LÁSZLÓ LEMPERT

EDUCATION

Diploma[1]	Eötvös U. of Budapest	1975
University Doctorate[2]	Eötvös U. of Budapest	1979
Candidate of Sciences	Hungarian Acad. Sci.	1984

[1]Diploma corresponds to 5 years of studies in mathematics at the University level
[2]This is awarded for original research and might be called equivalent to the American Ph.D.

PROFESSIONAL EXPERIENCE

Teaching Assistant	Eötvös U. of Budapest	1975-77
Research Fellow	Eötvös U. of Budapest	1977-79
Visiting Research Fellow	U. of Paris VII.	1979-80
Assistant Professor	Eötvös U. of Budapest	1980-81
Adjoint Professor	Eötvös U. of Budapest	1981-88
Visiting Lecturer	Princeton University	1984-85
Associate Professor	Eötvös U. of Budapest	1988-92
Professor of Mathematics	Purdue University	1988-04
Visiting Professor	Eötvös U. of Budapest	1994-95, 2002-03, Fall 2010, Fall 2018
Distinguished Professor of Mathematics	Purdue University	2004-2023
Researcher	Mittag-Leffler Institute	2008 (Feb. – June)
Visiting Professor	University of Paris 6	Spring 2011
Department Head	Purdue University	2011-13
Member	Center for Advanced Study, Oslo	Spring 2017
Associate Member	Sorbonne University of Paris	Spring 2019
Emeritus Professor	Purdue University	2023-

PROFESSIONAL SOCIETIES & AWARDS

Hungarian Mathematical Society	1975-
American Mathematical Society	1988-
Grünwald Prize of the Hungarian Math. Soc.	1981
Alexits Prize of the Hungarian Acad. Sci.	1985
Bergman Prize of the American Math. Soc.	2001
Joel S. Spira Faculty Teaching Award	2004
External Member of the Hungarian Acad. Sci.	2004-
Senior Clay Scholar	2008 (March – May)
Fellow of the American Mathematical Society	2012-

RESEARCH INTERESTS

Complex Analysis, Partial Differential Equations, and Differential Geometry

VITA

Birthplace	Budapest
Birthdate	June 4, 1952
Marital Status	Married
Children	2

PUBLICATIONS

1. Recursion for orthogonal polynomials on complex domains, Colloquia Mathematica Soc. J. Bolyai, 19, Fourier Analysis and Approximation Theory, Budapest 1976.

2. A note on mapping polydiscs into balls and vice versa, Acta Math. Acad. Sci. Hung. 34 (1979) 117-119.

3. Boundary behaviour of meromorphic functions of several variables, *Acta Math. Scand.* 144 (1980) 1-25.

4. La métrique de Kobayashi et la représentation des domaines sur la boule, *Bull. Soc. Math. France* 109 (1981) 427-474.

5. Intrinsic metrics and holomorphic retracts, *Complex Analysis and Applications '81, Sofia* (1984) 341-364.

6. Imbedding pseudo convex domains into a ball, *Amer. Journal of Math.* 104 (1982) 901-904.

7. Holomorphic retracts and intrinsic metrics in convex domains, *Analysis Mathematica* 8 (1982) 257-261.

8. Intrinsic metrics, *Proceedings of Symposia in Pure Mathematics*, Vol. 41., Amer. Math. Soc. (1984) 147-150.

9. Solving the degenerate complex Monge-Ampère equation with one concentrated singularity, *Math. Ann.* 263 (1983) 515-532.

10. Symmetries and other transformations of the complex Monge-Ampère equation, *Duke Math. J.* 52 (1985) 869-885.

PUBLICATIONS CONT.

11. On the boundary behavior of holomorphic mappings, in Contributions to Several Complex Variables in Honour of Wilhelm Stoll, Vieweg & Son, Braunschweig (1986), 193-215.

12. A precise result on the boundary regularity of biholomorphic mappings, *Math. Zeitschrift* 193 (1986), 559-579. Erratum: 206 (1991) 501-504.

13. Complex geometry in convex domains, *Proceedings of the International Congress of Mathematicians*, Berkeley (1986) 759-765.

14. Holomorphic invariants, normal forms, and moduli space of convex domains, *Ann. of Math.* 128 (1988) 43-78.

15. Imbedding Cauchy-Riemann manifolds into a sphere, *International Journal of Mathematics* 1 (1990) 91-108.

16. (with E. Amar) Geometric regularity versus analytic regularity. Higher codimensional case, *Ann. Scuola Norm. Sup. Pisa, IV*., Vol XVII, (1990) 298-321.

17. (with S. Bell) A Schwarz reflection principle in one and several complex variables, *J. Diff. Geom.* 31 (1990) 899-915.

18. (with R. Szöke) Global solutions of the homogeneous complex Monge-Ampère equation and complex structures on the tangent bundle of Riemannian manifolds, *Math. Ann.* 290 (1991) 689-712.

19. Imbedding pseudohermitian manifolds into a sphere, in: Complex Analysis, Proc. Internat. Workshop, Wuppertal 1990, ed. K. Diederich (Aspects of Mathematics) 194- 199.

20. (with L.A. Rubel) An independence result in several complex variables, *Proc. Amer. Math. Soc.* 113 (1991) 1055-1065.

21. (with D. Catlin) A note on the instability of embeddings of Cauchy-Riemann manifolds, *J. Geom. Analysis* 2 (1992) 99-104.

22. (with E. Andersén) On the group of holomorphic automorphisms of C^n , *Invent. Math.* 110 (1992) 371-388.

23. On three dimensional Cauchy-Riemann manifolds, *J. Amer. Math. Soc.* 5 (1992) 923-969.

24. Elliptic and hyperbolic tubes, in: Several Complex Variables, Proc. Mittag-Leffler Institute, 1987-88, *Math. Notes* 38, Princeton Univ. Press, Princeton, NJ 1993.

PUBLICATIONS CONT.

25. Complex structures on the tangent bundle of Riemannian manifolds, in: Complex Analysis and Geometry, eds. V. Ancona, A. Silva, 235-251, The University Series in Mathematics. Plenum Press, New York 1993.

26. Loop spaces as complex manifolds, *J. Diff. Geom.* 38 (1993) 519-543.

27. Metamorphoses of the Kobayashi metric, in: *Proceedings of the Global Analysis Research Center*, 177-210, Seoul, Korea, 1993.

28. Embeddings of three dimensional Cauchy-Riemann manifolds, *Math. Ann.* 300 (1994) 1-15.

29. (with J.-P. Demailly and B. Shiffman) Algebraic approximation of holomorphic maps from Stein domains to projective algebraic manifolds, *Duke Math. J.* 76 (1994) 333-363.

30. (with A. Eremenko) An extremal problem for polynomials, *Proc. Amer. Math. Soc.* 122 (1994) 191-193.

31. The Virasoro group as a complex manifold, *Math. Research Letters* 2 (1995) 479-495.

32. Algebraic approximations in analytic geometry, *Invent. Math.* 121 (1995) 335-354.

33. Algebraic approximations, in: Geometric Complex Analysis, World Scientific Publishing, Singapore, 1996.

34. The problem of complexifying a Lie group, *Contemporary Mathematics* 205 (1997) 169-176.

35. Spaces of Cauchy-Riemann manifolds, in: CR geometry and overdetermined systems, 221-236 Kinokuniya Co. Ltd., Tokyo 1997.

36. The Dolbeault complex in infinite dimensions, I., *J. Amer. Math. Soc.* 11 (1998) 485-520.

37. The Cauchy-Riemann equations in infinite dimensions, *Journées Équations aux dérivées partielles*, Saint-Jean-de-Monts, 1998, CNRS, VIII-1 – VIII-8.

38. The Dolbeault complex in infinite dimensions, II, *J. Amer. Math. Soc.* 12 (1999) 775-793.

39. Approximation de fonctions holomorphes d'un nombre infini de variables, *Ann. Inst. Fourier*, Grenoble 49 (1999) 1293-1304.

40. Approximation of holomorphic functions of infinitely many variables II, *Ann. Inst. Fourier*, Grenoble 50 (2000) 423-442.

PUBLICATIONS CONT.

41. The Dolbeault complex in infinite dimensions III. Sheaf cohomology in Banach spaces, *Invent. Math.* 143 (2000) 579-603.

42. (with R. Szöke) The tangent bundle of an almost complex manifold, *Canad. Math. Bull.* 44 (2001) 70-79.

43. On Fréchet spaces with a dominant norm, *Math. Proc. Royal Irish Acad.* 102A (2002) 127-129.

44. Holomorphic approximations in Fréchet spaces, *Comm. Anal. Geom.* 11 (2003) 1-15.

45. Analytic cohomology in Fréchet spaces, *Comm. Anal. Geom.* 11 (2003) 17-32.

46. Plurisubharmonic domination, J. *Amer. Math. Soc.*, 17 (2004) 361-372.

47. Vanishing cohomology for holomorphic vector bundles in a Banach setting, *Asian J. Math*, 8 (2004) 65-85.

48. Holomorphic functions on (generalized) loop spaces, *Math. Proc. Royal Irish Acad.*, 104A (2004) 35-46.

49. The $\overline{\partial}$ equation in N variables, as N varies, *Proceedings of the Oka Centennial Conference*, Kyoto-Nara 2001, 189-202, *Math. Soc. Japan*, Tokyo 2004.

50. Acyclic sheaves in Banach spaces, *Contemporary Math.*, 368 (2005) 313-320.

51. (with N. Zhang) Dolbeault cohomology of a loop space, *Acta Math.* 193 (2004) 241-268.

52. (with I. Patyi) Analytic sheaves in Banach spaces, *Ann. Scient. Éc. Norm. Sup.*, 4^{e} série, t.40 (2007) 453-486.

53. (with E. Szabó) Rationally connected varieties and loop spaces, *Asian J. Math.*, 11 (2007) 485-496.

54. A note on holomorphic approximation in Banach spaces, *Periodica Math. Hung.*, 56 (2008), 241-245.

55. On the cohomology groups of holomorphic Banach bundles, *Trans. Amer. Math. Soc.*, 361 (2009), 4013-4025.

56. Analytic continuation in mapping spaces, *Pure and Appl. Math. Quarterly*, 6 (2010) 1051-1080.

PUBLICATIONS CONT.

57. Coherent sheaves and cohesive sheaves, in Complex Analysis, Trends in Mathematics, 227-244, 2010 Springer.

58. (with R. Szöke) A new look at adapted complex structures, *Bull. London Math. Soc.*, 44 (2012) 367-374.

59. (with T. Darvas) Weak geodesics in the space of Kähler metrics, *Math. Res. Lett.*, 19 (2012) 1127-1135.

60. (with L. Vivas) Geodesics in the space of Kähler metrics, *Duke Math. J.*, 162 (2013) 1369-1381.

61. (with R. Szöke) Direct images, Hilbert fields, and geometric quantization, *Comm. Math. Physics*, 327 (2014) 49-99.

62. A maximum principle for Hermitian (and other) metrics, *Proc. Amer. Math. Soc.*, 143 (2015) 2193-2200.

63. (with R. Szöke) Curvature of fields of quantum Hilbert spaces, *Quart. J. of Math.*, 66 (2015) 645-657.

64. Representing analytic cohomology groups of complex manifolds, *Ann. Fac. Sci. Toulouse*, 24 (2015) 21-38.

65. Analytic cohomology groups of infinite dimensional complex manifolds, *J. Math. Anal. Appl.* 445 (2017) 1428-1446.

66. (with B. Berndtsson) A proof of the Ohsawa-Takegoshi theorem with sharp estimates, *J. Math. Soc. Japan* 68 (2016) 1461-1472.

67. Extrapolation, a technique to estimate, *Contemp. Math*. 693 (2017) 271-281.

68. Modules of square integrable holomorphic germs, Analysis Meets Geometry: A Tribute to Mikael Passare, *Trends in Mathematics* 311-333, 2017 Springer.

69. Noncommutative Potential Theory, *Analysis Math*. 43 (2017) 603-627.

70. On Riemannian submersions, *Acta Math. Hungarica*, 158 (2019) 363-372.

71. Isometries in spaces of Kähler potentials, *Ann. Polonici Math*. 123 (2019) 423-458.

72. On complex Legendre duality, *J. Geom. Anal.* 30 (2020) 2581–2592.

PUBLICATIONS CONT.

73. On the adjoint action of the group of symplectic diffeonionplirsues, Pure and Applied Math. Quarterly 18 (2022) 657-682.

74. The principle of least action in the space of Kahler potentials, Math. Res. Lett. 29 (2022) 785-833.

75. Aron-Berner-type extension in complex Banach manifolds, Trans. Amer. Math. Soc. 377 (2024) 2169-2203.

INVITED ADDRESSES

1. Toulouse (France), Fine Analysis, 1983

2. Varna (Bulgaria), Summer School on Complex Analysis & Applications, 1983

3. Oberwolfach (Germany), Complex Analysis and P.D.E., 1983

4. Notre Dame (Indiana, USA), Meeting in Honour of W. Stoll, 1984

5. Albany (New York, USA), Complex Analysis and P.D.E., 1985

6. Oberwolfach (Germany), Complex Analysis & Differential Geometry, 1985

7. Berkeley (California, USA), International Congress of Mathematicians, 1986

8. Paris (France), Journées du Nord en Analyse Complexe, 1987.

9. Kyoto (Japan), International Conference on Several Complex Variables, 1988.

10. Trento (Italy), Complex Analysis and Geometry, 1988.

11. W. Lafayette (Indiana, USA), Midwest Meeting on Several Complex Variables, 1988.

12. San Diego (California, USA), Southern California Analysis and Partial Differential Equations Conference, 1989.

13. Muncie (Indiana, USA), AMS Meeting, 1989.

14. Wuppertal (Germany), Workshop on Several Complex Variables in Honor of Hans Grauert, 1990.

15. Ann Arbor (Michigan, USA), Midwest Meeting on Several Complex Variables, 1991.

16. Princeton (New Jersey, USA), Conference on Several Complex Variables in Honor of R.C. Gunning and J.J. Kohn, 1992.

17. Riverside (California, USA), Holomorphic and Differential Geometry, 1992.

INVITED ADDRESSES CONT.

18. Urbana-Champaign (Illinois, USA), Function Theory and Algebraic Differential Equations in Honor of L.A. Rubel, 1993.

19. Trento (Italy), Complex Analysis and Geometry 1993.

20. Seoul/Pohang (Korea), Lecture Series at Dae Woo Workshop on Pure Mathematics, 1993.

21. Bern (Switzerland), Third Analysis Colloquium, 1994.

22. St. Petersburg (Russia), Workshop on Several Complex Variables, 1994.

23. Vienna (Austria), Workshop on Complex Analysis at the Schrödinger Institute, 1995.

24. Hayama (Japan), Third Research Institute on Geometric Complex Analysis, 1995.

25. Levico-Terme (Italy), Complex Analysis and Geometry, 1995.

26. Sao Carlos (Brazil), Conference on Partial Differential Equations and Several Complex Variables in Honor of F. Treves, 1995.

27. Berkeley (California, USA), Workshop on Algebraic and Geometric Methods in Several Complex Variables, 1996.

28. Taipei (Taiwan), Lecture series at Workshop on Geometry, Academia Sinica, 1996.

29. Charleston (Illinois, USA), Geometry Day, 1996.

30. London (Ontario, Canada), Meeting of the Canadian Mathematical Society, 1996.

31. Levico-Terme (Italy), Complex Analysis and Geometry, 1997.

32. Hong Kong, Lecture series at Workshop on CR manifolds, 1997.

33. Warsaw (Poland), Complex Analysis and Applications, 1997.

34. Paris (France), Complex Analysis in honor of P. Lelong, 1997.

35. Bloomington (Indiana), Midwest Several Complex Variables Meeting, 1997.

36. Seattle (Washington, USA), Conference in honor of L. Stout, 1998.

37. St Jean de Monts (France), Équations aux Dérivées Partielles, 1998.

INVITED ADDRESSES CONT.

38. Lille (France), Complex Analysis in honor of G. Coeuré, 1998.

39. Fribourg (Switzerland), Conference on CR geometry, 1998.

40. Hayama (Japan), Symposium on complex analysis, 1998.

41. Toronto (Canada), Midwest Several Complex Variables Meeting, 1999.

42. Luminy (France), Colloque: Analyse Complexe, 1999.

43. Columbus (Ohio), Complex Analysis and Geometry Conference, 1999.

44. Cortona (Italy), Lecture series at Summer School on Complex Analysis, 1999.

45. La Jolla (California), Southern California Analysis and Partial Differential Equations Conference, 2000.

46. Berkeley (California), Geometric Scattering Theory, Workshop, 2001.

47. Levico-Terme (Italy), Complex Analysis and Geometry, 2001.

48. Kyoto-Nara (Japan), Oka Centennial Conference in Complex Analysis, 2001.

49. Pohang (Korea), Infinite dimensional function theory, 2002.

50. Princeton (New Jersey), Conference on Several Complex Variables and Complex Geometry, in honor of R.C. Gunning and J.J. Kohn, 2002.

51. Oberwolfach (Germany), Real methods of complex analysis, 2003.

52. Pisa (Italy), Lecture series at Workshop on real and complex geometry, 2003.

53. Visby (Sweden), NORDAN, Nordic Analysis Conference, 2003.

54. Taipei (Taiwan), Workshop on complex geometry, 2003.

55. Oberwolfach (Germany), Finite and infinite dimensional complex geometry and representation theory, 2004.

56. London (Ontario, Canada), Midwest Several Complex Variables Meeting, 2004.

57. New York (New York), Conference in honor of M. Kuranishi, 2005.

58. Luminy (France), Lecture series at Summer School in Complex Analysis, 2005.

INVITED ADDRESSES CONT.

59. Hanoi (Vietnam), Complex Analysis and Geometry, 2005.

60. Madrid (Spain), The 9th Conference on Function Theory on Infinite-Dimensional Spaces, 2005.

61. Madison (Wisconsin), Conference in Complex Analysis, 2006.

62. Notre Dame (Indiana), Conference in honor of S. Baouendi, 2006.

63. Les Rasses (Switzerland), Journées Complexes du Sud, 2006.

64. Levico-Terme (Italy), Complex Analysis and Geometry, 2007.

65. Mariehamn (Finland), NORDAN, Nordic Analysis Conference, 2008.

66. Stockholm (Sweden), Progress in Analysis, Geometry, and Topology, in honor of O. Viro, 2008.

67. Bucharest (Romania), Conference on complex geometry, 2008.

68. Prague (Czech Republic), Conference in honor of J.J. Kohn, 2008.

69. Hayama (Japan), Symposium on Several Complex Variables XII, 2008.

70. Banff (Canada), Workshop on Complex Analysis and Geometry, 2009.

71. Marrakesh (Morocco), Geometric Analysis of Several Complex Variables and its Interactions, 2010.

72. Levico-Terme (Italy), Complex Geometry, 2010.

73. Valencia (Spain), Functional Analysis, 2010.

74. Oberwolfach (Germany), Geometric Methods in Complex Analysis, 2011.

75. Notre Dame (Indiana), Nevanlinna theoryand complex geometry, 2012.

76. Bedlewo (Poland), Functional analysis: Applications to complex analysis and partial differential equations, 2012.

77. Evanston (Illinois), Analytic Microlocal Analysis, 2013.

78. Hong Kong (China), Conference on Complex Geometry, 2013.

79. Notre Dame (Indiana), Great Lakes Geometry Conference, 2014.

INVITED ADDRESSES CONT.

80. Edinburgh (Scotland), Complex Variables and Modeling Uncertainty, 2014.

81. Oberwolfach (Germany), Komplexe Analysis, 2014.

82. Beijing (China), Lecture series at Tshinghua University, 2014.

83. Evanston (Illinois), Special day on complex geometry and analytic Riemannian manifolds, 2015.

84. Baltimore (Maryland), BW Metro Area Differential Geometry Seminar, 2015.

85. Levico Terme (Italy), Complex Analysis and Geometry, 2015.

86. Stony Brook (New York), Quantum Geometry, Stochastic Geometry, Random Geometry, you have it, 2015.

87. College Station (Texas), Summer Informal Regional Functional Analysis Seminar, 2015.

88. Toledo (Ohio) Midwest Several Complex Variables Meeting, 2016.

89. Oslo (Norway) Complex Geometry and the Cauchy-Riemann equation, 2016.

90. Kent (Ohio) Infinite Dimensional Analysis, 2016.

91. Notre Dame (Indiana) Complex Analysis and Geometry, 2018.

92. Syracuse (New York) Midwest Several Complex Variables Conference, 2018.

93. Shanghai (China) Second Symposium on Geometry and Differential Equations, 2018.

94. San Jose (California) Non-Hermitian Quantum Mechanics and Symplectic Geometry, 2018.

95. Ljubljana (Slovenia) Stein Manifolds and Holomorphic Mappings, 2018.

96. Cortona (Italy) Workshop on Constant Scalar Curvature Kähler Metrics, 2019.

97. Hanoi (Vietnam) Lecture Series at Summer School: Complex Analysis and Applications, 2019.

98. Taipei (Taiwan) Conference on Complex Geometry, 2019.

99. Philadelphia (PA)/zoom A conference on SCV and related PDEs, 2021.

100. Oberwolfach (Germany)/hybrid Geometric Methods of Complex Analysis, 2021.

101. Levico Terme (Italy)/hybrid Cohomology of Complex Manifolds and Special Structures, 2021.

INVITED ADDRESSES CONT.

102. Cluj (Romania)/online Workshop in memory of Gabriela Kohr, 2021.

103. Notre Dame (Indiana) Midwest Several Complex Variables Meeting, 2022.

104. Krakow (Poland) Complex Geometry in honor of S. Kolodziej. 2022.

105. Cetraro (Italy) Complex and Convex, in honor of B. Berndtsson. 2022.

106. Columbus (Ohio) Midwest Several Complex Variables Meeting, 2023.

107. College Park (Maryland) Several Complex Variables, Complex Geometry and related PDEs, 2024.

108. Portoroz (Slovenia) Complex Analysis, Geometry, and Dynamics III, 2024.

109. Budapest (Hungary) 2nd Analysis Mathematica Conference, 2024

DEPARTMENTAL SERVICE

Department Head	2011-13
Promotion Committee	1991-92
	1993-94 (Chairman)
	1996-97 (Chairman)
	2003-04 (Chairman)
	2004-05
	2006-07 (Chairman)
	2007-08 (Chairman)
	2008-09
	2014-15
	2015-16
	2017-18
	2019-20
Awards Committee	2015-16 (Chairman)
College of Science Area Committee	1999-2000; 2009-2010
Personnel Committee	1991-94; 1995-02; 2003-04; 2005-07; 2008-10; 2021-22;
Head Search Committee	1992; 1996-97; 2001-02; 2006-07
Elementary Services Committee	1992-94
Library Committee	1996-2001; 2013-16
University Senate	1995-96
Applied Mathematics Subcommittee	1996-99
Graduate Committee	1999-2001
GAANN/VIGRE Committee	2000-02
VIGRE Committee	2004
College of Science Grievance Committee	2004-06
CCAM Review Committee	2009-10 (Chairman)

EDITORIAL WORK

Editor of International Journal of Mathematics	1990-2011
Editor of Periodica Mathematica Hungarica	1997-2020
Editor of Annali della Scuola Normale Superiore	2001-
Editor of Analysis and Partial Differential Equations	2008-2016

PH.D. STUDENTS

Puqi Tang, Ph.D. 1994
Hualun Li, Ph.D. 1995
Anbo Le, Ph.D. 1996
Imre Patyi, Ph.D. 2000
Boris Kotzev, Ph.D. 2001
Ning Zhang, Ph.D. 2003
Scott Simon, Ph.D. 2006
Aaron Zerhusen, Ph.D. 2006
Jaehong Kim, Ph.D., 2008
Vakhid Masagutov, Ph.D., 2009
Nicholas Wegman, Ph.D., 2012
Dat Tran, Ph.D., 2014
Tamas Darvas, Ph.D., 2014
Kate Brubaker, Ph.D., 2019
Kuang-Ru Wu, Ph.D., 2020