

CURRICULUM VITAE

VICTOR KAC

Born: December 19, 1943, Buguruslan, Russia
Citizenship: U.S.A.
Education: M.S. Moscow State University, 1965
Ph.D. Moscow State University, 1968
Thesis: Simple Irreducible Graded Lie Algebras of Finite Growth

Positions Held:

Assistant, 1968–1971
Moscow Institute of Electronic Machine Building
Senior Teacher, 1971–1976
Moscow Institute of Electronic Machine Building
Visiting Associate Professor, 1977
M.I.T., Cambridge, MA 02139, U.S.A.
Associate Professor, 1978–1980
M.I.T., Cambridge, MA 02139, U.S.A.
Professor, 1981–present
M.I.T., Cambridge, MA 02139, U.S.A.

Honors and Awards:

1981–1983 Sloan Fellowship
1981 Medal from the College de France
1986–87 Guggenheim Fellowship
1994 Wigner Medal
1998 Honorary member of Moscow Math. Society
1998 Chaire Condorcet at Ecole Normale Superieure, Paris
1999 Sackler fellow, IHES
2002 Simons research visiting professor, MSRI
2003 Sarojini Damadaran fellow, TIFR
2007 Member of the American Academy of Arts and Sciences

Conferences organized:

Oberwolfach, Germany, 1980 and 1985
Berkeley, MSRI, 1984 and 2002
Marseille, Lumini, France, 1988
Pisa, Italy, Spring program, “Infinite dimensional algebra and algebraic geometry,” 1991
M.I.T., “Lie theory and geometry”, 1993
ESI, Vienna, Programm on representation theory, 2000
Toronto, Fields Institute, 2000
MSRI, Programm “Infinite-dimensional algebras and Mathematical Physics”, 2002
BIRS, working in teams programm, August 2003
ESI, Vienna, Summer school on vertex algebras, June 2005

BIRS, focused research group, May 2006
IUM, Moscow, "Transformation groups", December 2007

Editorial boards and scientific committees:

Advanced series in Mathematical Physics, World Scientific, Singapore
Reviews in Mathematical Physics, World Scientific, Singapore
Transformation groups, Birkhäuser, Boston
Journal of Algebra and Applications, World Scientific
Advisory committee of INDAM, Rome
Advisory board of Istanbul center for math. sciences

Selected invited addresses and lecture series:

Harvard colloquium, 1977
ICM, Helsinki, 1978
Invariant theory, Bonn, 1979
AMS annual meeting, San Antonio, Texas, 1980
Australian National University colloquium, Canberra, 1980
College de France, lecture series, 1981
Montecatini Terme, lecture series, Italy, 1982
Universite Paris 6, lecture series, 1983
Mathematical Soc of Denmark, Copenhagen, 1983
RIMS colloquium, Kyoto, 1984
The mathematical heritage of E. Cartan, Lyon, 1984
Anomalies, geometry, topology, Argonne, 1985
Academia Sinica, Beijing, lecture series, 1985
TIFR, Bombay, lecture series, 1985-86
Algebraic groups, Utrecht, 1987
Strings 88, Maryland, 1988
Centennial of the AMS, Providence, 1988
Colloque Dixmier, Paris, 1989
Group theoretical methods in physics, Moscow, 1990
LOMI colloquium, Leningrad, 1990
Charles University colloquium, Prague, 1990
SNS, Pisa, lecture series, 1991
Colloque Bruhat-Tits, Paris, 1991
Lezioni Leonardesche, Milan, 1991
Theoretical physics conference, Tbilisi, lecture series, 1991
Canadian Math Soc, 1991
Ecole Normale, Paris , lecture series, 1992-93
University of Amsterdam colloquium, 1993
Amici della SNS di Pisa, lecture series, 1994
Cordoba and Mendoza, lecture series, 1994
Ecole Normale, Lyon, lecture series, 1995
Quantum field theory, Dubna, Russia, 1996
Group theoretical methods in physics, Goslar, Germany, 1996
Kyoto University, lecture series, 1996

Lumini, CIRM lecture series, 1997
 Frontiers in mathematics lecture series, Texas A+M University, 1997
 International Congress in Math. Physics, Brisbane, Australia, 1997
 Rome University graduate course, 1997
 Soliton theory and geometry, Moscow, 1998
 Schroedinger institute, lecture series, Vienna, 1998
 Ecole Normale, Paris, lecture course, 1998
 Rome University colloquium, 1998
 Swedish Math. Soc, Stockholm, 1999
 Visions in mathematics, Tel-Aviv, 1999
 Yale University colloquium, 2000
 Weisfeiler lecture, 2000
 Colloquio latinoamericano, La Falda, Argentina, 2001
 ICM Beijing, Plenary address, 2002
 Graduate course in Beijing University, 2002
 TIFR, Mumbai, lecture series, 2003
 Giornata INDAM, Rome University 1, 2004
 Group theoretical methods in physics, Cocoyoc, Mexico, 2004
 Algebra day, Carleton University, 2004
 Distinguished lecturer series, Weizmann Institute, 2005
 Summer school in Bad Honnef, 2005
 British Math. Colloquium, Newcastle, 2006
 Escola de Altos Estudos course of lectures, Sao Paulo, Brasil, 2007
 Lie days, Cornell University, 2007
 Rome University 2 colloquium, 2008
 Graduate course in Rome University 1, 2008-09
 Knowledge transfer lecture, Edinburgh, 2009

Books:

1. *Infinite dimensional Lie algebras*, Birkhäuser, Boston, 1983 (second edition, Cambridge University Press, 1985) (third edition, Cambridge University Press, 1990). Russian translation, MIR, Moscow, 1993. Chinese translation, 2006.
2. *Infinite dimensional groups with applications*, ed., Publ. MSRI 4, 1985.
3. (with A. Raina) *Bombay lectures on highest weight representations*, World Scientific, 1987.
4. *Infinite-dimensional Lie algebras and groups*, ed., *Adv. Ser. in Math. Phys.*, vol. 7, 1989.
5. *Lie theory and geometry*, ed., Birkhäuser, Boston, 1994.
6. *Vertex algebras for beginners*, University lecture series, AMS, vol. 10, 1996 (second edition, AMS, 1998). Russian translation, Moscow 2005.
7. (with C. Martinez and E. Zelmanov) Graded simple Jordan superalgebras of growth one, *Memoirs of AMS* 711, 2001, pp 1-140.
8. (with P. Cheung) *Quantum calculus*, Springer-Verlag, 2002. Russian translation, Moscow 2005.

Publications

1. On a characteristic property of locally Euclidean spaces, *Uspehi Mat. Nauk.* **191** (1964), No. 4, 225–227.
2. (with E. Vinberg) Quasi-homogeneous cones, *Math. Zametiki* **1** (1967), 347–354 (English translation: *Math. Notes* **1** (1967)).
3. Simple graded Lie algebras of finite growth, *Funkt. Analys y ego prilozh.* **1** (1967), No. 4, 82–83 (English translation: *Funct. Anal. Appl.* **1** (1967), 328–329).
4. Graded Lie algebras and symmetric spaces, *Funkt. Analys y ego prilozh.* **2** (1968), No. 2, 93–94 (English translation: *Funct. Anal. Appl.* **2** (1968), 183–184).
5. Simple irreducible graded Lie algebras of finite growth, *Izvestija AN USSR (ser. Math.)* **32** (1968), 1923–1967 (English translation: *Math. of USSR-Izvestija* **2** (1968), 1271–1311).
6. Some properties of the contragredient Lie algebras, *Trudy MIEM*, No. 5, 1969, 48–60.
7. An algebraic definition of compact Lie groups, *Trudy MIEM*, No. 5, 1969, 36–47.
8. Automorphisms of finite order of semi-simple Lie algebras, *Funkt. analys y ego prilozh.* **3** (1969), No. 3, 94–96 (English translation: *Funct. Anal. Appl.* **3** (1969), 252–254).
9. On classifications of simple Lie algebras over fields of non-zero characteristics, *Izvestija AN USSR (ser. Math.)* **34** (1970), 381–404 (English translation: *Math of USSR-Izvestija* **4** (1970), 391–413).
10. (with B. Weisfeiler) Exponentials in Lie algebras of characteristic p , *Izvestija AN USSR (ser. Math.)* **35** (1971), 762–788 (English translation: *USSR-Izvestija* **5** (1971), 777–803).
11. (with B. Weisfeiler) On irreducible representations of Lie p -algebras, *Funkt. analys y ego prilozh.* **5** (1971), No. 2, 28–36 (English translation: *Funct. Anal. Appl.* **5** (1971), 111–117).
12. Global Cartan pseudogroups and simple Lie algebras of Characteristic p , *Uspehi Math. Nauk.* **26** (1971), No. 3, 199–200.
13. On algebras related to quantum field theory, *All-Union Algebraic Colloquium*, Kishinev, 1971, 140–141.
14. On irreducible representations of Lie algebras of classical type, *Uspehi Math. Nauk.* **27** (1972), No. 5, 237–238.
15. Filtered Lie algebras of Cartan type, *Uspehi Math. Nauk.* **29** (1974), No. 3, 203–204.
16. Infinite-dimensional Lie algebras and the Dedekind η -function, *Funkt. analys y ego prilozh.* **8** (1974), No. 1, 77–78 (English translation: *Funct. Anal. Appl.* **8** (1974), 68–70).
17. A description of filtered Lie algebras whose associated graded Lie algebras are of Cartan type, *Izvestija AN USSR (ser. Math.)* **38** (1974), 800–834 (English translation: *Math. of USSR-Izvestija* **8** (1974), 801–835; letter to the editor, 40 (1976), No. 6).
18. On the question of description of the orbit space of linear algebraic groups, *Uspehi Math. Nauk.* **30** (1975), No. 6, 173–174.
19. Classification of simple Lie superalgebras, *Funct. Anal. y ego Prilozh.* **9** (1975), No. 3, 91–92; letter to the editor, **10** (1976), No. 2, **93** (English translation: *Funct. Anal. Appl.* **9** (1975), 263–265).

20. (with B. Weisfeiler) Coadjoint action of a semi-simple algebraic group and the center of the enveloping algebra in characteristic p , *Proc. Kon. Nederl. Akad., Series A* **38** (1976), 136–151.
21. (with V. Popov and E. Vinberg) Sur les groupes linear algebrique avec algebres d’invariants libre, *C.R. Acad. Sci. Paris*, **283** (1976), 875–878.
22. A sketch of Lie superalgebra theory, *Comm. Math. Physics* **53** (1977), 31–64.
23. Characters of typical representations of classical Lie superalgebras, *Comm. in Algebra* **5**, No. 8 (1977), 889–897.
24. Classification of simple Z -graded Lie superalgebras and simple Jordan superalgebras, *Comm. in Algebra* **5**, No. 13 (1977), 1375–1400.
25. Lie superalgebras, *Advances in Math.* **26**, No. 1 (1977), 8–96.
26. Classification of simple algebraic supergroups, *Uspehi Math. Nauk.* **32**, No. 3 (1977), 214–215.
27. Infinite-dimensional algebras, Dedkind’s η -function, classical Möbius function and the very strange formula, *Advances in Math.* **30** (1978), 85–136.
28. (with E. Vinberg) Spinors of 13-dimensional space, *Advances in Math.* **30** (1978), 137–155.
29. Representations of classical Lie superalgebras, *Lecture Notes in Math.* **676** (1978), 597–626.
30. Contravariant form for infinite dimensional Lie algebras and superalgebras, *Lecture Notes in Physics* **94** (1979), 441–445).
31. (with D. Kazhdan) Structure of representations with highest weight of infinite dimensional Lie algebras, *Advances in Math.* **34** (1979), 97–108.
32. Highest weight representations of infinite dimensional Lie algebras, *Proceedings of ICM, Helsinki 1978* (1980), 299–304.
33. Infinite root systems, representations of graphs and invariant theory, *Inventiones Math.* **56** (1980), 57–92.
34. An elucidation of “Infinite dimensional algebras... and the very strange formula” $E_8^{(1)}$ and the cube root of the modular invariant j , *Advances in Math.* **35** (1980), 264–273.
35. On simplicity of certain infinite-dimensional Lie algebras, *Bul. Amer. Math. Soc.* **2** (1980) 311–314.
36. Some remarks on nilpotent orbits, *Journal of Algebra* **64** (1980) 190–213.
37. (with D. Peterson) Affine Lie algebras and Hecke modular forms, *Bull. Amer. Math. Soc.* **3** (1980) 1057–1061.
38. A remark on the Conway-Norton conjecture about the “Monster” simple group, *Proc. Nat’l. Acad. Sci. USA*, **77** (1980) 5048–5049.
39. (with I. Frenkel) Basic representations of affine Lie algebras and dual resonance models, *Invent. Math.* **62** (1980) 23–66.
40. Some remarks on representations of quivers and infinite root systems, *Lecture Notes in Math.* **832** (1980), 311–327.
41. (with D. Kazhdan, J. Lepowsky and R. Wilson) Realization of the basic representation of the Euclidean Lie algebras, *Advances in Math.* **42** (1981), 83–112.

42. Simple Lie groups and the Legendre symbol, *Lecture Notes in Math.* **848** (1981), 110–124.
43. (with D. Peterson) Spin and wedge representations of infinite dimensional Lie algebras and groups, *Proc. Nat'l. Acad. Sci. USA* **78** (1981), 3308–3312.
44. (with O. Gabber) On defining relations of certain infinite-dimensional Lie algebras, *Bull. Amer. Math. Soc.* **5** (1981), 185–189.
45. (with K. Watanabe) Finite linear groups whose ring of invariants is a complete intersection, *Bull. Amer. Math. Soc.* **6** (1982), 221–223.
46. (with V. Deodhar and O. Gabber) Structure of some categories of representations of infinite dimensional Lie algebras, *Advances in Math.* **45** (1982), 92–116.
47. Infinite root systems, representations of graphs and invariant theory II, *Journal of Algebra* **78** (1982), 141–162.
48. Some problems on infinite dimensional Lie algebras and their representations, *Lecture Notes in Math.* **933** (1982), 117–126.
49. (with D. Peterson) Infinite flag varieties and conjugacy theorems, *Proc. Nat. Acad. Sci. USA* **80** (1983), 1778–1782.
50. Montecatini lectures on invariant theory, *Lecture Notes in Math.* **996** (1983), 74–108.
51. (with D. Peterson) Regular functions on certain infinite-dimensional groups, Arithmetic and Geometry (ed. M. Artin and J. Tate), *Progress in Math.* **36**, Birkhäuser, Boston, 141–166, 1983.
52. Infinite-dimensional Lie algebras, *Progress in Math.* **44**, Birkhäuser, Boston, 1983.
53. (with D. Peterson) Infinite dimensional Lie algebras, theta functions and modular forms, *Advances in Math.* **53** (1984), 125–264.
54. (with D. Peterson) Unitary structure in representation of infinite-dimensional groups and a convexity theorem, *Invent. Math.* **76** (1984), 1–14.
55. Laplace operators of infinite-dimensional Lie algebras and theta functions, *Proc. Nat'l. Acad. Sci. USA* **81** (1984), 645–647.
56. (with J. Dadok) Polar representations, *J. Algebra* **92** (1985), 504–524.
57. Infinite dimensional Lie algebras, second edition, Cambridge University Press, 1985.
58. Torsion in cohomology of compact Lie groups and Chow rings of reductive algebraic groups, *Invent. Math.* **80** (1985), 69–79.
59. (with H. Jakobsen) A new class of unitarizable highest weight representations of infinite-dimensional Lie algebras, *Lecture Notes in Physics* **226** (1985), 1–20.
60. Constructing groups associated to infinite-dimensional Lie algebras, Proceedings of the conference on Infinite-dimensional groups, Berkeley 1984, MSRI publ. #4, 1985, 167–216.
61. (with D. Peterson), Defining relations of certain infinite-dimensional groups, Proceedings of the Cartan conference, Lyon 1984, Asterisque, 1985, Numero hors serie, 165–208.
62. (with D. Peterson) Generalized invariants of groups generated by reflections, in Proceedings of the Conference Giornate di Geometria, Rome 1984. *Progress in Math.* **60**, Birkhäuser, 1985, 231–250.
63. (with D. Peterson) 112 Constructions of the basic representation of the loop group of E_8 , Proceedings of the conference “Anomalies, geometry, topology,” Argonne, 1985. World Scientific, 1985, 276–298.

64. (with I.T. Todorov) Superconformal current algebras and their unitary representations, *Comm. Math. Physics* **102** (1985), 337–347.
65. (with M. Wakimoto) Unitarizable highest weight representations of the Virasoro, Neveu-Schwarz and Ramond algebras, in Proceedings of the Symposium on conformal groups and structures, Claustal, 1985. *Lecture Notes in Physics* **261** (1986), 345–372.
66. (with D. Peterson), Lectures on the infinite wedge representation and the MKP hierarchy, *Seminaire de Math. Superieures*, Les Presses de L'Université de Montréal **102** (1986), 141–186.
67. Highest weight representations of conformal current algebras, Symposium on Topological and Geometric methods in Field theory, Espoo, Finland, 1986. World Scientific (1986), 3–16.
68. (with D. Peterson) On geometric invariant theory for infinite-dimensional groups, in *Lecture Notes in Math.* **1271**, 102–142, 1987.
69. (with J. Van de Leur) Super boson-fermion correspondence, *Ann. de L'Institute Fourier* **37** (1987), 99–137.
70. (with A. Raina) Bombay lectures on highest weight representations of infinite-dimensional Lie algebras, World Scientific, 1987.
71. (with M. Wakimoto) Modular and conformal invariance constraints in representation theory of affine algebras, *Advances in Math.* **70** (1988), 156–234.
72. (with E. Arbarello, C. De Concini and C. Procesi) Moduli spaces and curves and representation theory, *Comm. in Math. Phys.* **117** (1988), 1–36.
73. (with M. Niculescu-Sanielevici) Decomposition of representations of exceptional affine algebras with respect to conformal subalgebras, *Phys. Rev. D* **37** (1988), 2231–2237.
74. (with M. Wakimoto) Modular invariant representations of infinite dimensional Lie algebras and superalgebras, *Proc. Nat'l. Acad. Sci. USA* **85** (1988), 4956–4960.
75. (with R. Moody and M. Wakimoto) On E_{10} , Proceedings of the 1987 conference on differential-geometrical methods in physics, Kluwer, 1988, 102–128.
76. (with H. Jakobsen) A new class of unitarizable highest weight representations of infinite-dimensional Lie algebras II, *J. Funct. Anal.* **82** (1989), 69–90.
77. (with M. Wakimoto) Exceptional hierarchies of soliton equations, *Proceedings of Symposia in Pure Math.* **49** (1989), 191–237.
78. (with E. Arbarello and C. De Concini) The infinite wedge representation and the reciprocity law for algebraic curves, *Proceedings of Symposia in Pure Math.* **49** (1989), 171–190.
79. (with C. De Concini and D. Kazhdan) Boson-fermion correspondence over \mathbb{Z} , in Infinite-dimensional Lie algebras and groups, *Adv. Ser. Math. Phys.* **7** (1989), 124–137.
80. (with J. van de Leur) Super boson-fermion correspondence of type B, in *Infinite dimensional Lie algebras and groups*, *Adv. Ser. Math. Phys.* **7**, World Scientific, 369–406, 1989.
81. (with J. van de Leur) On classification of superconformal algebras, in *Strings 88*, World Scientific, 77–106, 1989.
82. (with M. Wakimoto) Classifications of modular invariant representations of affine algebras, in Infinite dimensional Lie algebras and groups, *Adv. Ser. Math. Phys.* **7**, World Scientific, 138–177, 1989.

83. (with C. De Concini) Representation of quantum groups at roots of 1, Colloque Dixmier, 1990, *Progress in Math.* **92**, Birkhäuser, 1990, 471–506.
84. Infinite dimensional Lie algebras, third edition, Cambridge University Press, 1990.
85. (with M. Wakimoto) Branching functions for winding subalgebras and tensor products, *Acta Applicandae Math.* **21** (1990), 3–39.
86. (with A.S. Schwarz) Geometric interpretation of partition function of 2D quantum gravity, *Phys. Lett. B* **257** (1991), 329–334.
87. (with C. De Concini) Representations of quantum groups at roots of 1: reduction to the exceptional case, in *Adv. Series in Math. Phys.* **16A** (1992), 141–150.
88. Modular invariance in mathematics and physics, AMS Centennial Publications II, Mathematics into the 21st century, 1992, 337–350.
89. (with S.-P. Wang) On automorphisms of Kac-Moody algebras and groups, *Advances in Math.* **92** (1992), 129–195.
90. (with C. De Concini and C. Procesi) Quantum coadjoint action, *AMS Math. Journal* **5** (1992), 151–190.
91. (with E. Frenkel and M. Wakimoto) Characters and fusion rules for W -algebras via quantized Drinfeld-Sokolov reduction, *Comm. in Math. Phys.*, **147** (1992), 295–328.
92. (with C. De Concini and C. Procesi) Some remarkable degenerations of quantum groups, *Comm. Math. Phys.* **157** (1993), 405–427.
93. (with J. van de Leur) The n -component KP hierarchy and representation theory, in *Important developments in soliton theory*, pp. 302–343, eds. A.S. Fokas and V.E. Zakharov, Springer-Verlag, 1993. hep-th/9308137
94. (with A. Radul) Quasifinite highest weight modules over the Lie algebra of differential operators on the circle, *Comm. Math. Phys.* **157** (1993), 429–457. hep-th/9308153
95. (with M. Wakimoto) A construction of generalized spin models, in *Perspectives in Math. Physics*, Conference Proceedings, Vol. 3, International Press, 1994, 125–150.
96. (with W. Wang) Vertex operator superalgebras and their representations, *Contemporary Mathematics* **175** (1994), 161–191. hep-th/9312065
97. (with M. Wakimoto) Integrable highest weight modules over affine superalgebras and number theory, *Progress in Math.* **123** (1994), 415–456. hep-th/9407057
98. (with C. De Concini and C. Procesi) Some quantum analogues of solvable Lie groups, Proceedings of the International Colloquium on Geometry and Analysis, Bombay 1992, Oxford University Press, 1995, 41–66. hep-th/9308138
99. (with A. Radul) Poisson structure in restricted Lie algebras, The Gelfand Mathematical Seminars, 1996-1999, Birkhauser, Boston, 1999, 77–84.
100. (with E. Frenkel, A. Radul and W. Wang) $\mathcal{W}_{1+\infty}$ and $\mathcal{W}(gl_N)$ at central charge N , *Comm. Math. Phys.* **170** (1995) 337–358. hep-th/9405121
101. (with S.-J. Kang) Trace formula for graded Lie algebras and monstrous moonshine, Canadian Math.Soc.conference proceedings 16 (1995), 141-154.
102. (with J. Beck) Finite-dimensional representations of quantum affine algebras at roots of 1, *AMS Math. Journal* **9** (1996), 391-423. hep-th/9410189
103. (with E. Medina) On the SKP hierarchy, *Lett.Math.Phys.* **37** (1996), 435-448.

104. (with A. Radul) Representation theory of the vertex algebra $W_{1+\infty}$, *Transformation groups* **1** (1996), 41-70. hep-th/9512150
105. Vertex algebras for beginners, *University lecture series*, AMS, vol. **10**, 1996.
106. (with I. Todorov) Affine orbifolds and RCFT extensions of $W_{1+\infty}$, *Comm. Math. Phys.*, **190** (1997), 57-111. hep-th/9612078
107. (with S.-J. Cheng) A new $N = 6$ superconformal algebra, *Comm. Math. Phys.*, **186** (1997), 219-231.
108. Conformal superalgebras and transitive group actions on quadrics, *Comm. Math. Phys.*, **186** (1997), 233-252. Erratum, 217(2001), 697-698.
109. The idea of locality, in *Physical applications and mathematical aspects of geometry, groups and algebras*, H.-D. Doebner et al eds, World Sci., Singapore, 1997, pp 16-32. q-alg/9709008
110. (with S.-J. Cheng) Conformal modules, *Asian J. Math.* **1** (1997), 181-193. Erratum, 2(1998),153-156. q-alg/9706030
111. (with J. van de Leur) The geometry of spinors and the multicomponent *BKP* and *DKP* hierarchies, *CRM Proceedings and Lecture Notes*, **14** (1998),159-202. solv-int/9706006
112. (with S.-J. Cheng and M. Wakimoto) Extensions of conformal modules, in *Topological field theory, primitive forms and related topics*, Proceedings of Taniguchi and RIMS symposia, Progress in Math. **160**, Birkhäuser , 1998, pp 79-130. q-alg/9709019
113. Formal distribution algebras and conformal algebras, in Proceedings of the 12th International Congress in Math. Physics, 1997, De Witt et al eds, International Press, Boston, 1999, pp 80-97. q-alg/9709027
114. (with A. D'Andrea) Structure theory of finite conformal algebras, *Selecta Mathematica*, **4** (1998), 377-418.
115. (with M. Golenishcheva-Kutuzova) Γ -conformal algebras, *J. Math Physics* **39** (1998), 2290-2305. q-alg/9709006
116. (with C. Boyallian, J. Liberati and C. Yan) Quasifinite highest weight modules over the Lie algebra of matrix differential operators on the circle, *J. Math Phys*, **39** (1998), 2910-2928.
117. (with W. Wang and C. Yan) Quasifinite representations of classical Lie subalgebras of $W_{1+\infty}$, *Advances in Math*, **139** (1998), 56-140. QA/9801136
118. Classification of infinite-dimensional simple linearly compact Lie superalgebras, *Adv. in Math.*, **139** (1998), 1-55. ESI preprint no 406 ,1998.
119. Vertex algebras for beginners, 2nd edition, 1998.
120. (with B. Bakalov and A. Voronov) Cohomology of conformal algebras, *Comm. Math. Phys.* **200** (1999), 561-598. math.QA/9803022
121. (with S.-J. Cheng) Generalized Spencer cohomology and filtered deformations of \mathbb{Z} -graded Lie superalgebras, *Advances in Theor. and Math. Physics*, **2** (1998), 1139-1180. math.RT/9805039
122. (with S.-J. Cheng) Structure of some \mathbb{Z} -graded Lie superalgebras of vector fields, *Transformation groups*, **4** (1999), 219-272. Erratum, 9(2004), 399-400.
123. (with A. Smilga) Vacuum structure in supersymmetric Yang-Mills theories with any gauge group, in: The many faces of the Superworld, Golfand memorial volume, M. Shifman, ed, World sci., 2000, pp 185-234 . hep-th/9902029

124. (with A. Smilga) Normalized vacuum states in $N=4$ supersymmetric Yang-Mills quantum mechanics with any gauge group, Nuclear Physics **B571** (2000),515-554. hep-th/9908096
125. (with S.-J. Cheng and M. Wakimoto) Extensions of Neveu-Schwarz conformal modules, J. Math. Physics **41** (2000), 2271-2294.
126. Classification of infinite-dimensional simple groups of supersymmetries and quantum field theory, Proceedings of the conference "Visions in Mathematics toward the year 2000", GAFA , Special volume (2000), 162-183. math.QA/9912235
127. (with J. Liberati) Unitary quasifinite representations of W_∞ , Letters in Math. Phys.**53** (2000), 11-27. math.QA/9910172
128. (with C. Martinez and E. Zelmanov) Graded simple Jordan superalgebras of growth one, Memoirs of AMS 711, 2001, pp 1-140.
129. (with M. Wakimoto) Integrable highest weight modules over affine superalgebras and Appell's function, Comm. Math. Phys. **215** (2001), 631-682. math-ph/0006007
130. (with B. Bakalov and A. D'Andrea) Theory of finite pseudoalgebras, Advances in Math. **162** (2001), 1-140. math.QA/0007121
131. (with J. Troost) The stability of vacua in two-dimensional gauge theory, Phys. Letters **B501** (2001),313-318. hep-th/0010289
132. A differential analog of a theorem of Chevalley, IMRN **13** (2001), 703-710. math.AG/0101210
133. (with A. Rudakov) Representations of the exceptional Lie superalgebra $E(3,6)$ I: Degeneracy conditions, Transformation groups **7** (2002), 67-86. math-ph/0012049
134. (with A. Rudakov) Representations of the exceptional Lie superalgebra $E(3,6)$ II: Four series of degenerate modules, Comm. Math. Phys. **222** (2001), 611-661. math-ph/0012050
135. (with D. Fattori) Classification of finite simple Lie conformal superalgebras, J. Algebra **258** (2002),23-59. math-ph/0106002
136. (with P. Cheung) Quantum calculus, Springer Verlag, 2002
137. (with A. Rudakov) Complexes of modules over exceptional Lie superalgebras $E(3,8)$ and $E(5,10)$, IMRN **19** (2002),1007-1025. math-ph/0112022
138. (with A. De Sole) Subalgebras of gc_N and Jacobi polynomials, Canadian Math. Bull. **45**(4)(2002),567-605. math-ph/0112028
139. (with C. Boyallian and J. Liberati) On the classification of subalgebras of $Cend_N$ and gc_N , J. Algebra **260** (2002), 32-63. math-ph/0203022
140. Classification of supersymmetries, ICM, Beijing 2002. math-ph/0302016
141. (with B. Bakalov) Field algebras, IMRN **3** (2003), 123-159. math.QA/0204282
142. (with C.Boyallian and J. Liberati) Finite growth representations of infinite Lie conformal algebras, J. Math. Phys. **44** (2003), 754-770. math.QA/0210161
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