

## CURRICULUM VITAE – College of William and Mary Standard Format

### *PERSONAL INFORMATION*

1. Name: Nahum Zobin Date: 09/05/03  
Office Address: Jones 118  
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### *POSITION*

2. Associate Professor of Mathematics

### *EDUCATION*

3. Academic degrees, institutions and dates

Ph.D. in Math. Voronezh State University, USSR December 1975  
M.Sc. in Math. Kazan State University, USSR June 1972

### *ACADEMIC POSITIONS*

4. Teaching and research positions, including dates

Asso. Prof., Dept. of Math., College of William & Mary, since May 1999  
Asst. Prof., same Department Aug.'98 -May '99  
Vis. Prof., Dept. of Math., Ohio State Univ., Columbus, Oct.'96 -July '98  
Vis. Prof., Dept. of Math., Univ. of Miami, Coral Gables, Aug.'94-May '96  
Res. Fellow, Math.Dept., Univ. of Haifa, Israel, Oct.'91 - Aug.'94  
Vis. Prof., Max-Planck-Inst., Bonn, Germany, April '93 - May '93  
Asso. Prof., Dept. of Math., Kazan State Univ., USSR, Dec. '87 - March '91  
Sr. Res. Fellow, Math. Dept, Kazan Inst. Techn., USSR, Dec. '85 - Dec. '87  
Asso. (until Dec. '77 - Asst.) Prof., same Dept., Dec. '75 - Dec.'85

### *HONORS, PRIZES AND AWARDS*

5. Professional prizes, awards, honors, editorial positions on scholarly journals, service on review boards outside the College, and offices in professional societies

Diploma with Excellence, Kazan State University, USSR, 1972.

Reviewer for Mathematical Reviews (USA), Zentralblatt fuer Mathematik (Germany), Referativnyi Zhurnal Matematika (USSR).

Reviewer of several professional journals, including Matematika. Izvestiya vuzov (USSR), Algebra and Analysis (Russia), Russian Journal of Mathematical Physics (Russia - USA).

*COURSES TAUGHT*

## 6. Courses taught

College of William & Mary:

Calculus 1 Math 111  
Calculus 2 Math 112 (several times)  
Real Analysis Math 311  
Abstract Algebra 2 Math 430 (three times)  
Complex Analysis Math 405  
Multivariable Calculus Math 212 (several times)  
Multivariable Calculus for Math and Science Math 213 (three times)  
Seminar in Scattering Theory Math 490  
Topics in Geometry Math 416 (twice)  
Advanced Analysis Math 520 (directed reading)  
Operator Theory Math 410 (directed reading) (three times)  
Honor Thesis Math 495  
Vector Calculus for Science Math 417 (twice)  
Seminar in Problem Solving Math 490  
Introduction to Number Theory Math 412

Ohio State University:

Calculus 1  
Calculus 2

University of Miami:

Calculus 1  
Calculus 2  
Multivariable Calculus  
Differential Equations  
Precalculus: Trigonometry  
Calculus with Analytic Geometry  
Introduction to Probability and Statistics

Kazan State University:

Analysis  
Functional Analysis  
Differential Geometry  
Spectral Theory  
Interpolation of Operators

Kazan Institute of Chemical Technology:

Calculus  
Linear Algebra  
Analytic Geometry  
Differential Equations  
Multivariable Calculus

*FELLOWSHIPS AND GRANTS*

7. a) All fellowships, grants, contracts, etc., awarded by outside agencies. Specify dates, sources, and amounts

Grant of the Ministry of Absorption (Israel), 1991 - 1994  
 Grant of the Ministry of Science (Israel), 1992 - 1994  
 (information on amounts not available)

b) All summer grants and Faculty Research Assignment received from William and Mary with dates awarded.

Summer research grant, 2000.

*RESEARCH*

8. Scholarly activity under the following separate headings with full bibliographic data (include page numbers):

**a) refereed publications in periodicals, chapters in books, law review articles and conference proceedings**

1. Extension and representation theorems for Gevrey type spaces, Doklady Akad. Nauk SSSR, 212, (1973), # 6, 1280-1283.

2. Contre-exemple a l'existence d'une base dans un espace de Frechet nucleaire, 1, C.R. Acad. Sci. Paris, t. 279 (1974), Ser. A, 255-256, (with B.S. Mityagin).

3. Contre-exemple a l'existence d'une base dans un espace de Frechet nucleaire, 2, *ibid.*, 325-327, (with B.S. Mityagin).

4. Examples of nuclear metric linear spaces without basis, Funct. Anal. i ego pril., 8 (1974), #4, 35-47, (with B.S. Mityagin).

5. On extension and representation of functions from Gevrey classes, in "Singular differential operators", Voronezh, (1975), 26-29.

6. Interpolation problems in Gevrey-type spaces, in "Collection of research papers on applications of functional analysis", ed. S.G. Krein, Voronezh, (1975), 63-70.

7. On topologization of certain vector spaces, *ibid.*, 21-30, (with M.D. Bronshtein).

8. A continuum of pairwise non-isomorphic nuclear Frechet spaces without bases, Sibirskii Matemat. Zhurnal, 17 (1976), #2, 249-258, (with B.S. Mityagin).

9. On an algebraically closed field, Matematika, Izv. vuzov, (1977), #2 (177), 37-48, (with V.A. Sochneva, V.R. Friedlender).

10. Interpolation in spaces that have given symmetries, Funct. Anal. i ego pril., 12 (1978), #4, 85-86, (with V.G. Zobina).

11. Interpolation in spaces of holomorphic functions, Teor. funk., funkt. anal. i pril. (Kharkov), 31 (1979), 55-56, (with V.G. Zobina).

12. Interpolation in spaces with given symmetries. Finite dimension, Matematika. Izv. vuzov, (1981), # 4, 20-28, (with V.G. Zobina).

13. On extreme mixed norms, Uspekhi Matem.Nauk, (1984), v.39, # 2, 157-158.

14. On a problem arising in non-Newtonian hydrodynamics, Matematika. Izv. vuzov, (1984), # 12, 62-64, (with Yu.G. Nazmeyev).

15. A method for calculating of the velocity field and the "suspension model" of a flow of a non-linear viscous fluid in a cylindric channel of an arbitrary form, *Inzhenerno-fizicheskii Zhurnal*, 51 (1986), # 4, 594-601, (with Yu.G. Nazmeyer, G.P. Lagutin).
16. On the existence of a stationary flow of a non-linear viscous fluid in screw channels. 1. Inertialess approximation, *Inzhenerno-fizicheskii Zhurnal*, 50 (1986), # 6, 1034-1035, (with Yu.G. Nazmeyer, E.K. Vachagina).
17. On the existence of a stationary flow of a non-linear viscous fluid in screw channels. 1. Inertialess approximation, *VINITI* 7.01.86, # 145 - B 86, 5 p.) (with Yu.G. Nazmeyer, E.K. Vachagina).
18. Interpolation of operators and duality, *VINITI*, 5.07.88, # 5399-B88, 11 p., (with L. Veselova).
19. Interpolation of Lipschitz constants and duality, *VINITI*, 5.07.88., # 5400-B88, 13 p. (with L. Veselova).
20. Constructions of minimal sufficient collections for operator semigroups, in "Operator Methods and Applications", *VINITI* 19.10.89, # 6385 - B 89, 50-51, (with V.G. Zobina).
21. Minimal sufficient collections for operator semigroups, *Matematika. Izv. vuzov*, (1989), # 11, 31-35, (with V.G. Zobina).
22. A general theory of interpolation and duality, *Constructive theory of functions and functional analysis*, No. 7 (Russian), 14-29, *Kazan. Gos. Univ.*, Kazan, 1990, (with L.V. Veselova).
23. On the theory of non-selfadjoint operators, in "Modern algebr. and funct.-analytic methods of solution of problems of analysis", *VINITI* 16.02.90, # 965 - B 90, 88-89.
24. Quantization of Poisson pairs: the R-matrix approach, *Journal of Geometry and Physics*, 9:1, (1992), 25-44 (with D. Gurevich, V. Rubtsov).
25. Duality in Operator Spaces and Problems of Interpolation of Operators, *Geometric function theory and applications of complex analysis to mechanics: studies in complex analysis and its applications to partial differential equations*, 2 (Halle, 1988), 123-144, *Pitman Res. Notes Math. Ser.*, 257, Longman Sci. Tech., Harlow, 1991, (with V.G. Zobina).
26. On a tensor approach to interpolation theory, *Interpolation spaces and related topics* (Haifa, 1990), 269-277, *Israel Math. Conf. Proc.*, 5, Bar-Ilan Univ., Ramat Gan, 1992, (with L. Veselova).
27. Coxeter groups and interpolation of operators, *Integral Equations and Operator Theory*, 18, (1994), 335-367, (with V. Zobina).
28. A general theory of sufficient collections of norms with a prescribed semigroup of contractions, *Nonselfadjoint operators and related topics* (Beer Sheva, 1992), 397-416, *Oper. Theory Adv. Appl.*, 73, Birkhuser, Basel, 1994, (with V. Zobina).
29. Whitney's problem: extendability of functions and intrinsic metric, *C.R. Acad. Sci. Paris, Série 1*, t. 320, (1995), 781-786.
30.  $l_\infty$  and interpolation between Banach lattices, *Proc. Amer. Math. Soc.*, vol. 125, # 3, (1997), 827-833, (with V. Zobin).
31. Whitney's problem on extendability of functions and an intrinsic metric, *Advances in Mathematics*, vol. 133, # 1, (1998), 96-132.
32. Szegő extremal problems, *Amer. Math. Soc. Transl.*, 2, vol. 184, (1998), 253-263.

33. Jordan Decomposition, 1. Geometric Approach, Russian Journal of Mathematical Physics, vol. 6, # 1, (1999), 113-123.
34. Jordan Decomposition, 2. Analytic Approach, Russian Journal of Mathematical Physics, vol. 6, # 2, (1999), 235-243.
35. Extension of smooth functions from finitely connected planar domains, Journal of Geometric Analysis, vol. 9, # 3, (1999), 489-509.
36. Some remarks on quasi-equivalence of bases in Fréchet spaces, Linear Algebra and Applications, vol. 307, # 1-3, 2000, 47-67.
37. Geometric structure of  $B_{2,2}$ -orbihedra and interpolation of operators, Linear and Multilin. Algebra, vol. 48, 2000, 67–91, (with V. Zobin).
38. Linear preservers of isomorphic types of lattices of invariant operator ranges, Proc. of Amer. Math. Soc., vol. 129, 2001, 2981 – 2986,(with L. Rodman).
39. On eigenvalues and boundary curvature of the numerical range, Linear Algebra and Applications, vol. 322, # 1-3, 2001, 129–140, (with L. Caston, M. Savova, I. Spitkovsky).
40. Birkhoff's Theorem and convex hulls of Coxeter groups, Linear Algebra and Applications, vol. 347, 2002, 219–231, (with N. McCarthy, D. Ogilvie, I. Spitkovsky).
41. Convex hulls of Coxeter groups, in "Function Spaces, Interpolation Theory and Related Topics", Walter de Gruyter, Berlin – New York, 2002, 213–240, (with J. Brandman, J. Fowler, B.Lins, I. Spitkovsky).
42. Noncommutative gauge theory without Lorentz violation, Phys. Rev. D, vol. 66, 2002, 075001-8 (with C. Carlson, C. Carone).
43. Convex geometry of Coxeter-invariant polytopes, Contemp. Math., vol. 321, 2003, 153–180, (with N. McCarthy, D. Ogilvie, V. Zobin).
44. Finite reflection groups and linear preserver problems, to appear in Rocky Mountains Journal of Mathematics, 2003, 22 pp., (with C.K. Li, I. Spitkovsky).

#### **b) books written**

45. The Mathematical Analysis of Smooth Functions, Voronezh University Press 1978, 140 p., (with S.G. Krein).
46. Introduction to Functional Analysis and Spectral Theory, Lecture Notes, Kazan University Press, 1991, 95 p., (with A.E. Danshin).

#### **c) edited volumes**

47. Asymptotic Methods in Inverse Problems of Seismology, by L.D. Eskin, Kazan Univeristy Press, 1988, 250 pp.

#### **d) articles published in non-refereed conference proceedings**

48. On extreme mixed norms, Wiss. Beitr. M.-Luther Univ. Halle-Wittenberg, 1984, M. #35, 73.
49. The Jordan Decomposition of a Linear Operator, Abstr. Intern. Symp. Funct. Anal. Related Topics, Hokkaido Univ., Sapporo, 1990, p.95.
50. Jordan Representation of a Linear Operator and Related Spaces, Tagungsbericht 7/1990, Nukleare Frechetraume, Math. Forschungsinstitut Oberwolfach, p.13.

#### **e) invited scholarly papers and talks**

Conferences and Workshops - Invited Talks

1. Numerous talks at Voronezh Mathematical Winter Schools, USSR, 1972 – 1991.

2. Numerous talks at Chernogolovka Conferences on Operator Theory and Complex Analysis, USSR, 1981 – 1989.
3. Talks at Conferences on Functional Analysis and Operator Theory, Novosibirsk, 1975, 1977, Novgorod, 1976, 1989, Riga, 1982, Baikal, 1980.
4. Interpolation and symmetries, Intern. Conf. on Complex Analysis and Appl., Halle, Germany, 1980.
5. Jordan form of infinite-dimensional operators, Intern. Conf. on Complex Analysis and Appl., Halle, Germany, 1988.
6. Jordan decompositions and related spaces, Workshop "Nuclear Frechet Spaces" Oberwolfach, Germany, 1990.
7. Tensor approach to interpolation theory, Workshop "Interpolation Spaces and Related Topics", Haifa, Israel, 1990.
8. Jordan decomposition of general operators, Intern. Conf. on Funct. Analysis and Related Topics, Sapporo, Japan, 1990.
9. What is a Jordan decomposition? Intern. Conf. on Banach Spaces, Jerusalem, Israel, 1991.
10. Jordan decomposition, Intern. Conf. on Operator Theory, Beer Sheva, Israel, 1992.
11. Interpolation problems for smooth functions, Intern. Workshop on Integral Equations, Ramat-Gan, Israel, 1992.
12. Extension of smooth functions - geometry and analysis, Annual Meeting of the Israel Math Society, Jerusalem, Israel, 1992.
13. Root vector expansions, Intern. Conf. in honor of J.-P. Kahane, Orsay, France, 1993.
14. Extension of smooth functions – a Whitney's Problem, Workshop on Real Analysis, Santa Barbara, 1997.
15. Whitney's Problem, Intern. Conf. in Analysis, Edwardsville, IL, 1998.
16. Whitney's Problem, Virginia Oper. Theory and Complex Anal. Meeting, Richmond, 1998.
17. Fourier Analysis in Fock Spaces, Intern. Analysis Conf., Columbus, OH, 1999.
18. Extension of functions and a Fourier Analysis on Fock spaces, Intern. Analysis Conf., Lund, Sweden, 2000.
19. Convex hulls of Coxeter groups, Intern. Analysis Conf., Lund, Sweden, 2000.
20. Geometry of extensions, Midwest Geometric Meeting, Wichita, KS, 2001.
21. Coxeter groups and interpolation of operators, Trends in Banach Spaces, Memphis, TN, 2001.
22. Coxeter groups and interpolation of operators, South Eastern Analysis Meeting, Chapel Hill, NC, 2002.
23. Convex geometry of Coxeter-invariant polytopes and interpolation of operators, SUMIFRAS, College Station, TX, 2002.
24. Convex geometry and interpolation of operators, VOTCAM, Richmond, VA, 2002.
25. Fock geometry, Banach Spaces section, Joint AMS-MAA-SIAM Meeting, Baltimore, MD, 2003.
26. Lorentz-invariant non-commutative quantum field theory, Workshop on Non-commutative Geometry, Banff International Research Station, Canada, 2003.
27. Lorentz-invariant non-commutative quantum field theory, Max Planck Institute for Mathematics, Bonn, Germany, 2003.

28. Fock geometry, Workshop on Geometric Measure Theory, Banff International Research Station, Canada, 2003.

#### SEMINARS AND COLLOQUIA - INVITED TALKS

1. Functional Analysis Seminar, Rostov State University, 1975.
2. Topological vector Spaces Seminar, Moscow State University, 1975.
3. Operator Theory Seminar, Kiev Institute of Mathematics, 1978.
4. Banach Algebras and Complex Analysis Seminar, Moscow State University, 1982.
5. Banach Spaces Seminar, Tel Aviv University, 1991.
6. Functional Analysis Seminar, Technion, Haifa, 1991.
7. Colloquium, Technion, Haifa, 1991.
8. Colloquium, University of Haifa, 1992.
9. Geometry of Discrete Groups Seminar, Bonn, 1993.
10. Functional Analysis Seminar, University of Duesseldorf, 1993.
11. Mathematical Physics Seminar, Bochum University, 1993.
12. Functional Analysis Seminar, Technion, Haifa, 1993.
13. Approximation and Interpolation Seminar, Technion, Haifa, 1993.
14. Colloquium, University of Miami, Coral Gables, 1994.
15. Functional Analysis Seminar, University of Missouri, Columbia, 1994.
16. Colloquium, Wichita State University, 1994.
17. Colloquium, Kansas State University, 1994.
18. Analysis Seminar, Ohio State University, 1994.
19. Analysis Seminar, University of Chicago, 1994.
20. Colloquium, University of Arizona, Tucson, 1994.
21. Colloquium, Florida International University, 1994.
22. Colloquium, George Mason University, 1995.
23. Analysis Seminar, University of Maryland, 1995.
24. Colloquium, Temple University, 1995.
25. Colloquium, University of North Carolina at Charlotte, 1996.
26. Analysis Seminar, Ohio State University, 7 talks, 1996-98.
27. Quantum Groups Seminar, Ohio State University, 1996.
28. Group Representations Seminar, Ohio State University, 1996.
29. Wabash Extramural Seminar, Wabash College, 1996.
30. Colloquium, Kent State University, 1996.
31. Geometric Analysis Seminar, Ohio State University, 1997.
32. Functional Analysis Seminar, IUPUI, 1997.
33. Colloquium, IUPUI, 1997.
34. Analysis Seminar, Northeastern University, 1997.
35. Analysis Seminar, MIT, 1997.
36. Colloquium, Wayne State University, 1997.
37. Analysis Seminar, University of Cincinnati, 1998.
38. Colloquium, University of Cincinnati, 1998.
39. Colloquium, College of William and Mary, 1998.
40. Colloquium, University of Richmond, 1998.
41. Colloquium, Michigan State University, East Lansing, 1999.
42. Colloquium, College of William and Mary, 2000.
43. Colloquium, ICASE, Langley, VA, 2001.
44. Colloquium, University of Miami, Coral Gables, 2001.

45. Analysis Seminar, University of Virginia, Charlottesville, 2001.
46. Special applied math. seminar, College of William and Mary, 2001.
47. Colloquium, Central Florida University, Orlando, 2003.
48. Colloquium, University of Calgary, Canada, 2003.

**f) contributed scholarly papers and talks**

1. Voronezh Functional Analysis Seminar - numerous talks, 1972 - 1976.
2. Voronezh Algebra seminar - numerous talks, 1972 - 1976.
3. Kazan Analysis Seminar - numerous talks, 1967 - 1990.
4. Kazan Operator Algebras Seminar - numerous talks, 1984 - 1989.
5. Kazan Math. Physics Seminar - numerous talks, 1976 - 1990.
6. Analysis Seminar, University of Haifa - numerous talks, 1991 - 1994.
7. Afula Institute Seminar - numerous talks, 1991 - 1994.
8. Technion Quantum Groups Seminar - numerous talks, 1993.
9. Geometric Seminar, University of Miami - numerous talks, 1994 - 1996.
10. Wabash Miniconference, 1996.
11. Study Groups at William and Mary - numerous talks, 1998 - 1999.
12. Interdepartmental Mathematical Physics seminar at William and Mary – numerous talks, 2000 – 2003.
13. Interdepartmental Noncommutative Geometry seminar at William and Mary – numerous talks, 2001 – 2003.
14. Interdepartmental seminar Algebro-geometric Methods in Nonlinear Equations at William and Mary – numerous talks, 2002–2003.

**g) reviews of books, software, etc.**

Numerous reviews of books and papers, published in the Mathematical Reviews, Zentralblatt für Mathematik, Referativnyi Zhurnal Matematika, 1975 - 2001.

Numerous reviews of papers submitted to various journals.

**h) juried shows, exhibitions, and performances**

n/a

**i) unjuried shows, exhibitions, and performances**

n/a

**j) unrefereed publications not listed above**

51. "Investigations in the theory of nuclear spaces", Ph. D. dissertation, Voronezh State University, Voronezh, 1975.

52. Quantization: the R-matrix approach, Preprint IHES/M/90/56, juillet 1990, 28 p., (with D. Gurevich, V. Roubtsov).

53. Coxeter groups and interpolation of operators, Preprint Max-Planck-Inst. MPI/93-39, 1993, 44 p., (with V. Zobina).

54. A Jordan decomposition of general operators, Preprint Max-Planck-Inst. MPI/93-40, 1993, 43 p.

**k) research reports from grant and contract work**

Numerous classified research reports from grant works in the former Soviet Union.

Unpublished research reports from grants in Israel.



**l) performances by others of music, poetry, etc. you have written**

n/a

**m) published software, audio, multimedia, etc. materials**

none

**n) work in progress or submitted**

55. Whitney's Theorem – a dual approach, in progress.

56. Some examples related to extension of functions, in progress.

**m) other scholarly activity, including papers presented at professional meetings and publication of abstracts**

*PROFESSIONAL SERVICE*

## 9. Professional Service Activities

## a) college committee service

Member of the Faculty Research Committee (2003-2004).

## b) other professional service not included in item 5 above.

*Service prior to work at the College of William and Mary:*

Organizer and coordinator of seminars:

(i) City Seminar on Mathematical Methods of Physics, (Kazan, USSR), 1976 - 1990.

(ii) Seminar on Analysis (Department of Mathematics, University of Haifa, Israel), 1991 - 1994.

(iii) Seminar at the Afula Research Institute, Israel, 1991 - 1994.

(iv) Seminar on Quantum Groups (Department of Mathematics, Technion, Haifa, Israel), 1993-1994.

Numerous duties at the Kazan Institute of Chemical Technology (1975-1987), at the Kazan State University (1987 - 1991), at the University of Haifa (1991 - 1994).

*Service at the College of William and Mary:*

Organizer and coordinator of seminars:

(i) Interdepartmental Mathematical Physics Seminar (College of William & Mary, Williamsburg, USA), 2000 - 2003.

(ii) Interdepartmental Noncommutative Geometry Seminar (College of William & Mary, Williamsburg, USA), 2001 -2003.

(iii) Interdepartmental Algebro-geometric Methods in Nonlinear Equations Seminar (College of William & Mary, Williamsburg, USA), 2002 - 2003.

Member of the Department Library Committee, 1999 - 2001.

Member of the Department Colloquium Committee, (Fall 2002 - Spring 2004).

Student evaluation committee (Fall 2001 - Spring 2003)

Coordinator of the Calculus 112 course, Fall 1999

Coordinator of the Multivariable Calculus 212 course, Spring 2000, Fall 2000, Spring 2001.

Mentor and Coordinator of the Putnam and VA Tech math competitions, 1999 - 2003.

Mentor in the NSF-REU program (summers of 1999, 2000)

Organized visits to W& M of prominent mathematicians: Profs. S. Novikov, S. Gindikin, B. Mityagin.