Liviu Ornea - Curriculum Vitae

Personal data

Born in Bucharest, Romania, July, 14-th, 1960.

Education

1980-1984 University of Bucharest, Faculty of Mathematics.
1984-1985 Specialization in Algebra-Geometry (Master degree equivalent) at the same University.

Doctorate

1992 Doctor in Mathematics at the University of Bucharest cu the thesis *Geometrical structures on complex manifolds. Locally conformal Kähler structures.*

Present position

Professor at the Faculty of Mathematics and Informatics, University of Bucharest (since 2004), half-position as Senior Researcher I at the Institute of Mathematics "Simion Stoilow" of the Romanian Academy (since 2007).

Teaching activity

- Courses and tutorials of: Linear algebra and geometry (I-st year), Differential geometry of curves and surfaces (II-nd year), Manifolds and Riemannian geometry (III-rd year), Variational calculus (IV-th year), Complements of Riemannian Geometry (IV-th year), Foundations of geometry (IV-th year), Algebraic and differential topology (master), Complex geometry (master).
- Differential geometry, Summer course in Perugia, 2016.

Previous positions

- 1985-1987 Mathematics teacher in High school nr. 6, Tîrgoviste.
- 1987-1990 Mathematician, Institute for Computer Science, Bucharest.
- 1990-1991 Assistant Professor at the Politechnical Univ. of Bucharest.
- 1991-1995 Assistant Professor at the Faculty of Mathematics, Univ. of Bucharest.
- 1995-2001 Senior lecturer at the Faculty of Mathematics, Univ. of Bucharest.
- 2001-2004 Associate professor at the Faculty of Mathematics, Univ. of Bucharest.

Fields of interest

Differential geometry of Hermitian manifolds, quaternionic structures, contact structures.

Mathematical Publications

- over 75 research papers.
- The item *Hopf manifolds* in the Kluwer Encyclopedia of Mathematics.
- The monograph *Locally conformal Kähler geometry*, Progress in Mathematics 155, Birkhäuser 1998 (cu Sorin Dragomir). Awarded cu the "Ghe. Titeica" prize of the Romanian Academy in 1998.
- The problem book *Differentiable curves and surfaces* (in Romanian), Univ. of Bucharest Publ. House 1995.
- The textbooks *An introduction to geometry* (in Romanian, cu A. Turtoi), Theta Foundation Publ. House, 2000; 2nd ed. 2011; *An introduction to differential geometry* (in Romanian), Theta Foundation Publ. House, 2015.

Research in foreign universities and institutes

- 1990, 1 month in Paris 7.
- 1993, 3 months at the Université Libre de Bruxelles.
- 1994, 6 months at "La Sapienza" University in Rome.
- 1996, 10 days at Debrecen University, Hungary.
- 1997, "La Sapienza" University in Rome.
- 1997, 2 months at Dortmund University.
- 1997-1998, 5 months at Paris 6 University.
- 1998, 1 month at "La Sapienza" University in Rome.
- 1998, 2 months in "Max-Planck Institut für Mathematik" Bonn.
- 1999, 2 weeks at Kumamoto University, Japan.
- 1999, 2 months at ICTP *Abdus Salam*, Trieste.
- 1999, 2 weeks at the "Erwin Schrödinger Institute for Mathematical Physics", Vienna.
- 2000, 1 month at "La Sapienza" University in Rome.
- 2000 and 2001, 1 month at Tokyo Metropolitan University.
- 2001, 1 month in Ecole Polytechnique Fédérale de Lausanne.
- 2002, 1 month at "La Sapienza" University in Rome.
- 2002, 2 weeks at the Catholic University, Leuven.
- 2003, 3 months in Ecole Polytechnique, Paris.
- 2003, 1 month at University of Basilicata, Potenza.
- 2003, 1 month at the "Erwin Schrödinger Institute for Mathematical Physics", Vienna.
- 2003, 2 months at University of New Mexico, Albuquerque.
- 2004, 1 month at Université de Nancy.
- 2004, 1 month in Ecole Polytechnique Fédérale de Lausanne.
- 2004 - 2005, visiting professor at University of New Mexico, Albuquerque.
- 2006, 1 month at "La Sapienza" University in Rome.
- 2006, 1 month in Ecole Polytechnique Fédérale de Lausanne.
- 2006, 1 month in Ecole Polytechnique, Paris.
- 2007, 1 month at Waterloo University, Canada.
- 2008, "Ennio de Giorgi" Institute (Pisa, 2 weeks) and University of Pescara (3 weeks).
- 2008, Ecole Polytechnique, Paris (3 weeks).
- 2009, University of Tokyo, (2 weeks)
- 2009, Moscow Independent University (1 week)
- 2009, Ecole Polytechnique, Paris (1 week)
- 2010, Oberwolfach Institute (2 weeks)
- 2010, Tokyo Institute of Technology (visiting professor, 3 months)
- 2011, University of Cagliari (visiting professor, 1 month)
- 2011, Higher School of Economics, Moscow (visiting researcher, 2 weeks)
- 2012, University of Rome, La Sapienza (visiting researcher, 1 month)
- 2012, Max-Planck-Institut fuer Mathematik, Bonn (2 months)
- 2013, Higher School of Economics, Moscow (visiting researcher, 2 weeks)
- 2014, Higher School of Economics, Moscow (visiting researcher, 4 weeks)
- 2015, Higher School of Economics, Moscow (visiting researcher), 3 weeks)
- 2016, Postech, Pohang (Korea) (visiting researcher), 2 weeks.
- 2017, Univ. Libre de Bruxelles (visiting researcher), 10 days.
- 2017, Higher School of Economics, Moscow (visiting researcher), 2 weeks.
- 2017, Universita di Firenze (visiting researcher), 10 days.

- 2018, University of Houston (visiting researcher), 10 days.
- 2018, University of Firenze (visiting researcher), 2 weeks.
- 2018, IMPA, Rio de Janeiro (visiting researcher), 1 month.

Lectures given in foreign universities and institutes

Rome - La Sapienza (1991, 1994, 1998, 2000, 2002, 2003, 2006, 2012), Bruxelles - U.L.B. (1993, 1997, 2002, 2015, 2016, 2017), Leuven (1993, 2002), Lecce (1994), Potenza (1994, 1997, 1998, 2002, 2006), Palermo (1994), Debrecen (1996), Cagliari (1997, 1999, 2000, 2011), Mulhouse, Nice, Angers, Bonn (1998), Paris 7 (1998, 2003), Ochanomizu (Tokio) (1999), ICTP Trieste (1999), ESI Vienna (1999, 2003), Tokyo Metropolitan (1999, 2000, 2001, 2009), EPFL (2001), Brest (2003), New Mexico - Albuquerque (2003, 2004, 2005, 2016), California - Riverside (2003, 2004), Ecole Polytechnique - Paris (2003, 2004), Nancy (2003, 2004), Minnesota - Minneapolis (2005), Miami (2005), Pescara (2006, 2008), Glasgow (2007), Edinburgh (2007), Waterloo (2007), Universite de Quebec a Montreal (2007), Steklov Inst. (2007, 2009), Firenze (2008, 2017), Parma (2008), Lille (2008), Tokyo Inst. of Technology (2010), Osaka (2010), MPIM Bonn (2012), Hamburg (2012), Marburg (2012), Koeln (2012), HSE Moscow (2013, 2014, 2015, 2017), Postech (Korea, 2016), NYU (2016), Hannover (2016), Houston (2018), Texas Tech (Lubbock) (2018), IMPA (2018), Fluminense (Rio) (2018).

Invited speaker

- Second international meeting on quaternionic structures in mathematics and physics (Rome, September 1999).
- Perspectives in calibrations and gauge theories (Martina Franca, May 2000).
- Integrable systems in differential geometry (Tokyo, July 2000).
- Differential geometry and applications (Varna, August 2001).
- Geometric mechanics and its applications, MASIE, (Lausanne, July 2004).
- AMS Fall Western Section Meeting (Albuquerque, NM, October 2004).
- Special geometries in mathematics and physics (Kuehlungsborn, March 2006, April 2008).
- 6th Congress of Romanian Mathematicians (Bucharest, June 2007).
- Supersymmetry in complex geometry (Kashiwa-Tokyo, January 2009).
- A harmonic map fest (Cagliari, September 2009).
- Kaehler and related geometries (Nantes, November 2009).
- 5th Pacific rim conference on complex and symplectic geometry (Nagoya, July 2010).
- Non-Kaehler complex geometry (Luminy, February 2011).
- Geometry of Kaehler manifolds, 21-25 May 2012, Laboratoire de Mathatiques Jean Leray, Nantes.
- Geometric structures on Riemannian manifolds, 25-26 June 2015, Bari.
- Special Hermitian metrics on non-Kaehler manifolds, 20-22 April 2016, Florence.
- Complex and symplectic geometry, 12-18 June 2016, Cortona.

Varia

- Prize "Gheorghe Titeica" of the Romanian Academy in 1998 for the book *Locally conformal Kähler geometry*.
- **Non-mathematical publications:**

1. Theater reviews and various articles in *Scena, Teatrul Azi, Dilema, Dilema veche, Observator cultural* (weekly column Oct. 2005 - Oct. 2015, May 2017-ongoing), *22, Okean, Cuvintul.*
2. Translations from French:
    1. *Mitul arian (Le mythe arien)*, by Leon Polyakov, EST Publishing House 2003
    2. *Breviarul urii (Le bréviaire de la haine)*, by Leon Polyakov, EST Publishing House, 2004.
    3. *Ura de sine (La haine de soi)*, J.-C. Attias and E. Benbassa eds., EST Publishing House, 2005
    4. *Tata. Inventar (Mon père. Inventaire)*, by Jean-Claude Grumberg, EST Publishing House, 2010.
    5. *Priviri asupra conditiei evreiesti (Regards sur la conditions juive)*, by Gilles Zenou, EST Publishing House, 2010.
    6. *Teorema vie (Théorème vivant)*, by Cédric Villani, Humanitas Publ. House, 2014.
3. Translations from Italian:
    1. *Timpul imbatrineste in pripa (Il tempo invecchia in fretta)*, by Antonio Tabucchi, Polirom Publishing House, 2010.
    2. *Iubitul nefericit (L'amante infelice)*, by Alberto Moravia, Polirom Publishing House, 2011.
4. *Varietati conexe* (Essays, in Romanian), Curtea Veche Publ. House, Bucuresti, 2008.
5. *Bifurcatii* (Essays, in Romanian), Curtea Veche Publ. House, Bucuresti, 2014.
6. *Un matematician la teatru* (Theater critique, in Romanian), Tracus arte Publ. House, Bucuresti 2014.

Service

- 2008-2012 Secretary scientific of Faculty of Mathematics and Informatics
- 2012- Head of Department of Mathematics
- 2013- Scientific Council of the Mathematics Department of "Scoala Normala Superioara - Bucuresti".

Membership

- Society of Mathematical Sciences of Romania
- Ad Astra (association of Romanian researchers, www.ad-astra.ro)
- International Association of Theater Critiques, Romanian section.

Editorship

- Bulletin Mathématique de la Société des Sciences Mathématiques de Roumanie.
- Romanian Journal of Pure and Applied Mathematics (Rev. Roum. de Math. Pures et Appl.)
- Mathematical Reports
- Annals of the University of Bucharest (Mathematics series).

Spoken languages

- Romanian, French, English, Italian.

Liviu Ornea - List of publications

A. Research Articles

Preprints

1. *A characterization of compact locally conformally hyperkaehler manifolds* (with Alexandra Otiman).

2. *Flat affine subvarieties in Oeljeklaus-Toma manifolds* (with Misha Verbitsky and Victor Vuletescu). To appear in Mathematische Zeitschrift.

3. *Positivity of LCK potential* (in collaboration with Misha Verbitsky). To appear in Journal of Geometric Analysis. https://doi.org/10.1007/s12220-018-0046-y

4. *Hopf surfaces in locally conformally Kaehler manifolds with potential* (with M. Verbitsky).

5. *Homogeneous locally conformally Kaehler manifolds* (with A. Moroianu) arXiv:1311.0671

Published papers

6. *Locally conformally Kaehler manifolds with holomorphic Lee field* (with Andrei Moroianu and Sergiu Moroianu) Diff. Geom. Appl., 60 (2018), 33--38.

7. *The spectral sequence of the canonical foliation of a Vaisman manifold* (in collaboration with Vladimir Slesar). Annals of Global Analysis and Geometry, 53 (3), (2018), 311--329.

8. *Weighted Bott-Chern and Dolbeault cohomology for LCK manifolds with potential* (with M. Verbitsky and V. Vuletescu). J. Math. Soc. Japan 70 (2018), nr. 1, 407--420.

9. *Embedding of LCK manifolds with potential into Hopf manifolds using Riesz-Schauder theorem* (with M. Verbitsky). In "Complex and Symplectic Geometry", Springer INdAM serie, 2017, 137--148.

10. *Basic Morse-Novikov cohomology for foliations* (with V. Slesar), Mathematische Zeitschrift 284 (2016), no. 1-2, 469-489.

11. *LCK rank of locally conformally Kaehler manifolds with potential* (with M. Verbitsky). J. Geom. Physics. 107 (2016), 92-98.

12. *Locally conformally Kaehler metrics obtained from pseudoconvex shells* (with M. Verbitsky) Proceedings Amer. Math. Soc. 144 (2016), 325-335.

13. *Compact homogeneous LCK manifolds are Vaisman* (with A. Moroianu and P. Gauduchon) Math. Annalen. 361 (2015), 1043-1048.

14. *Holomorphic submersions of locally conformally Kaehler manifolds* (with M. Parton and V. Vuletescu). Ann. Matematica Pura ed Applicata 193(5) (2014), 1345-1351.

15. *Oeljeklaus-Toma manifolds and locally conformally Kahler metrics. A state of the art.* (with V. Vuletescu). Stud. Univ. Babes-Bolyai Math. 58(2013), No. 4, 459-468.

16. *Spin(9) geometry of the octonionic Hopf fibration* (with M. Parton, P. Piccinni, V. Vuletescu). Transformation groups, 18 nr. 3 (2013) 845-864.

17. *Blow-ups of locally conformally Kaehler manifolds* (with M. Verbitsky and V. Vuletescu, International Mathematics Research Notices 12 (2013) 2809-2821.

18. *Locally conformally Kaehler manifolds admitting a holomorphic conformal flow* (with M. Verbitsky), Math. Zeitschrift 273 (2013), 605-611.

19. *An integral invariant from the viewpoint of locally conformally Kaehler geometry* (with A. Futaki and K. Hattori), Manuscripta mathematica, 140, 1-12 (2013).

20. *Submanifolds in manifolds with metric mixed 3-structures* (with S. Ianus and G.E. Vilcu). Mediterranean Journal of Math. 9(2012), 105-128.

21. *Twistor theory for CR quaternionic manifolds and related structures* (with S. Marchiafava and R. Pantilie, Monatshefte fuer Mathematik. 167 (2012), 531-545.

22. *Automorphisms of locally conformally Kaehler manifolds* (with M. Verbitsky), International Mathematics Research Notices vol. 2012 Nr. 4 894-903.

23. *Oeljeklaus-Toma manifolds admitting no complex subvarieties* (with M. Verbitsky), Mathematical Research Letters 18(4), (2011), 747-754.

24. *A report on locally conformally Kaehler manifolds* (with M. Verbitsky), "Harmonic Maps and Differential Geometry" Contemporary Mathematics 542, 135-150, 2011.

25. *On holomorphic maps and generalized complex geometry* (with R. Pantilie). Journal of Geometry and Physics 61 (2011) 1502-1515.

26. *Remarks on the product of harmonic forms* (with M. Pilca), Pacific Journal of Mathematics, 250 (2011), 353-363.

27. *Essential points of conformal vector fields* (with F.A. Belgun and A. Moroianu), arXiv:1002.0482. Journal of Geometry and Physics 61 (2011), 589-593.

28. *Twistorial maps between quaternionic manifolds* (with S. Ianus, S. Marchiafava, R. Pantilie). Annali Scuola Normale Superiore di Pisa, Cl. Sci. (5) Vol. IX (2010), 47-67.

29. *Locally conformal Kaehler manifolds with potential* (with M. Verbitsky), Mathematische Annalen 348 (2010), 25-33.

30. *Topology of locally conformal Kaehler manifolds with potential* (with M. Verbitsky). International Mathematics Research Notices, 4 (2010), 117-126.

31. *On the local structure of generalized Kaehler manifolds* (with R. Pantilie), Bull. Math. Soc. Sci. Math. Roumanie, 52(2009), 347-354.

32. *Transformations of locally conformally Kaehler manifolds* (with A. Moroianu), Manuscripta Mathematica 130 (2009), 93-100.

33. *Morse-Novikov cohomology of locally conformally Kaehler manifolds* (with M. Verbitsky), Journal of Geometry and Physics 59, No. 3 (2009), 295-305.

34. *Einstein-Weyl structures on complex manifolds and conformal version of Monge-Ampere equation* (with M. Verbitsky), Bull. Math. Soc. Sci. Math. Roumanie Tome 51(99) No. 4, 2008, 339-353.

35. *Conformally Einstein Products and Nearly Kaehler Manifolds* (with A. Moroianu), Annals of Global Analysis and Geometry 33(2008), 11-18.

36. *Constructions in Sasakian Geometry* (with C. P. Boyer, K. Galicki). Mathematische Zeitschrift 257 (2007), 907-924.

37. *Sasakian structures on CR-manifolds* (with M. Verbitsky), Geometriae Dedicata, 125 (2007), 159-173.

38. *Embeddings of compact Sasakian manifolds* (with M. Verbitsky), Mathematical Research Letters, 14 (2007), 703-710.

39. *Reduction of Vaisman structures in complex and quaternionic geometry* (with R. Gini, M. Parton and P. Piccinni), Journal of Geometry and Physics, 56 (2006), 2501-2522.

40. *CR-submanifolds. A class of examples.* Rev. roum. math. pures appl. 51 (2006) 77-85.

41. *Locally conformally Kaehler manifolds. A selection of results.* Lecture Notes of Seminario Interdisciplinare di Matematica, 4(2005), 121-152. math.DG/0411503.

42. *Non-zero contact and Sasakian reduction* (with O. Drăgulete), Differential Geometry and its Applications 24 (2006), 260-270.

43. *Harmonicity and minimality of vector fields and distributions on locally conformal Kaehler and hyperkaehler manifolds* (with L. Vanhecke), Bull. of the Belgian Math. Soc. "Simon Stevin" 12 (2005) 543-555.

44. *An immersion theorem for Vaisman manifolds* (with M. Verbitsky,), Mathematische Annalen 332 (2005), 121-143.

45. *Locally conformal Kaehler reduction* (with R. Gini and M. Parton,). Crelle Journal fuer die Reine und Angewandte Mathematik 581 (2005), 1-21.

46. *Geometric flow on compact locally conformally Kaehler manifolds* (with Y. Kamishima). Tohoku Math. J. 57 (2) (2005), 201-221.

47. *Eigenvalue estimates for the Dirac operator and harmonic 1-forms of constant length* (with A. Moroianu). Comptes Rendus Acad. Sci. Paris, 338 (2004), 561-564.

48. *Structure theorem for compact Vaisman manifolds*, Mathematical Research Letters, 10 (2003), 799-805 (with M. Verbitsky).

49. *Potential 1-forms for hyper-Kaehler structures with torsion*, Classical and Quantum Gravity 20 (2003), 1845-1856 (with Y.S Poon and A. Swann).

50. *Cosphere bundle reduction in contact geometry*, Journal of symplectic geometry, 1(4) (2002), 695-714. (with O. Dragulete and T.S. Ratiu).

51. *Weyl structures in quaternionic geometry. A state of the art.* Barletta, Elisabetta (ed.), Selected topics in geometry and mathematical physics. Vol. I. Potenza: Univ. degli Studi della Basilicata, Dip. di Mat., Seminario Interdisciplinare di Matematica, 43-80 (2001).

52. *Cayley 4-frames and a quaternion Kaehler reduction related to Spin(7)*, Global differential geometry: the mathematical legacy of A. Gray (Bilbao 2000), 401-405, Contemporary Mathematics 288, 2001 (with P. Piccinni).

53. *Reduction of Sasakian manifolds*, Journal of Mathematical Physics 48 (2001), 3809-3816 (with G. Grantcharov).

54. *Local almost contact metric 3-structures* Publicationes Mathematicae (Debrecen) 57 (2000) 499-508 (with P. Matzeu).

55. *Complex structures on some Stiefel manifolds*, Bull. Math. Soc. Sci. Math. Roumanie (N.S.) 49 (2000) (with P. Piccinni).

56. *On some moment maps and induced Hopf bundles in the quaternionic projective space*, International Journal of Mathematics 11 (2000), 925-942 (with P. Piccinni).

57. *Intersections of Riemannian submanifolds. Variations on a theme by T. J. Frankel*, Rendiconti di Matematica (Roma), 19 (1999), 107-121 (with T. Bingh and L. Tamassy).

58. *Locally conformal Kaehler metrics on Hopf surfaces*, Annales de l'Institut Fourier, 48 (1998), 1107-1127 (with P. Gauduchon).

59. *Compact hyperhermitian-Weyl and quaternion Hermitian-Weyl manifolds*, Annals of Global Analysis and Geometry, 16 (1998), 383-398. (with P. Piccinni). *Erratum*, Same journal, 18 (2000), 105-106.

60. *An example of an almost hyperbolic Hermitian manifold*, International Journal of Mathematics and Mathematical Sciences, 21 (1998), 613-618 (with C.-L. Bejan).

61. *Locally conformal Kaehler structures in quaternionic geometry*, Transactions of the American Mathematical Society, 349 (1997), 641-655, (with P. Piccinni).

62. *Induced Hopf bundles and Einstein metrics*, in New developments in differential geometry, Budapest (1996), 295-306, Kluwer (with P. Piccinni).

63. *Weyl structures on quaternionic manifolds*, Proceedings of the Meeting on Quaternionic Structures in Mathematics and Physics, Trieste 1994. SISSA, Trieste, (1996), 261-267, (with P. Piccinni).

64. *Holomorphic and harmonic maps on locally conformal Kaehler manifolds*, Bolletino dell'Unione Matematica Italiana, (7)9-A(1995), 569-579, (with S. Ianus, V. Vuletescu).

65. *Conformal geometry of Riemannian submanifolds. Gauss, Codazzi and Ricci equations*, Rendiconti di Matematica (Roma), 15, (1995), 233-249, (with G. Romani).

66. *Locally conformal Kaehler manifolds. A survey*, Quaderno n. 12, Dip. di Mat., Univ. di Roma "La Sapienza", (1994).

67. *The fundamental equations of conformal submersions*, Beitraege zur Algebra und Geometrie, 34, (1993), 233-243, (with G. Romani).

68. *Submanifolds with parallel second fundamental form in a generalized Hopf manifold*, Ricerche di Matematica (Napoli), XLII, (1993), 3-9.

69. *Immersions sphériques dans une varieté de Hopf generalisée*, Comptes Rendus de l' Acad. Sci. Paris, 316, Serie I, (1993), 63-66, (with S. Ianus, K. Matsumoto).

70. *A theorem on nonnegatively curved locally conformal Kaehler manifolds*, Rendiconti di Matematica (Roma), serie VII, 12, (1992), 257-262.

71. *A class of antiinvariant submanifolds of a generalized Hopf manifold*, Bull. Math. de la Soc. Sci. Math. de Roumanie, 34, (1990), 115-123, (with S. Ianus).

72. *Minimal real hypersurfaces of a generalized Hopf manifold*, Analele St. Univ. "Al. I. Cuza" Iasi, 2, (1990), 137-142.

73. *Complex hypersurfaces with planar geodesics in generalized Hopf manifolds*, Mathematika Balkanica 3 (1989) 92-96.

74. *Complex hypersurfaces of a generalized Hopf manifold*, Publications de l'Inst. Math. (Beograd), 42, (1987), 123-129, (with S. Ianus, K. Matsumoto).

75. *CR-submanifolds of a locally conformal Kaehler manifold*, Demonstratio Mathematica, 19, (1986), 863-869.

B. Monographs

1. Locally conformal Kaehler geometry, Progress in Mathematics 155, Birkhauser, 1998 (with Sorin Dragomir).

C. Textbooks

2. Curbe și suprafețe diferențiabile. Culegere de probleme, Ed. Univ. din București, 1995.

3. O introducere în geometrie (with A. Turtoi), Ed. Fundației Theta, ed. a 2-a: 2011.

4. O introducere în geometria diferențială, Ed. Fundației Theta, 2015.