máthé, Doru Sticlet, Liviu P. Zârbo, Phys. Rev. B

105, 155409 (2022).

25. Adrian Calborean, Sergiu Macavei, Mihaela Mocan, Catalin Ciuce, Adriana Bintintan, Adrian Cordos, Cosmin Pestean, Romeo Chira, Liviu Zarbo, Lucian Barbu-Tudoran, George Dindelegan, Felix Nickel, Bogdan Mocan, Valeriu Surlin & Vasile Bintintan

Scientific Reports volume 12, Article number: 760 (2022)

26. Daria Gusenkova, Francesco Valenti, Martin Spiecker, Simon Günzler, Patrick Paluch, Dennis Rieger, Larisa-Milena Pioraş-Ţimbolmaş, Liviu P. Zârbo, Nicola Casali, Ivan Colantoni, Angelo Cruciani, Stefano Pirro, Laura Cardani, Alexandru Petrescu, Wolfgang Wernsdorfer, Patrick Winkel, and Ioan M. Pop, "Operating in a deep underground facility improves the locking of gradiometric fluxonium qubits at the sweet spots", Appl. Phys. Lett. 120, 054001 (2022) https://doi.org/10.1063/5.0075909

27. T. Murariu, A. Păstrăv, C. Tripon, C. Morari, E. Puşchiţă and L. P. Zârbo, "A roadmap for building quantum key distribution devices," 2022 21st RoEduNet Conference: Networking in Education and Research (RoEduNet), Sovata, Romania, 2022, pp. 1-6, doi: 10.1109/RoEduNet57163.2022.9921102.

28. Perhaiţa, I., Mureşan, L.E., Garabagiu, S. et al. Structural and electrical charge transport properties in oxygen-deficient PbTiO3−δ ceramics. J Aust Ceram Soc (2023). https://doi.org/10.1007/s41779-023-00895-7

29. Máthé L, Kovács-Krausz Z, Botiz I, Grosu I, El Anouz K, El Allati A, Zârbo LP. Phonon-Assisted Tunneling through Quantum Dot Systems Connected to Majorana Bound States. Nanomaterials. 2023; 13(10):1616. https://doi.org/10.3390/nano13101616.

Conferinţe Peste 30 de prezentari la conferinte internationale.

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Semnatura,