Curriculum Vitae (Dan Burghelea)

Mailing address: Department of Mathematics, OSU 231 West 18th Avenue, Columbus, OH, 43210,

e-mail: burghele@math.ohio-state.edu

Phone: 614-560-3381

1. Education (degrees):

• Elementary school (Ramnicu Valcea, Romania, 1949-1956)

- High School (Ramnicu Valcea, 1956-1960, Liceum N.Balcescu now national College A. Lahovari) In this period he won several National Problem Contests organized by" Mathematical Gazette" and several prizes in National Mathematical Olympiads.
- University Degree in Mathematics University of Bucharest, 1965.
- Ph.D. in Mathematics- Mathematical Institute of the Romanian Academy, 1968.

2. Honorary degree:

- "Doctor Docent in Stiinte" = doctor-teacher in sceinces University of Bucharest, 1972. (a romanian degree for peoples with exceptional accomplishments in sciences introduced in 1967)
- Doctor Honoris Causa University of Timisoara Romania (1995)

3. Prizes:

• Prize G. Tzitzeica of the Romanian Academy, 1967.

4. Distinctions:

- Knight of the order : Faithful Service rank (Commander) given by the Romanian government in 2003.
- $\bullet\,$ Honorary member of the Mathematical Institute of the Romanian Academy, 2005
- Distinction Academic Merit Romanian Academy of Sciences, 2009
- Medal of honor of the Romanian Mathematicacal Society Medalia de onoare a Societatii Matematice din Romania (October 12, 2019)

5. Positions held:

- The Ohio State University, Professor emeritus 2015-present.
- The Ohio State University, Professor 1979-2015.

- National Inst. for Sci. and Tech. Creation, Senior Researcher, 1977-1979.
- Institute for Atomic Physics (Bucharest), Senior Researcher, 1975-1977.
- Mathematical Institute of the Romanian Academy, Junior Researcher (1966-68), Researcher (1968-70), Senior Researcher (1970-75).

6. Visiting Positions held ¹ 1978):

- Inst. for Advanced Study (1969, and short term 1978),
- University of Geneva, (short term 1970),
- University of Bonn (one semester 1972),
- University of Chicago (one quarter 1975, 1979),
- University of Paris (1974 and short term 1991),
- Rutgers University (1978-79),
- ETH, Zurich (one semester 1985, 1986, 1992-3), (visiting research positions)
- Forschung Inst fur Math. ETH-Zurich, (short term 1967, 1968, 1971,
- Math Institut of Aarhus University, Aarhus, Denmark (short terms 1972, 197?),
- IHES, Bures sur Yvette, 1987 (short term 1986, 1996, 2005, 2011),
- ESI for Math. Phys. Vienna (short term 1993, 1995, 2000, 2003),
- Max Plank Institute, Bonn, Germany (short term 1986, 1996, 2005, 2013, 2015),
- Euler Institute, Lausanne (short term 2013),
- IMAR Bucharest, (short term 2005, 2016, 2019),

6. **Memberships:** (during various periods)

AMS, French Math. Society, Romanian Math. Society.

7. Ph.D.-students and their dissertations:

- John Oprea, Contributions to rational homotopy theory.
- Shoba Char, Contribution to the study of continuos functors.
- Doobon Lee, Contributions to rational homotopy theory of S^1 -spaces.
- P. Manoharan, A study of Fréchet manifolds.

¹short term= appointments between 2 and 4 months

- Hua Chen, The localization theorems of S^3 -equivariant cohomologies.
- Hon Kit Wai, Witten deformation in the presence of S^1 symmetry.
- Yoonwoon Lee, Determinants of elliptic operators.
- John Marcsick, Analytic torsion and closed one forms.
- Imre Major, On equivariant Morse Theory (G-manifolds, prestratifications, conic stratification).
- Bogdan Bucichovski, Contributions to the complex powers and the zeta function of elliptic pseudodifferential operators on orbifolds.
- Dong Du, Contributions to persistence theory.

8. Editorial Boards:

- . Studii si cercetari matematice, Academia R. S. Romania, 1972-1979.
- . Revue Roumaine des Mathematiques pures et appliquees, Academie de R. S. Roumanie, 1972-1979.
 - . Annalele Univ. din Timisoara 1994-.
 - . Bulletin de la Societe Roumaine de mathematiques, 2004-.
 - . Tbilisi Mathematical Journal, 2007-.
 - . Journal of Advanced Research in Differential Equations , 2008-.
 - . Chinese Journal of Mathematics, 2013-.

9. Organizer/ coorganizer/ member of scientific committee:

- Topology Conference, Bucharest, 1968.
- Co-director program in Global Analysis, Banach Institute, Warszawa, 1977.
- Oberwolfach- Conference in Algebraic K-Theory of Topological spaces, 1987.
- Special AMS session on Cyclic homology, University Park, Pen., 1989, on L-2-cohomology, OSU, OH, 199?.
- Miniprogram on Algebraic K-theory, Cyclic Homology and Automorphisms of Manifolds, Schrödinger Institute, Vienna, 1994.
- OSU Geometry Topology Conferences, since 1989 (every year till 2002).
- Conference on L2-methods in geometry, Sarasota Fl., Jan. 2001.
- Special AMS session on L2-methods in Topology, Columbus OH, Sept, 2001.
- Conference on C^* algebras and ellipticity, Banach Center, Bedlewo -Poland, 2004, 2006, 2008, 2009.

- Conference on Algebras of Operators and Topology, Moscow State University, 2005 and 2007.
- Conference, Topology old and new (in memory of M.Postnikov), Banach Center Bedlewo-Poland, 2009.
- Conference on Experimental and Theoretical methods in Algebra, Geometry and Topology, Romania, Constanzta, June 21-24 2013.
- 9th International Eurasian conference on Mathematical sciences and applications, Skopje North-Macedonia, 2020.

10. Some one Hour Invited Addresses

- 1. Oberwolfach Conferences in Topology or Analysis, Oberwolfach, Germany, 1968, 1972, 1982, 1983, 1984, 1999, 2001,
- 2. Séminaire des Mathématiques Superieures, Montreal, 1969,
- 3. Conference on Infinite -Dimensional Topology, Baton Rouge, 1969,
- 4. Arbeitstagung, Bonn, 1970, 1978, 1987,
- Colloque Internationale sur l'Analyse et Topologie Differentielle, Strassburg, France, 1972,
- 6. Swiss Topology seminar at Plans sur Bex, Switzerland, 1974,
- 7. Georgia Topology Conference, 1974, 1987,
- 8. Up State New York Topology Seminar, 1977, 1982,
- 9. Algebraic Topology Symposium, Aarhus, Denmark, 1978,
- 10. International Conference on Geometric Topology, Warsaw, Poland, 1978,
- 11. Santa Barbara Meeting on Topology, 1979,
- 12. Midwest Topology Seminar, 1980, 1983,
- 13. Michigan Topology Seminar, 1980,
- 14. AMS Summer Meeting, Ann Arbor, Michigan: 1980,
- 15. Colloque Internationale sur l'Homotopie Rationelle (CNRS), Luminy, France, 1982,
- 16. Western Ontario Topology Seminar, 1983,
- 17. Algebraic K-theory Seminar, Paris, 1984, 1985, 1987,
- Conference in Topology and geometry in honor of R. Lashof -Univ. of Chicago, 1984,

- 19. International Conference in Topology S. Banach Center of Math. Sciences, Warsaw, Poland (series of talks), 1984,
- 20. International Conference on Rational Homotopy Theory, Louvain la Neuve, Belgium, 1986,
- Workshop on Rational Homotopy Theory, Max Plank Inst., Bonn, Germany, 1986,
- 22. Alsatian Geometry Conference, Schnepfenride Alsace, France, 1987,
- 23. Winter School on Geometry and Physics, Snri organized by Czechoslovakian Academy, Czechoslovakia, 1992 (series of 4 lectures),
- 24. International Workshop on Cyclic Homology, Punjab Univ., Chandigarh, India, 1994, (series of 5 lectures),
- 25. Conference on Topology and Representations, Univ. of Allahabad, India, 1994,
- 26. International Conference in Algebraic K-Theory, Poznan, Poland, 1995,
- 27. International Conference on Global Analysis, S. Banach Center of Math. Sciences, Warsaw, Poland, 1996,
- 28. Workshop on L2-Cohomology, Les Diablerets, Switzerland, 1996,
- 29. Joint Romania -German Workshop in Geometry, Sibiu, Romania, 1997,
- Conference on Spectral geometry, Schrödinger Institute of Math. Phys., Vienna, Austria, 1998,
- 31. Conference on Topology (in honor of M Rothenberg), Univ. of Chicago, May 1999,
- 32. Harvard -MIT -Brandeis Colloquium (1999),
- 33. Conference on L2-methods in Geometry, Sarasota, Florida, 2000,
- 34. German Summer School in Geometry and Groups, (two series of lectures) Göettingen, Germany, June 2000,
- 35. Conference on topology and analysis of manifolds (in honor of J. Levine) Tel.Aviv, Israel, August 2001,
- The 5-th International Congress of the Rumanian Mathematicians, Pitesti, Romania, 2003,
- Conference on transformation groups in honor of Sören Illman , Helsinki, Finland , 2003,
- 38. Summer School on Geometric analysis IAS-Seoul, Korea, July 2007, (mini-course of three lectures on Witten -Hellfer -Sjostrand theory),

- The 6-th International Congress of the Rumanian Mathematicians, Bucharest, Romania, 2007,
- 40. Conference " 100 Years Anniversary of the Alexander Miller Mathematical Seminar, Iasi, Romania", June, 2009,
- 41. XVII Encontro Brasileiro de Topologia (The XVII Brazilian Topology Meeting), Rio de Janeiro, Brasil, August, 2010,
- Conference on K-theory, C*-algebras and Index Theory, Göttingen, Germany, November, 2010,
- 43. The 7-th International Congress of the Rumanian Mathematicians, Brasov, Romania, 2011,
- 44. International conference on Analysis, Topology and Applications, Harbin, China, August 2011,
- 45. Conference KATM, Nankai, Tianjin, (China), May 2012,
- Conference on Geometry in honor of Th Hangan Mulhouse (France) September 2012,
- 47. Conference on Algebraic methods in Topology, Harbin, China, August 2013,
- 48. Conference on Topology, Univ. of Östnabruch, Germany, April 2013,
- Conference "Centennial of Faculty of Sciences of Univ. of Bucharest", August 2013,
- 50. Conference on Experimental and Theoretical methods in Algebra, Geometry and Topology, Romania, Constanzta, June 21-24 2013,
- 51. Conference on Floer homology, contact topology, Novikov homology and related topics, at Kavli IPMU, Tokyo, April 2014,
- 52. conference K-theory, C*-algebra and Topology of manifolds, Harbin, China August 24-29, 2015,
- 53. Conference "Finiteness condition in Topology and Algebra", Belfast, August 31-Sept 4, 2015,
- 54. "Singularity Theory Conference, East China Normal University", Shanghai, China, July 10-14, 2017,
- 55. Workshop Topological Data Analysis meets symplectic topology, Tel-Aviv, Israel, April-May, 2018,
- International workshop and conference on Topology and Applications (IWCTA), Cochin, India, 2018,

11. Half Hour Invited Talks

- 1. AMS special session, 1979, 1986, 1995, 1997, 1999, 2001
- 2. International Conference on Algebraic Topology, Arcata (California), 1986
- 3. Workshop in spectral geometry, MSRI, 1994

The slides of the following talks can be downloaded from my website:

- TRIVANDRUM WORKSHOP LECTURE, Trivandrum, India, December 12, 2018
- 2. COCHIN CONFERENCE LECTURE, IWCTA 2018, Cochin, RSET, India, December 9 December 11, 2018
- 3. COCHIN WORKSHOP LECTURES, IWCTA 2018, Cochin, RSET, India, December 5 December 8, 2018
- 4. TEL AVIV LECTURE, Topological data analysis meets symplectic topology, Tel Aviv, Tel Aviv University, Israel, April 29 May 3, 2018
- SHANGHAI LECTURE, "Singularity Theory Conference, East China Normal University", Shanghai, July 10-14, 2017
- REFINMENTS OF TOPOLOGICAL INVARIANTS OF A PAIR topological space and degree one integral homology class, conference on "Finiteness condition in Topology and Algebra", Belfast, August 31-Sept 4, 2014
- REFINMENTS OF HOMOLOGY (homological spectral package), conference "K-theory, C*-algebra and Topology of manifolds", Harbin, China August 24-29, 2014
- 8. Monodromy for a space X and a degree one integral cohomology class, "The eigth international congress of the Romanian mathematicians", Iasi, Romania, June 25-July 1 2015 Iasi
- 9. Refinements of homology (homological spectral package), "The eight international congress of the Romanian mathematicians", Iasi, Romania, June 25-July 1 2015
- 10. NEW INVARIANTS IN TOPOLOGY, homological spectral package., Bucharest June 17 2015 Math Institute, Bucharest.
- 11. On the Spectral Geometry of closed Riemannian Manifolds in the presence of a smooth function, Real and Complex Differential Geomtry, Bucharest, Sep. 8 12, 2014.
- 12. A(computer friendly) alternative to Morse Novikov theory for real and angle valued maps, IPMU, Tokyo, April 2014

- 13. Data Analysis, Persistent homology and Computational Morse-Novikov Theory, Bowling Green Colloquium, November 2013
- 14. Persistence theory revisited, OSU Topology Seminar, September, 2013
- 15. Witten deformation and analytic continuation, Max Plank Institute, Bonn, June 2013
- 16. A NEW (computer friendly) APPROACH TO MORSE-NOVIKOV THE-ORY, Ostnabruck- April 2013, Eforie June 2013
- 17. The Virtually small spectral package of a closed Riemannian manifold with respect to a Morse function, Mulhouse-Sept 2012, Lausanne-Oct 2012
- 18. Graphs Representations and the Topology of Real and Angle valued maps (an alternative approach to Morse-Novikiov theory) Tianjin, May 2012
- 19. QUIVER REPRESENTATIONS and MORSE-NOVIKOV THEORY, UPenn, (Philadelphia, October 2011)
- DYNAMICS, GEOMETRY AND TOPOLOGY (Goettingen, November 2010)
- 21. DYNAMICS, TOPOLOGY AND SPECTRAL GEOMETRY (Iasi, June 2010)
- 22. SMOOTH STRUCTURE ON THE MODULI SPACE OF THE TRAJECTORIES OF A GENERIC VECTOR FIELD AND APPLICATIONS (Iasi, September 2009)
- 23. DATA AND TOPOLOGY (INVITATION TO PERSISTENCY) (Alba Iulia, September 2009)
- 24. TORSION, A MANIFOLD INVARIANT OF INTEREST IN TOPOL-OGY GEOMETRY AND DYNAMICS (Vienna, November 2008)
- 25. TORSION AS A FUNCTION ON THE VARIETY OF REPRESENTATIONS (Bucharest, June 2007)
- 26. A STRANGE GEOMETRIC INVARIANT WITH APPLICATIONS TO TOPOLOGY AND SPECTRAL GEOMETRY (Poznan, August 2003)
- 27. G-MORSE THEORY REVISITED (Helsinki, August 2003)
- 28. LAPLACE TRANSFORM. FROM TOPOLOGY TO SPECTRAL GE-OMETRY (Pitesti, June 2003)
- 29. DIRICHLET SERIES, NOVIKOV THEORY AND SPECTRAL GEOMETRY(Tel Aviv, August 2001)
- 30. WITTEN HELLFER SJOSTRAND THEORY AN ASYMTOTIC EXTENSION OF DeRHAM-HODGE THEOREM (Zurich, December 1999)

- 31. L2-Torsion (Harvard-MIT -Brandeis colloquium, March 1999)
- 32. WITTEN HELLFER-SJOSTRAND THEORY (Tel Aviv, May 1998)

12. Publications, - on a separate document

13. Colloquia or Seminars given to the following institions:

Austria:

Univ. of Vienna,

E. Schrödinger International Inst. for Math. end Physics, Vienna

Brasil

PUC, Rio de Janeiro

Canada:

University of Montreal,

University of London, Western-Ontario

China:

Harbin Technical Institute,

Tianjin University,

Shanghai, East China Normal Univ.

Denmark:

University of Aarhus,

University of Copenhagen,

France:

University of Amiens,

University of Bordeaux,

University of Grenoble,

University Haute Alsace, Mulhouse,

University of Lille,

University of Nantes,

University of Orsay,

University of Paris VII, VI

University of Rennes,

University of Strassburg,

École Polytechnique-Paris,

École Normale Superieure,

IHES Bures sur Yvette,

Germany:

University of Bonn,

University of Eichstadt,

University of Frankfurt,

University of Göttingen,

University of Heidelberg,

University of Konstanz, University of Karlsruhe, University of Östnabruck, University of Munster, University of Dormundt, University of Köln Max Plank Institute,Bonn,

Holland:

University of Amsterdam, University of Utrecht

India:

Punjab Univ., Chandigarh, Univ. of Alahabad, Tata Institute of Fundamental Research, Bombay, Metha Institut of Mathematics (Allahabad), Rajagjiri School of Engeneering and Technology, Kochi (Kerala) University of Trivandrum (Kerala)

Israel:

University of Jerusalem, University of Tel-Aviv, University of Haifa, Technion, Haifa,

Republic of Moldavia

IMCS - Moldavian Academy, Chisinau

Poland

University of Warsawa, S. Banach Institute, Warszawa, Math. Institute Polish Academy, University of Gdansk, University of Poznan,

Romania:

University of Bucharest,
Math. Institute of Romanian Academy, Bucharest,
University of Timisoara.
University of Iasi,
University of Cluj,

Switzerland:

EPF- Lausanne, University of Bale, University of Géneve, University of Lausanne, Forschungsinstutut für Mathematick, Zürich, ETH-Zürich, University of Zürich

Sweeden

University of Stockholm, KTH Stockholm

United Kingdom:

University of Cambridge, University of Oxford, University of Liverpool, University of Warwick, University of Edinburgh University of Belfast

USA:

Univ of Arizona, Brandeis University, Brown Univ, University of California, Berkeley, Univ. of California, Santa Barbara, University of California, Los Angeles, University of Chicago, Cleveland State. Univ, Cornell University, University of Georgia, Harvard Univ., Cambridge, MA, University of Illinois, Champaign-Urbana, University of Indiana, Bloomington, Louisiana State University, Baton Rouge, University of Maryland, University of Michigan, MIT, Cambridge, MA, M.S.R.I, Berkeley, Northwestern University, Univ of Oregon University of Notre Dame, Penn. State Univ, Princeton University, Purdue University, IAS -Princeton, Rutgers University, SUNY of Binghamton, SUNY at Stony Brook,

Syracuse University, Yale University,

Vanderbilt University, University of Virginia, University of Wisconsin, Wayne State University, Stanford, Univ University of Oregon Univ. Texas A and M