



In Memoriam
Professor Doctor Habilitate Dumitru Botnaru
October 13, 1946 – August 19, 2026

Professor Dumitru Botnaru was one of the Moldavian members of ROMAI. By this, we mean that he lived in Republic of Moldova, more precise in its Capital, Chişinău. We remind here that Romanian Society of Applied and Industrial Mathematics -ROMAI is a Society that has two wings – one in Romania, and the other in Republic of Moldova. From its founding, in 1993, it included members from both sister countries. Moreover, Moldovan members involved themselves in the activity of ROMAI in a vivid and benefic way, by organizing many editions of the annual conference of the Society (Conference of Applied and Industrial Mathematics - CAIM), in Republic of Moldova, by participating in the editions of CAIM in Romania, by publishing in ROMAI Journal, and so on.

Being among the first Moldovan members of ROMAI, Professor Botnaru became a friend of our Society. A reciprocal sympathy relation connected Professor Dumitru Botnaru (and his wife) to Professor Adelina Georgescu, the founder of ROMAI, that left this world in 2010, and whom we all miss. Meeting each other at CAIM conferences either in Romania or in Republic of Moldova, they always discussed, besides Mathematics, problems concerning the Romanian people from both sides of river Prut. Since ROMAI was founded in 1993, that is short time after the fall of the communism, everyone in the two countries was, at that time, animated by vivid hopes concerning the future. It was a period of grace in which, us, Romanians, tried to conceive a beautiful future of our sister countries.

We present here a few facts concerning Professor's Dumitru Botnaru life and activity. He was born on October 13, 1946, in Donduşeni (in the North of the actual Republic of Moldova) as the youngest of 9 siblings. From his youth he loved both Mathematics and Literature. He was reading classic literature, poetry and novels as well. But the passion for Mathematics was stronger, and, in 1965, he became student of the Faculty of Physics and Mathematics from the State Pedagogical University "Alecu Russo" of Bălţi. Here he was designated as the best student of the Faculty and was sent, in 1968, as a sign of recognition of his value, to continue his studies in Moscow, in the renowned State Pedagogical University.

After graduation, between 1971 and 1973, he was Assistant Lecturer at the Pedagogical University of Bălţi. Then he returned to Moscow, to the same Pedagogical Institute, to pursue doctoral studies (1973-1976). His Doctoral Supervisor was Professor Dmitrii Abramovici Raicov, a known specialist in Functional Analysis, and the title of his PhD Thesis was "*Bicategorical Structures and Pairs of Adjoint Subcategories*".

With his PhD Degree obtained in 1979 (a confirmation of his mathematical talent and determination to work), Professor Dumitru Botnaru carried out his activity at the Technical University of Moldova, from Chişinău, firstly as a Assistant Lecturer (until 1981) then as a Senior Lecturer (1981-1982), then as an Associated Professor (1982-2002) and, finally as Professor (2002-2016).

In 1992 he became a *Doctoral Supervisor*, and had two PhD Students, that are now Doctors in Mathematics: Mrs. Olga Cerbu, Associate Professor at Moldova State University, and Mrs. Alina Țurcanu, Associate Professor at Technical University of Moldova.

In 2001 he was awarded, by the “*Vladimir Andruchievici*” *Institute of Mathematics and Computer Science, of the Academy of Sciences of Republic of Moldova*, the title of *Doctor Habilitate in the Sciences of Physics and Mathematics*, as a high recognition of his Scientific and Pedagogic activity. His Habilitation Thesis was titled: “*Local, Spectral, and Nuclear Dualities*”, and was elaborated under the guidance of Academician Mitrofan Choban (that was, for a long period, Vice President of ROMAI).

Besides the Technical University of Moldova, Prof. Dr. Hab. Dumitru Botnaru, also held courses at the Academy of Transport, Informatics and Communications, and at the former State University of Tiraspol, displaced in Chișinău.

A brief history of his activity in Category Theory is presented in his own paper “*Factorization structures. History and Results*” contained in the previous issue of ROMAI Journal, (vol. 22, no. 1/2026, pages 1-9).

His very fruitful mathematical activity resulted in a large number of scientific papers published in Mathematical Journals, from which we cite below only some.

1. *On generalized bicategory structures* / Dumitru Botnaru // Soviet Mathematics. Doklady Akademii Nauk SSSR. – 1974. – Vol. 15, nr. 2. – P. 1562-1564.
2. *Reflective subcategories and right bicategory structures* / Dumitru Botnaru // Soviet Mathematics. Doklady Akademii Nauk SSSR. – 1974. – Vol. 15, nr 6. – P. 1588-1596.
3. *Quasi-identity and identity in the category of dynamics* / Dumitru Botnaru // Questions and Answers in General Topology. – 1990. – Vol. 8, no 1. – P. 19-32. – ISSN 0918-4732.
4. *Categoria spațiilor A-vagi* / Dumitru Botnaru // Buletin științific. Seria : Matematică și Informatică / Universitatea din Pitești. – 1998. – Nr 2. – P. 23-36. – ISSN 1453-116x.
5. *Dualité locale et nucléaire* / Dumitru Botnaru // Buletin științific. Seria : Matematică și Informatică / Universitatea din Pitești. – 2000. – Nr 6. – P. 37-58. – ISSN 1453-116x.

6. *Dualité locale* / Dumitru Botnaru // Scientific Annals. Faculty of Mathematics and Informatics, Moldova State University. – 2000. – Vol. 2, nr 1. – P. 66-84.
7. *Equivalence des triplets dans la dualité locale* / Dumitru Botnaru // Analele științifice ale USM. Seria : Științe fizico-matematice. – Chișinău, 2001. – P. 19-23. – ISBN 9975-70-042-x.
8. *Dualité spectrale. Le cas covariant* / Dumitru Botnaru // Scripta Scientiarum Mathematicarum : Scripta seminarii investigationum scientiae. Topologiae Systematum Subtilium et Applicationum. – Chișinău : Tehnica-Info, 2001. – Tomus 2, Fasciculus 1. – P. 199-221. – ISBN 9975-63-073-1.
9. *The R - Perfect Morphismes* / Dumitru Botnaru, Alina Țurcanu // Acta Universitatis Apulensis: Mathematics - Informatics / Universitatea „1 Decembrie 1918” din Alba Iulia. – 2004. – No 7. – P. 49-53. – ISSN 1582-5329.
10. *On Giroux subcategories in locally convex spaces* / Dumitru Botnaru, Alina Țurcanu // ROMAI Journal. – 2005. – Vol. 1, no 1. – P. 7-30. – ISSN 1841-5512.
11. *Bicategory structures generated by injective spaces* / Dumitru Botnaru, Alina Țurcanu, Olga Cerbu // ROMAI Journal. – 2007. – Vol. 3, nr 2. – P. 31-50. – ISSN 1841-5512.
12. *Structures bicatégorielles complémentaires* / Dumitru Botnaru // ROMAI Journal. – 2009. – Vol. 5, nr 2. – P. 5-27. – ISSN 1841-5512.
13. *Semireflexive subcategories* / Dumitru Botnaru, Olga Cerbu // ROMAI Journal. – 2009. – Vol. 5, nr 1. – P. 7-20. – ISSN 1841-5512.
14. *The factorization of the right product of two subcategories* / Dumitru Botnaru, Alina Țurcanu // ROMAI Journal. – 2010. – Vol. 6, nr 2. – P. 41-53. – ISSN 1841-5512.
15. *Structures bicatégorielles complémentaires* / Dumitru Botnaru // Revue Roumaine Mathématiques Pures et Appliquées. – 2010. – Tome LV, no 2. – P. 97-119. – ISSN 0035-3965.
16. *The Hewitt Spaces as Right Factorized Product of Two Subcategories* / Dumitru Botnaru, Alina Țurcanu // Buletinul Institutului Politehnic din Iași. Secția: Matematică. Mecanică teoretică. Fizică. – 2011. – Tomul LVII(LXI), Fasc. 1. – P. 37-46. – ISSN 1224-7863.

17. *The Classes of Hereditary Morphisms and the Theory of Relative Torsion* / Dumitru Botnaru, Elena Baeş // Buletinul Institutului Politehnic din Iaşi. Secţia: Matematică. Mecanică teoretică. Fizică. – 2011. – Tomul LVII(LXI), Fasc. 1. – P. 15-28. – ISSN 1224-7863.
18. *Semireflexives Subcategories and the Right Product* / Dumitru Botnaru, Olga Cerbu // Buletinul Institutului Politehnic din Iaşi. Secţia: Matematică. Mecanică teoretică. Fizică. – 2011. – Tomul LVII(LXI), Fasc. 1. – P. 29-35. – ISSN 1224-7863.
19. *Categorical aspects of the semireflexivity* / Dumitru Botnaru, Olga Cerbu // Buletinul Academiei de Ştiinţe a Republicii Moldova. Matematica. – 2011. – Nr 3(67). – P. 77-83. – ISSN 1024-7696.
20. *Factorization structures with nonhereditary classe of projections* / Dumitru Botnaru, Elena Baeş // ROMAI Journal. – 2012. – Vol. 8, nr 2. – P. 27-37. – ISSN 1841-5512.
21. *On the right product of two subcategories* / Dumitru Botnaru, Alina Turcanu // ROMAI Journal. – 2016. – Vol. 12, no 2. – P. 9-18. – ISSN 1841-5512.
22. *Souscatégories $\mathcal{L}$ -semi-reflexives* / Dumitru Botnaru // Acta et Commentationes: Ştiinţe Exacte şi ale Naturii. – 2017. – Nr 2(4). – P. 11-34. – ISSN 2537-6284.
23. *Some properties of left product of two subcategories* / Dumitru Botnaru, Alina Turcanu // Acta et Commentationes: Ştiinţe Exacte şi ale Naturii. – 2017. – Nr 2(4). – P. 35-44. – ISSN 2537-6284.
24. *The center of the lattice of factorization structures* / Dumitru Botnaru, Elena Baeş // Buletinul Academiei de Ştiinţe a Republicii Moldova. Matematica. – 2018. – Nr 1(86). – P. 50-66. – ISSN 1024-7696.
25. *The cartesian product of two subcategories = Produsul cartezian a două subcategorii* / Dumitru Botnaru, Olga Cerbu // Acta et commentationes: Ştiinţe Exacte şi ale Naturii. – 2018. – Nr 2(6). – P. 133-138. – ISSN 2537-6284.
26. *Noyaux des sous-catégories semi-réflexives* / Dumitru Botnaru // ROMAI Journal. – 2018. – Vol. 14, no 2. – P. 1-32. – ISSN 1841-5512.
27. *Groupoïd des sous-catégories $\mathcal{L}$ -semi-reflexives (The Groupoïd of $\mathcal{L}$ -semireflexive subcategories)* / Dumitru Botnaru // Revue Roumaine de

Mathematiques Pures et Appliquees. – 2018. – Nr 1(63). – P. 61-71. – ISSN 0035-3965.

28. *Couples des sous-catégories conjuguées* / Dumitru Botnaru // ROMAI Journal. – 2018. – Vol. 14, no 1. – P. 23-41. – ISSN 1841-5512.

29. *La classe des sous-catégories $\mathcal{L}$ -semi-réflexives* / Dumitru Botnaru // ROMAI Journal. – 2020. – Vol. 16, no 1. – P. 19-36. – ISSN 1841-5512.

30. *Couples des souscatégories bisemiréflexives et les théories de torsion relative* / Dumitru Botnaru // ROMAI Journal. – 2021. – Vol. 17, no 1. – P. 29-39. – ISSN 1841-5512.

31. *Variétés $\mathcal{L}$ -semi-réflexives* / Dumitru Botnaru // ROMAI Journal. – 2022. – Vol. 18, no 2. – P. 57-71. – ISSN 1841-5512.

32. *Commutative monoids of reflective functors* / Dumitru Botnaru, Alina Turcanu // ROMAI Journal. – 2022. – Vol. 18, no 2. – P. 73-80. – ISSN 1841-5512.

33. *Certaines modalités pour définir les sous-catégories semi-réflexives* / Dumitru Botnaru // ROMAI Journal. – 2022. – Vol. 18, no 1. – P. 9-15. – ISSN 1841-5512.

34. *On semireflexive subcategories* / Dumitru Botnaru // Topology and its Applications. – 2023. – Vol. 340 (1 December). – Article 108713. – ISSN 0166-8641. – E-ISSN1879-3207. DOI: <https://doi.org/10.1016/j.topol.2023.108713>. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0166864123003061>.

35. *La catégorie des espaces $\mathcal{B}$ -inductifs semi-reflexifs* / Dumitru Botnaru // ROMAI Journal. – 2023. – Vol. 19, no 1. – P. 63-71. – ISSN 1841-5512.

In 2023, Professor Botnaru published a very comprehensive monograph on Category Theory, written in Romanian:

Aspecte categoriale ale spațiilor topologice vectoriale : Subcategorii semireflexive = Les aspects catégoriels des espaces topologiques vectoriels : Sous-catégories semi-réflexives / Dumitru Botnaru. – Chișinău : Știința, 2023. – 484 p. – Bibliogr.: p. 467-472. – ISBN 978-9975-85-373-6 (https://www.romai.ro/src/library/Botnaru_monografie.pdf).

Besides these scientific publications we must remind the great number of communications at Conferences, and a number of 10 books, (and some articles) for the undergraduate level (high-school and gymnasium).

Professor Dr. Habilitate Dumitru Botnaru leaved this world in the summer of 2026, on 19th of August, due to a severe illness. Since he would have accomplished, in October, the age of 80, the conference organized by ROMAI, [CAIM 2026](#), was meant to be in his honor. Unhappily, he passed away while the participants at the conference, were gathering together at Chişinău.

May his soul rest in peace, and may his works in Mathematics inspire many Mathematicians!

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