Mikhail V. Beznogov

[redacted]

Research-related IDs

Web of Science ResearcherID: [redacted]

Employment

- 2021 – present: associated researcher, Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering, Bucharest, Romania (https://www.nipne.ro/);
- 2017 – 2021: postdoctoral researcher, Institute of Astronomy of the National Autonomous University of Mexico, Theoretical Astrophysics Department, Mexico City, Mexico (https://astronomia.unam.mx/);
- 2013 – 2017: laboratory assistant/researcher at Ioffe Institute, Saint Petersburg, Russia (https://www.ioffe.ru/en/);
- 2007 – 2013: physics teacher/scientific research supervisor for high school students at the Presidential Physics and Mathematics Lyceum 239 of Saint Petersburg, Saint Petersburg, Russia (https://239.ru/).

Education & Academic degrees

- 2012 – 2016: **PhD Degree** in Physics and Mathematics Sciences, Saint Petersburg Academic University, Astrophysics Department
  I defended my PhD (Candidate Science) thesis entitled "Thermal evolution of neutron stars with accreted envelopes" on *December 29th 2016*. The defense took place at Ioffe Institute (Saint Petersburg, Russia).
  Supervisor: Prof. D. G. Yakovlev.
- 2010 – 2012: **Master Degree with honors** in Physics, Saint Petersburg Academic University, Condensed Matter Physics Department.
  Supervisor: Prof. R. A. Suris.
- 2006 – 2010: **Bachelor Degree with honors** in Technical (Applied) Physics, Saint Petersburg State Polytechnical University, Solid State Physics Department.
  Supervisor: Prof. R. A. Suris.
- 2004 – 2006: "Attestat" (school graduation certificate), Presidential Physics and Mathematics Lyceum 239 of Saint Petersburg. Excellent grades in Physics, Mathematics and Informatics.

Fellowships

- 2018 – 2023: SNI (Sistema Nacional de Investigadores, Mexico) "Nivel 1";
- 2014 – 2015: Individual Fellowship for PhD students of Academic University from Foundation for support of education and science (Alferov's Foundation);
- 2014 – 2016: Individual Fellowship for PhD students from Dynasty Foundation.

Awards

- 2010: First Degree Award of XII National Youth Conference on the Physics of semiconductors and nanostructures, semiconductor opto- and nanoelectronics, October 25th – 29th, 2010, Saint Petersburg;
- 2007 – 2014: Several awards for supervising high school students' scientific researches and for training them for All-Russian conferences in physics among high school students;
- 2006 – 2012: Several other awards for participating in local conferences, seminars, etc.

Grants

- 2025 – 2027: PCE grant nr. PN-IV-P1-PCE-2023-0324 by UEFISCDI. Total budget 1 199 437 RON for three years. Publications: see publications list, Refs. [11, 31, 32].

Invited talks:

- Carpathian Summer School of Physics 2025, June 22nd – July 3rd 2025, Sinaia, Romania;
- IReNA-INT Joint Workshop on Thermal and Magnetic Evolution of Neutron Stars, December 9th – 13th 2024, Seattle, USA;
- N3AS-INT Joint Workshop "EOS Measurements with Next-Generation Gravitational-Wave Detectors", August 26th – September 6th 2024, Seattle, USA;
- Carpathian Summer School of Physics 2023, July 2nd – 15th 2023, Sinaia, Romania;
- Carpathian Summer School of Physics 2020(1), August 18th – 27th 2021, Sinaia, Romania.

For the full list, see the conference list.

Press-releases & interviews

- 2020: Following the article [5]; the press-releases are:
  http://www2.astroscu.unam.mx/uc3/index.php/88-boletines/95-trabajo-teorico-sobre-estrellas-de-neutrones-cobra-fuerza [*Spanish*, Institute of Astronomy, UNAM, Mexico]
  https://public.nrao.edu/news/alma-finds-possible-sign-of-neutron-star-in-supernova-1987a/ [*English*, National Radio Astronomy Observatory, USA]
  https://www.nytimes.com/2020/08/07/science/supernova-neutron-star-sn1987a.html [*English*, The New York Times, USA]
- 2023: Following the article [3]; the interview is: https://youtu.be/LnVD3jV-MBI

Reviewer

I am a reviewer for the following journals: Physical Review Letters, Physical Review Research, Physical Review D, Physical Review C, The Astrophysical Journal, Physics Letters A.

In 2023 I was invited by NASA to participate as a reviewer in NASA's Astrophysics Theory Program.

ANNEX 1

MINIMAL STANDARDS

for being hired and/or awarded the professional rank of

Leading Researcher (1st Rank Research Scientist - CS I) and Established Researcher (2nd Rank Research Scientist - CS II)

1. Teaching and Professional Activity

Item No	Type of Activities	Indicators	
1.	Books at global Web of Science recognised publishing houses as an author	$A_1 = \sum_i 4/n_i^{ef}$	0
2.	Book chapters at global Web of Science recognised publishing houses as an author/Reviews in ISI-ranked journals	$A_2 = \sum_i 1/n_i^{ef}$	0.333
3.	Books at global Web of Science recognised publishing houses as an editor	$A_3 = \sum_i 0.5/n_i^{ef}$	0
4.	Books, manuals, laboratory guides at national publishing houses or other international publishing houses as an author, internal notes, presentations delivered for the approval of data analyses under large collaborations	$A_4 = \sum_i 0.5/n_i^{ef}$	0
5.	Book chapters at national publishing houses or other international publishing houses as an author	$A_5 = \sum_i 0.2/n_i^{ef}$	0
6.	Papers in extenso (at least 3 pages) published in ISI-indexed Proceedings	$A_6 = \sum_i 0.2/n_i^{ef}$	0.410
7.	International patents awarded	$A_7 = \sum_i 3/n_i^{ef}$	0
8.	National patents awarded	$A_8 = \sum_i 0.5/n_i^{ef}$	0
9.	Director/responsible person/coordinator for study programmes, continuing training programmes, educational projects and infrastructure projects (research projects are excluded)	$A_9 = \sum_i 0.5$	0
10.	Manager/responsible person for research projects amounting to V_i EUR won through national or international competition (the projects in section 9 are excluded). Amounts in RON or other currencies shall be converted to EUR at the average exchange rate of the year in question as found at www.bnr.ro for the period after 1999 and at the 1999 exchange rate for the previous period. Project responsible persons are those leading a research team, being mentioned as such in the submitted project; in their case, the amount to be taken into account is only that which relates to the team they led.	$A_{10} = \sum_i V_i/100.000$	2.385
11.	TOTAL	$A = \sum_{i=1}^{10} A_i$	3.128

n_i^{ef} = is the actual number of authors of item *i* and have the following values:

n_i	if $n_i \leq 5$
$(n_i + 5)/2$	if $5 < n_i \leq 15$
$(n_i + 15)/3$	if $15 < n_i \leq 75$
$(n_i + 45)/4$	if $n_i > 75$

n_i is typically the number of authors of item *i*. In the case of HEPP (High Energy Particle Physics) publications with a large number of authors, if the article is based on an internal note of the collaboration and the candidate is a co-author of this internal note, then n_i^{ef} can be given by the number of authors in the internal note.

"Article/Proceedings" papers can be taken into consideration in items 1.6 or 2, only once, as the candidate chooses.
Web of Science recognised publishing houses can be found on the Web of Science Publishers – Master Book List – Publishers website (https://wokinfo.com/mbl/publishers/).
Each candidate should create a ResearcherID account to facilitate the verification of data regarding the research activity and the activity impact recognition.

2. Research Activity

Item No	Type of Activities	Indicators	
1.	Original scientific articles in extenso as an author	$I = \sum_i AIS_i/n_i^{ef}$	10.504
2.	Original scientific articles in extenso as a first author or a corresponding author, according to the mentions on the article. Articles where authors are indicated in the alphabetical order of their name and the candidate is a first author exclusively due to their name and the alphabetical order shall not be taken into account. In the case of HEPP (High Energy Particle Physics) publications with a large number of authors, if the article is based on an internal note whose approval for sending to publication was upheld by the author, then the author is considered first author.	$P = \sum_i AIS_i$	19.296

AIS_i = is the absolute Article influence score of the scientific journal where article i was published, according to its year of publication as per www.eigenfactor.org/ for articles published until 2006 and Journal Citation Report (Web of Science) starting from 2007; if the publishing year cannot be found in the database, the closest year shall be chosen.

3. Activity Impact Recognition

Item No	Type of Activities	Indicators	
1.	Citations in scientific journals with impact factor found in InCites Journal Citation Reports or in books at Web of Science recognised publishing houses Citations originating from articles where the candidate is as an author or a co-author shall not be taken into account.	$C = \sum_i c_i / n_i^{ef}$	164.39
2.	Hirsch Index	h	14

c_i = number of citations in ISI journals of publication *i*

h = is defined as follows: an author has the Hirsch index *h* if they published *h* articles cited at least *h* times. The Hirsch index shall be calculated using the ISI Web of Science database.

1. Minimal Conditions

Item No	Category			
	Field of Activity	Conditions for Established Researcher (CS II)	Conditions for Leading Researcher (CS I)	Scores
1	**Teaching and Professional Activity**	A ≥ 1	A ≥ 2	3.128
2	**Research Activity**	I ≥ 2	I ≥ 4	10.504
		P ≥ 2	P ≥ 4	19.296
3	**Activity Impact Recognition**	C ≥ 20	C ≥ 40	164.39
		h ≥ 5	h ≥ 10	14
	TOTAL SCORE **T = A + P/2 + I/2 + C/20 + h/5**	T ≥ 5	T ≥ 12	29.05

Date: 29.10.2025 Signature:

Mikhail V. Beznogov

List of 10 most relevant publications:

[1] M. V. Beznogov, A. R. Raduta. *Bayesian inference of the dense matter equation of state built upon extended Skyrme interactions* // Phys. Rev. C, **110**, 035805 (2024);

[2] A. R. Raduta, M. V. Beznogov, M. Oertel. *Bayesian inference of thermal effects in dense matter within the covariant density functional theory* // Phys. Lett. B, **853**, 138696 (2024);

[3] M. V. Beznogov, J. Novak, D. Page, A. R. Raduta. *Standard cooling of rapidly rotating isolated neutron stars in 2D* // ApJ, **942**, 72 (2023);

[4] M. V. Beznogov, A. Y. Potekhin, D. G. Yakovlev. *Heat blanketing envelopes of neutron stars* // Phys. Reports, **919**, 1 (2021);

[5] D. Page, M. V. Beznogov, I. Garibay, J. M. Lattimer, M. Prakash, H.-T. Janka. *NS 1987A in SN 1987A* // ApJ, **898**, 125 (2020);

[6] M. V. Beznogov, D. Page, E. Ramirez-Ruiz. *Thermal evolution of neo-neutron stars. I: envelopes, Eddington luminosity phase and implications for GW170817* // ApJ, **888**, 97 (2020);

[7] M. V. Beznogov, E. Rrapaj, D. Page, S. Reddy. *Constraints on Axion-like Particles and Nucleon Pairing in Dense Matter from the Hot Neutron Star in HESS J1731-347* // Phys. Rev. C, **98**, 035802 (2018);

[8] M. V. Beznogov, A. Y. Potekhin, D. G. Yakovlev. *Diffusive heat blanketing envelopes of neutron stars* // MNRAS, **459**, 1569 (2016);

[9] M. V. Beznogov, D. G. Yakovlev. *Statistical theory of thermal evolution of neutron stars* // MNRAS, **447**, 1598 (2015);

[10] M. V. Beznogov, D. G. Yakovlev. *Diffusion and Coulomb Separation of Ions in Dense Matter* // Phys. Rev. Lett., **111**, 161101 (2013);

List of all other publications except conference proceedings papers:

[11] A. R. Raduta, M. V. Beznogov. *New ab initio constrained extended Skyrme equations of state for simulations of neutron stars, supernovae, and binary mergers: I. Subsaturation density domain* // Astron. Astrophys. **701**, A143 (2025);

[12] M. V. Beznogov, A. R. Raduta. *Bayesian Survey of the Dense Matter Equation of State built upon Skyrme effective interactions* // ApJ, **966**, 216 (2024);

[13] M. Nava-Callejas, D. Page, M. V. Beznogov. *Probing Strong Field f(R) Gravity and Ultra-Dense Matter with the Structure and Thermal Evolution of Neutron Stars* // Phys. Rev. D, **107**, 104057 (2023);

[14] V. Baruah Thapa, M. V. Beznogov, A. R. Raduta, P. Thakur. *Frequencies of f- and p-oscillation modes in cold and hot compact stars* // Phys. Rev. D, **107**, 103054 (2023);

[15] M. V. Beznogov, A. R. Raduta. *Bayesian Inference of the Dense Matter Equation of State built upon Covariant Density Functionals* // Phys. Rev. C, **107**, 045803 (2023);

[16] D. Page, J. Homan, M. Nava-Callejas, Y. Cavecchi, M. V. Beznogov, N. Degenaar, R. Wijnands, A. S. Parikh. *A "Hyperburst" in the MAXI J0556-332 Neutron Star: Evidence for a New Type of Thermonuclear Explosion* // ApJ, **933**, 216 (2022);

[17] N. Degenaar, D. Page, J. van den Eijnden, M. V. Beznogov, R. Wijnands, M. Reynolds. *Constraining the properties of dense neutron star cores: The case of the low-mass X-ray binary HETE J1900.1-2455* // MNRAS, **508**, 882 (2021);

[18] A. Y. Potekhin, D. A. Zyuzin, D. G. Yakovlev, M. V. Beznogov, Yu. A. Shibanov. *Thermal luminosities of cooling neutron stars* // MNRAS, **496,** 5052 (2020);

[19] M. J. P. Wijngaarden, W. C. G. Ho, P. Chang, D. Page, R. Wijnands, L. S. Ootes, A. Cumming, N. Degenaar, M. V. Beznogov. *The effect of diffusive nuclear burning in neutron star envelopes on cooling in accreting systems* // MNRAS, **493**, 4963 (2020);

[20] M. J. P. Wijngaarden, W. C. G. Ho, P. Chang, C. O. Heinke, D. Page, M. V. Beznogov, D. J. Patnaude. *Diffusive nuclear burning in cooling simulations and application to new temperature data of the Cassiopeia A neutron star* // MNRAS, **484**, 974 (2019);

[21] M. V. Beznogov, M. Fortin, P. Haensel, D. G. Yakovlev, J. L. Zdunik. *Cooling of neutron stars with diffusive envelopes* // MNRAS, **463**, 1307 (2016);

[22] M. V. Beznogov, D. G. Yakovlev. *Statistical theory of thermal evolution of neutron stars – II. Limitations on direct Urca threshold* // MNRAS, **452**, 540 (2015);

[23] M. V. Beznogov, D. G. Yakovlev. *Effective potential and interdiffusion in binary ionic mixtures* // Phys. Rev. E, **90**, 033102 (2014);

[24] M. V. Beznogov, R. A. Suris. *Theory of Space-Charge-Limited Ballistic Currents in Nanostructures of Different Dimensionalities* // Semiconductors, **47** (4), 514 (2013).

List of publications in conference proceedings (3 or more pages):

[25] W. C. G. Ho, M. J. P. Wijngaarden, P. Chang, C. O. Heinke, D. Page, M. V. Beznogov, D. J. Patnaude. *Cooling of the Cassiopeia A neutron star and the effect of diffusive nuclear burning* // AIP Conf. Proc., **2127**, 020007 (2019);

[26] M. V. Beznogov, A. Y. Potekhin, M. Fortin, P. Haensel, J. L. Zdunik, D. G. Yakovlev. *Heat blanketing envelopes vs cooling of neutron stars* // J. Phys.: Conf. Ser., **932**, 012046 (2017);

[27] M. V. Beznogov, D. G. Yakovlev, M. Fortin, P. Haensel, J. L. Zdunik. *The impact of heat blanketing envelopes on neutron stars cooling* // J. Phys.: Conf. Ser., **929**, 012010 (2017);

[28] M. V. Beznogov, D. G. Yakovlev. *Diffusion in dense non-isothermal Coulomb plasma* // J. Phys.: Conf. Ser., 769, 012001 (2016);

[29] M. V. Beznogov, D. G. Yakovlev. *Statistical approach to thermal evolution of neutron stars* // J. Phys.: Conf. Ser., 661, 012002 (2015);

[30] M. V. Beznogov, D. G. Yakovlev. *Diffusive currents and Coulomb separation of ions in dense matter* // J. Phys.: Conf. Ser., 572, 012001 (2014);

List of not yet published papers:

[31] A. R. Raduta, M. V. Beznogov. *New ab initio constrained extended Skyrme equations of state for simulations of neutron stars, supernovae and binary mergers: II. Thermal response in the suprasaturation density domain* // Astron. Astrophys., submitted; ArXiv: 2509.23910 (2025);

[32] M. V. Beznogov, A. R. Raduta. *A Novel View on the Inner Crusts of Neo-Neutron Stars: exotic light nuclei, diffusional and thermodynamical stability* // Phys. Rev. C., submitted; ArXiv: 2504.12887 (2025);

Date: 29.10.2025 Signature: