JAN SEGERT
Curriculum Vitae - January 2001

Current Position: Associate Professor of Mathematics
University of Missouri
Columbia, MO 65211
From September 1990

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Postdoctoral Position: Bantrell Research Fellow in Mathematical Physics
California Institute of Technology
Pasadena, CA 91125
From September 1987 to August 1990

Postdoctoral Advisor: Professor Barry Simon

Date of Birth: November 8, 1960
Citizenship: United States

Academic Degrees

University of California, Los Angeles	1982	B.S., Magna Cum Laude
Princeton University	1984	M.A.
Princeton University	1987	Ph.D.

Ph.D. Thesis

Title: Hyperbolic Dynamical Systems and the Noncommutative Integration Theory of Connes
Advisor: Professor Arthur S. Wightman

Publications

1. *Photon Berry's Phase as a Classical Topological Effect*, Physical Review A, **36**, 10-15 (1987)
2. *Non-Abelian Berry's Phase, Accidental Degeneracy, and Angular Momentum*, Journal of Mathematical Physics, **28**, 2102-2114 (1987)
3. *Non-Abelian Berry's Phase Effects and Optical Pumping of Atoms* Annals of Physics, **179**, 294-312 (1987)
4. *Topological Invariants in Fermi Systems with Time Reversal Invariance*, with J. Avron, L. Sadun, B. Simon; Physical Review Letters, **61**, 1329-1332 (1988)
5. *Chern Numbers for Fermionic Quadrupole Systems*, with L. Sadun; Journal of Physics A: Math. Gen., **22**, L111-L115 (1989)
6. *Chern Numbers, Quaternions, and Berry's Phases in Fermi Systems*, with J. Avron, L. Sadun, B. Simon; Communications in Mathematical Physics, **124**, 595-627 (1989)
7. *Non-Self-Dual Yang-Mills Connections with Nonzero Chern Number*, with L. Sadun; Bulletin of the American Mathemtical Society, **24**, 163-170 (1991)
8. *On the Adiabatic Theorem, Landau-Zener Formula, and the Geometry of Isospectral Hamiltonians*, with V. Jaksic; p. 191-194 in "Rigorous results in Quantum Dynamics," Proceedings of Liblice Conference on Mathematical Physics, Czechoslovakia, ed. J. Dittrich, P.Exner (World Scientific, 1991)
9. *Stationary Points of the Yang-Mills Action*, with L. Sadun; Communications in Pure and Applied Mathematics, **45**, 461-484 (1992)
10. *Exponential Approach to the Adiabatic Limit*, with V. Jaksic; Reviews in Mathematical Physics, **4**, 529-574 (1992)
11. *Non-Self-Dual Yang-Mills Connections with Quadrupole Symmetry*, with L. Sadun; Communications in Mathematical Physics, **145**, 363-391 (1992)
12. *Constructing Non-Self-Dual Yang-Mills Connections on S^4 with Arbitrary Chern Number*, with L. Sadun; in "Differential Geometry", Differential Geometry, " Proceedings of Symposia in Pure Mathematics Volume, 54 Part 2, ed. R.E. Greene and S.T. Yau, 529-538, (American Mathematical Society, 1993)
13. *On the Landau-Zener formula for two-level systems*, with V. Jakšić; Journal of Mathematical Physics, **34**, 2807-2820 (1993)
14. *Symmetric instantons and the ADHM construction*, with G. Bor; Communications in Mathematical Physics, **183**, 183-203 (1997)
15. *Frobenius Manifolds from Yang-Mills Instantons*, Mathematical Research Letters, **5**, 327-344 (1998)

Preprints

1. *Painlevé Solutions from Equivariant Holomorphic Bundles*, Preprint

Support of Research

Competitive Grants

1. *Visiting Fellowship*, Mathematical Science Research Institute (MSRI), Berkeley, California;
Spring 1991; Amount $15,000.00 (*Declined*)

2. *Non-self dual Yang-Mills connections*, National Science Foundation, Division of Mathematical Sciences, Geometric Analysis Unit (DMS-9106807);
June 1991 - June 1993; Amount: $37,096.00,

3. *Summer Research Fellowship*, University of Missouri;
Summer 1991; Amount: $4,000.00 (*Declined*)

4. *Visiting Fellowship*, University of Warwick, England;
Summer 1992; Amount: £1,275.00 (approx. $2,300)

5. *Midwest Geometry Conference*, Research Board, University of Missouri;
April 1993 - May 1993; Amount: $6,000.00

6. (PI J. Segert, Co-Investigators J.K. Beem and A.D. Helfer) *Midwest Geometry Conference*, National Science Foundation, Division of Mathematical Sciences, Geometric Analysis and Special Projects Units:
April 1993 - May 1993; Amount: $9,500.00

7. *Junior Faculty Enhancement Award*,
Oak Ridge Associated Universitites (ORAU);
Nominated by E. Saab, chairman.
Summer 1993; Amount: $5,000.00

8. (PI J. Segert, Co-Investigator S. Wang) *Yang-Mills equations on complex manifolds*, Research Board, University of Missouri;
Summer 1993; Amount: $17,093.00

9. *Almost-Complex Structures*, Summer Research Fellowship, MU,
Summer 1996; Total Amount: $ 7,000.00

10. *The complex geometry of equivariant Yang-Mills connections*,
Division of Mathematical Sciences, Geometric Analysis Unit (DMS-9404468);
July 1994 - July 1997; Amount: $31,278.00,

11. *Frobenius manifolds and vector bundles*, Research Board, University of Missouri;
Summer 1999; Amount: $12,000.00

Prizes and Awards:

1. *Marilyn F. Lohr Memorial Scholarship*, University of California, Los Angeles;
September 1980; Amount $600.00

2. *E. Lee Kinsey Award*, University of California, Los Angeles;
June 1982; Amount $600.00

3. *Joseph Henry Prize*, Princeton University;
AY 1982 - 1983; Amount $1,000.00

Support of Research (contd.)

Selected Conference and Visiting Support:

1. *Mathematical Aspects of String Theory*; University of California, San Diego, July 1986
2. *Non-perturbative Quantum Field Theory*; NATO Advanced Studies Workshop, Cargese, Corsica, July 1987
3. *Workshop on Berry's phase*; Institute on Mathematics and Applications, University of Minnesota, Minneapolis, September 1987
4. *Visiting Membership*; Institute for Theoretical Physics, University of California, Santa Barbara, April 1989
5. *Regional Geometry Institute*, National Science Foundation, Park City, Utah, June - July 1991
6. *20th Holiday Mathematics Symposium*, New Mexico State University, Las Cruces NM, January 1994
7. *Park City - Institute for Advanced Study Math Institute*, Park City, Utah, July 1994

Reviewing and Refereeing

Reviewer, Mathematical Reviews
Reviewer, Grant Proposals for National Science Foundation, Geometric Analysis
Referee, Communications in Mathematical Physics
Referee, Letters in Mathematical Physics
Referee, Communications in Analysis and Geometry
Referee, Physical Review and Physical Review Letters
Referee, Journal of Physics
Referee, Annals of Physics
Referee, SIAM Journal on Applied Mathematics
Reviewer, Grant Proposals for the MU Research Board

Selected Talks and Colloquia

1990:

- *Nonminimal Yang-Mills Connctions*, Georgia Institute of Technology, Atlanta
- *New Symmetries Generated by Quantization*, University of South Carolina, Columbia
- *Nonminimal Yang-Mills Connections*, Georgia Tech, Atlanta GA
- *Yang-Mills Connections on the Four-Sphere*, Clarkson University, Potsdam NY
- *Yang-Mills Connctions on the Four-Sphere*, University of Southern California, Los Angeles
- *Non-Self-Dual Yang-Mills Connections*, International Congress of Mathematicians, Kyoto, Japan

1991:

- *The YM Equations on the Four-Sphere*, Midwestern Geometry Conference, Lawrence, Kansas
- *Yang-Mills Connections with Quadrupole Symmetry*, Conference on Nonlinear Integrable Systems in Mathematical Physics, University of California, Davis, CA
- *Equivariant Instantons and the ADHM Construction*, California Institute of Technology, Pasadena, CA
- *Construction of Nonminimal Yang-Mills Connections*, Regional Geometry Institute, Park City, Utah: (Also served as Organizer of Gauge Theory and Holomorphic Geometry) Research Workshop
- *Exponential Approach to the Adiabatic Limit*, Mathematical Physics Seminar, University of Texas, Austin

1992:

- *Rational Solutions of the Quadrupole Self-Duality Equation*, 2nd Midwestern Geometry Conference, Manhattan, Kansas
- *$SU(2)$-Equivariant Yang-Mills, ADHM, and Rationality*, Symposium on Gauge Theory, Geometry & Topology, University of Warwick, England

1993:

- *Critical Points of the Yang-Mills Functional on S^4*, AMS Meeting, Special Session on Variational Problems in Geometry, Knoxville, Tennessee
- *Anti-self-dual connections, symmetry, and jumping lines*, Differential Equations Conference, Columbia MO

1994:

- *An equivariant Atiyah-Ward correspondence*, 20th Holiday Mathematical Symposium, New Mexico State University, Las Cruces, NM
- *Equivariant geometry of instanton jumping lines*, Global Analysis and Differential Geometry Seminar, University of Texas, Austin TX
- *An equivariant Atiyah-Ward correspondence*, AMS Meeting, Special Session on Gauge Theory and Applications, Brooklyn NY
- *Yang-Mills solutions via elementary complex analysis*, 4th Midwest Geometry Conference, Iowa City, Iowa

1997:

- *Painleve Solutions from Yang-Mills Instantons*, AMS Meeting, Special Session on Partial Differential Equations, College Park, MD
- *Instantons and Isomonodromic Deformations*, Special Session on Geometry, Topology, and Physics, Joint Mathematics Conference, Pretoria, South Africa

1998:

- *Frobenius Manifolds*, Western States Conference, Caltech, Pasadena
- *Frobenius Manifolds and Instantons*, Pacific Rim Geometry Conference, Vancouver, Canada

1999:

- *Quantum cohomology of CP^2*, AMS Meeting at Champaign-Urbana
- *Quantum cohomology of the complex projective plane*, Math Colloquium at Washington University, St. Louis
- *Quantum cohomology of CP^2* Conference on Geometry, Topology, and Physics, Oporto, Portugal

2000:

- *Global quantum cohomology*, Western States Conference, Caltech
- *A global construction of the CP^2 quantum cohomology*, Mathematical Challenges of the 21st Century, UCLA