.

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 Engineering

Senior Teacher, 1971–1976
Moscow Institute of Electronic Engineering

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 colloqium, 1977
ICM, Helsinki, 1978
Invariant theory, Bonn, 1979
AMS annual meeting, San Antonio, Texas, 1980
Australian National University colloqium, Canberra, 1980
College de France, lecture series, 1981
Montacatini 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, toplogy, 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, Mumbay, 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
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.
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 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 eĝo 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 eĝo 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, *Iz vestija 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. Automoprhisms of finite order of semi-simple Lie algebras, *Funkt. analys y eĝo 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 eĝo 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 eĝo 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, Birkhause, 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 algebas 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 Matemathica*, **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 Physcis*, **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 superagebras, J. Algebra **258** (2002),23-59. math-ph/0106002

136. (with P. Cheung) Quantom 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

143. (with S.-S. Roan and M. Wakimoto) Quantum reduction for affine superalgebras. Comm. Math. Phys.**241**(2003),307-342. math-ph/0302015

144. (with M. Wakimoto) Quantum reduction and representation theory of superconformal algebras. Advances in Math. **185** (2004), 400-458. math-ph/0304011. Corrigendum: Advances in Math. 193(2005),453-455.

145. (with D. Fattori and A. Retakh) Structure theory of finite Lie conformal superalgebras, in "Lie theory and its applications to physics", eds. H.-D. Doebner and V.K. Dobrev, World Sci. 2004, pp 27-63. math.QA/0402211

146. (with B. Bakalov) Twisted modules over lattice vertex algebras, in "Lie theory and its applications to physics", eds. H.-D. Doebner and V.K. Dobrev, World Sci. 2004, pp 3-26. math.QA/0402315

147. (with S.-J. Cheng) Addendum: Generalized Spencer cohomology and filtered deformations of $\mathbb{Z}$-graded Lie superalgebras. Adv. Theor. Math. Phys. **8** (2004), 697-709.

148. (with A. De Sole) On integral representations of q-gamma and q-beta functions. Rend. Mat. Acc. Lincei **9** (2005), 11-29. math.QA/0302032

149. (with R. Longo and F. Xu) Solitons in affine and permutation orbifolds. Comm. Math. Phys. **253** (2005), 723-764. math.OA/0312512

150. (with A. De Sole) Freely generated vertex algebras and non-linear Lie conformal algebras. Comm. Math. Phys. **254** (2005), 659-694. math-ph/0312042

151. (with A.G. Elashvili) Classification of good gradings of simple Lie algebras, Amer. Math. Soc. Transl. (2) vol 213 (2005), 85-104. math-ph/0312030

152. (with A. Rudakov) Representations of the exceptional Lie superalgebra E(3,6) III: Classification of singular vectors. J. Algebra Appl. **4** (2005), 15-57. math-ph/0310045

153. (with M. Wakimoto) Quantum reduction in the twisted case. Progress in Math. 237, 2005, pp 85-126. math-ph/0404049

154. (with B. Bakalov and A. D'Andrea) Irreducible modules over finite simple Lie pseudoalgebras I. Primitive pseudoalgebras of type W and S. Advances in Math.**204**(2006),278-346. math.QA/0410213

155. (with P. Cellini, P. Moseneder Frajria and P. Papi) Decomposition rules for conformal pairs associated to symmetric spaces and abelian ideals of $\mathbb{Z}_2$-graded Lie algebras. Advances in Math. **207** (2006), 156-204. math-ph/0506043

156. (with C.Boyallian, J. Liberati and A. Rudakov) Representations of simple finite Lie conformal superalgebras of type W and S. J. Math. Phys. **47**, 043513 (2006), 25pp

157. (with A. De Sole) Finite vs affine W-algebras. Japanese Journal of Math. **1**(2006), 137-261. math-ph/0511055

158. (with N. Cantarini) Infinite-dimensional primitive linearly compact Lie superalgebras. Advances in Math.**207**(2006), 328-419. math.QA/0511424

159. (with N. Cantarini) Automorphisms and forms of simple infinite- dimensional linearly compact Lie superalgebras. Internat. J. of Geom. Methods in Phys. **3**, Nos. 5 and 6 (2006),1-23. math.QA/0601292

160. (with B. Bakalov) Generalized vertex algebras, in "Lie theory and its applications to physics VI", eds.V.K. Dobrev et al, Heron Press, Sofia, 2006. math.QA/0602072

161. (with R. Heluani) Supersymmetric vertex algebras. Comm. Math. Phys. **271**(2007), 103-178. math.QA/0603633

162. (with M. Gorelik) On simplicity of vacuum modules. Advances in Math. **211**(2007), 621-677. math-ph/0606002

163. (with N. Cantarini) Classification of simple linearly compact Jordan and generalized Poisson superalgebras. J. Algebra **313**(2007), 100-124. math.QA/0608390

164. (with M. Gorelik) Characters of highest weight modules over affine Lie algebras are meromorphic functions. IMRN **2007**(2007)rnm079-25, 25pp. arXiv: 0704.2876

165. (with P. Moseneder Frajria and P. Papi) Multiplets of representations, twisted Dirac operators and Vogan's conjecture in affine setting. Advances in Math. **217**(2008), 2485-2562. arXiv: 0704.3342

166. (with R. Heluani) SUSY lattice vertex algebras. in "Lie theory and its applications to physics VII", eds.V.K. Dobrev et al, Heron Press, Sofia, 2008, pp 3-24. arXiv:0710.1587

167. (with A. Retakh) Simple Jordan conformal superalgebras. J. Algebra Appl. **7** (2008), 517-533. arXiv:0801.0755

168. (with M. Wakimoto) On rationality of W-algebras. Transformation groups **13** (2008), 671-713. arXiv:0711.2296

169. (with P. Moseneder Frajria and P. Papi) On the kernel of the affine Dirac operator. Moscow Math. J. **8** (2008), 759-788. arXiv:0804.3495

170. (with M. Lau and A. Pianzola) Differential conformal superalgebras and their forms. Advances in Math. **222**(2009),809-861. arXiv:0805.4243

171. (with A.G. Elashvili and E.B. Vinberg) On exceptional nilpotents in semisimple Lie algebras. J. Lie Theory. arXiv:0812.1571

172. (with A. De Sole) Lie conformal algebra cohomology and the variational complex. Comm. Math. Phys. (2009) arXiv:0812.4897

173. (with M. Gorelik) On complete reducibility for infinite-dimensional Lie algebras. arXiv:0905.0893

174. (with A. Barakat and A. De Sole) Poisson vertex algebras in the theory of Hamiltonian equations. arXiv:0907.1275

175. (with N. Cantarini) Classification of linearly compact simple rigid superalgebras. arXiv:0909.3100

176. (with N. Cantarini) Classification of simple linearly compact n-Lie superalgebras. arXiv:0909.3284