PUBLICATIONS

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Research Directions

My favourite line of research is directed towards applied homotopy theory. I have dealt with various directions of application, such as:
• classification of differentiable manifolds up to finite ambiguity [5, 6];
• submanifolds with additional normal structure [8, 21];
• symmetry and geodesics of compact homogeneous spaces [11–14];
• algebras and graded Lie algebras associated to topological spaces [17, 19, 22, 27, 34, 37, 38, 43];
• topological invariants in codimension two derived from the lower central series via a peripheral marking [18, 20, 25, 28, 29, 32];
• artinian complete intersections in geometry and topology [23, 41, 44];
• universal finite–type invariants of braids [30, 52];
• combinatorial, algebraic and analytical aspects in the topological study of complex algebraic varieties [9, 26, 31, 33, 35, 36, 39, 40, 49, 67];
• toric complexes and Artin kernels [42, 45, 50];
• fundamental groups of smooth algebraic varieties [46, 47, 51, 54, 58, 59];
• cohomology jumping loci [48, 53, 55, 56, 57, 60, 64, 66];
• properties of the Johnson filtration via representation theory [61, 62, 63, 65]

see the list of publications.

Work in Progress and Research Projects

• Alexander invariants, characteristic varieties and resonance varieties;
• fundamental groups of smooth algebraic varieties;
• partial formality properties;
• finiteness properties of Galois covers;
• representation varieties and Milnor fibers

Publications

1. *O formulă de stabilitate pentru $\widehat{A}$–genul ponderat şi o teoremă de anulare a genului $\widehat{A}$* (Romanian), Stud. Cerc. Mat. (2) **29** (1977), 149–157.
2. *Teoria raţională a omotopiei* (Romanian), with L. Paunescu, INCREST Seminar Monographs, No. 1, 1981, 192 pp.
3. *On the formality of maps*, An. Univ. Timişoara Ser. Ştiinţe Mat. **20** (1982), 30–40.
4. *Homotopie rationnelle des espaces de Thom et problèmes de lissage*, C. R. Acad. Sci. Paris Sér. I Math. **297** (1983), 189–191.
5. *Classification of Poincaré duality algebras over the rationals*, Geom. Dedicata **17** (1984), 199–205.
6. *Poincaré duality algebras and the rational classification of differentiable manifolds*, in: *Homotopie algébrique et algèbre locale (Luminy, 1982)*, pp. 268–272, Astérisque **113–114**, Soc. Math. France, Paris, 1984.
7. *The cellular structure of formal homotopy types*, J. Pure Appl. Alg. **35** (1985), 171–184.
8. *The rational homotopy of Thom spaces and the smoothing of homology classes*, Comment. Math. Helv. **60** (1985), 601–614.
9. *The rational homotopy of Thom spaces and the smoothing of isolated singularities*, Ann. Inst. Fourier (Grenoble) **35** (1985), 119–135.
10. *Propriétés de rigidité des groupes de Lie compacts modulo leurs tores maximaux*, C. R. Acad. Sci. Paris Sér. I Math. **302** (1986), 455–458.
11. *Rigidity properties of compact Lie groups modulo maximal tori*, Math. Ann. **275** (1986), 637–652.
12. *Complex cohomology automorphisms of compact homogenous spaces of positive Euler characteristic*, Suppl. Rend. Circ. Mat. Palermo **16** (1987), 217–226.
13. *Rational homotopy equivalences of Lie type*, Math. Proc. Camb. Phil. Soc. **104** (1988), 65–80.
14. *Discrete symmetry, toral symmetry and the Euler characteristic of differentiable manifolds*, Proc. Amer. Math. Soc. **103** (1988), 612–614.
15. *Ch. XII: Clasificarea algebrelor Lie semi–simple reale* (Romanian), in: *Algebre Lie Semisimple* (B. Berceanu, M. Martin and St. Papadima Eds.), pp. 128–184, IMAR Bucharest Seminar Monographs, No. 1, 1991, 255 pp.
16. *Geometric decompositions, algebraic models and rigidity theorems*, with M. Markl, J. Pure Appl. Alg. **71** (1991), 53–73.
17. *Homotopy Lie algebras and fundamental groups via deformation theory*, with M. Markl, Ann. Inst. Fourier (Grenoble) (4) **42** (1992), 905–935.
18. *Moduli spaces for fundamental groups and link invariants derived from the lower central series*, with M. Markl, Manuscripta Math. **81** (1993), 225–242.

19. *Cohomologically generic* 2*–complexes and* 3*–dimensional Poincaré complexes*, with B. Berceanu, Math. Ann. **298** (1994), 457–480.

20. *Moduli spaces for generic low–dimensional complexes*, with B. Berceanu, J. Pure Appl. Alg. **95** (1994), 1–25.

21. *Homotopy Lie algebras and submanifolds*, J. Pure Appl. Alg. **91** (1994), 219–229.

22. *Finite determinacy phenomena for finitely presented groups*, In: *Proceedings of the 2nd Gauss Symposium. Conference A: Mathematics and Theoretical Physics (Munich, 1993)*, pp. 507–528, Sympos. Gaussiana, de Gruyter, Berlin, 1995.

23. *Reduced weighted complete intersection and derivations*, with L. Paunescu, J. Algebra **183** (1996), 595–604.

24. *A rational homotopy analogue of the Poincaré conjecture*, Rev. Roumaine Math. Pures Appl. (1–2) **42** (1997), 121–132.

25. *Campbell–Hausdorff invariants of links*, Proc. London Math. Soc. (3) **75** (1997), 641–670.

26. *A generalization of fiber–type arrangements and a new deformation method*, with M. Jambu, Topology (6) **37** (1998), 1135–1164.

27. *On rational* $K[\pi, 1]$ *spaces and Koszul algebras*, with S. Yuzvinsky, J. Pure Appl. Alg. (2) **144** (1999), 157–167.

28. *Braid commutators and homogenous Campbell–Hausdorff tests*, Pacific Journ. of Math. **197** (2001), 383–416.

29. *On the indeterminacy and the realization of Milnor's* $\overline{\mu}$*–invariants*, Rev. Roumaine Math. Pures Appl. **46** (2001), 471–487.

30. *The universal finite–type invariant of braids, with integer coefficients*, Topology and its Applications **118** (2002), 169–185.

31. *Deformations of hypersolvable arrangements*, with M. Jambu, Topology and its Applications **118** (2002), 103–111.

32. *Generalized* $\overline{\mu}$*–invariants for links and hyperplane arrangements*, Proc. London Math. Soc. **84** (2002), 492–512.

33. *Higher homotopy groups of complements of complex hyperplane arrangements*, with A. Suciu, Advances in Math. **165** (2002), 71–100.

34. *Rational homotopy groups and Koszul algebras*, with A. Suciu, C. R. Acad. Sci. Paris Sér. I Math. **335** (2002), 53–58.

35. *Hypersurface complements, Milnor fibers and higher homotopy groups of arrangements*, with A. Dimca, Annals of Math. **158** (2003), 473–507.

36. *Equivariant chain complexes, twisted homology and relative minimality of arrangements*, with A. Dimca, Ann. Scient. Éc. Norm. Sup. **37** (2004), 449–467.

37. *Chen Lie algebras*, with A. Suciu, Internat. Math. Res. Notices **21** (2004), 1057–1086.

38. *Homotopy Lie algebras, lower central series, and the Koszul property*, with A. Suciu, Geometry and Topology **8** (2004), 1079–1125.

39. *Multiplicative models for configuration spaces of algebraic varieties*, with B. Berceanu and M. Markl, Topology **44** (2005), 415–440.

40. *Some analogs of Zariski's theorem on nodal line arrangements*, with A. D. R. Choudary and A. Dimca, Algebraic and Geometric Top. **5** (2005), paper no. 28, 691–711.

41. *Isometry—invariant geodesics and nonpositive derivations of the cohomology*, with L. Paunescu, J. Differential Geometry **71** (2005), 159–176.

42. *Algebraic invariants for right–angled Artin groups*, with A. Suciu, Math. Annalen **334** (2006), 533–555.

43. *When does the associated graded Lie algebra of an arrangement group decompose?*, with A. Suciu, Comment. Math. Helvetici **81** (2006), 859–875.

44. *Closed manifolds coming from Artinian complete intersections*, with L. Paunescu, Trans. Amer. Math. Soc. **359** (2007), 2777–2786.

45. *Algebraic invariants for Bestvina–Brady groups*, with A. Suciu, J. London Math. Soc. **76** (2007), 273–292.

46. *Global versus local algebraic fundamental groups*, in: Mini-Workshop on topology of closed one-forms and cohomology jumping loci, Oberwolfach Reports **4** (2007), 2321–2360.

47. *Quasi–Kähler Bestvina–Brady groups*, with A. Dimca and A. Suciu, J. Algebraic Geometry **17** (2008), 185–197.

48. *Alexander polynomials: essential variables and multiplicities*, with A. Dimca and A. Suciu, Internat. Math. Res. Notices, vol. **2008** (2008), article ID rnm119, 36 pp.

49. *On the monodromy action on Milnor fibers of graphic arrangements*, with A. Macinic, Topology and its Appl. **156** (2009), 761–774.

50. *Toric complexes and Artin kernels*, with A. Suciu, Advances in Math. **220** (2009), 441–477.

51. *Non–finiteness properties of fundamental groups of smooth projective varieties*, with A. Dimca and A. Suciu, J. Reine Angew. Math. **629** (2009), 89–105.

52. *Universal representations of braid and braid-permutation groups*, with B. Berceanu, J. Knot Theory Ramif. **18** (2009), no. 7, 999–1019.

53. *Characteristic varieties of nilpotent groups and applications*, with A. Macinic, Proceedings of the 6th Congress of Romanian Mathematicians (Bucharest, 2007), vol. 1, pp. 57–64, Romanian Academy, Bucharest, 2009.

54. *Topology and geometry of cohomology jump loci*, with A. Dimca and A. Suciu, Duke Math. Journal **148** (2009), no. 3, 405–457.

55. *Geometric and algebraic aspects of* 1*-formality*, with A. Suciu, Bull. Math. Soc. Sci. Math. Roumanie **52** (2009), no. 3, 355–375.

56. *The spectral sequence of an equivariant chain complex and homology with local coefficients*, with A. Suciu, Trans. Amer. Math. Soc. **362** (2010), no. 5, 2685–2721.

57. *Bieri-Neumann-Strebel-Renz invariants and homology jumping loci*, with A. Suciu, Proc. London Math. Soc. **100** (2010), no. 3, 795–834.

58. *Algebraic monodromy and obstructions to formality*, with A. Suciu, Forum Math. **22** (2010), no. 5, 973–983.

59. *Quasi-Kähler groups,* 3*-manifold groups, and formality*, with A. Dimca and A. Suciu, Math. Zeit. **268** (2011), no. 1–2, 169–186.

60. *Finite Galois covers, cohomology jump loci, formality properties, and multinets*, with A. Dimca, Annali Sc. Norm. Sup. Pisa **10** (2011), no. 2, 253–268.

61. *Homological finiteness in the Johnson filtration of the automorphism group of a free group*, with A. Suciu, J. Topol. **5** (2012), no. 4, 909–944.

62. *Arithmetic group symmetry and finiteness properties of Torelli groups*, with A. Dimca, Annals of Math. **177** (2013), no. 2, 395–423.

63. *The abelianization of the Johnson kernel*, with A. Dimca and R. Hain, `arXiv:1101.1392`, to appear in J. Eur. Math. Soc.

64. *Nonabelian cohomology jump loci from an analytic viewpoint*, with A. Dimca, preprint `arXiv:1206.3773`, to appear in Commun. Contemp. Math.

65. *Vanishing resonance and representations of Lie algebras*, with A. Suciu, preprint `arXiv:1207.2038`.

66. *Jump loci in the equivariant spectral sequence*, with A. Suciu, preprint `arXiv:1302.4075`.

67. *On the second nilpotent quotient of higher homotopy groups, for hypersolvable arrangements*, with A. Macinic and D. Matei, preprint `arXiv:1302.5822`.