

Curriculum Vitae of Ambar N. Sengupta

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Résumé of Ambar N. Sengupta CV

a. Professional Preparation

Institution	Major	Degree	Year
University of Calcutta	Mathematics	B. Sc.	1984
Cornell University	Mathematics	M.S.	1987
Cornell University	Mathematics	Ph. D.	1990

b. Principal Appointments

- Presently (since 2011): Hubert Butts Memorial Alumni Departmental Professor in Mathematics, Louisiana State University
- 2001-2011: Professor, Department of Mathematics, Louisiana State University
- 1996-2001 : Associate Professor, Department of Mathematics, Louisiana State University
- 1991-1996 : Assistant Professor, Department of Mathematics, Louisiana State University
- 1990-1991 : Instructor/Post-Doctoral Research, Department of Physics, Princeton University
- Visiting positions at Max Planck Institute Bonn, University of Bonn, the Indian Statistical Institute, S.N. Bose Centre (Kolkata, India), and the École Normale Supérieure, Paris.

c. Research Support, Grants & Awards

- National Security Agency: Probability and Analysis in Geometric Problems. 2013-2015.
- Mercator Guest Professorship from the Deutsche Forschungsgemeinschaft at the University of Bonn, awarded 2011 (summers 2011 and 2012).
- National Science Foundation, NSF DMS 0601141 (2006-2009; ext. 2011): Geometric and Probabilistic Problems from Low Dimensional Gauge Theories.
- National Science Foundation, NSF DMS 0201683 (2002-2005; ext. 2006): Mathematical Problems from Geometric/Topological Quantum Field Theories.
- National Science Foundation, NSF DMS 9800955 (1998-2001; ext. 2002): Mathematical Problems in Low Dimensional Gauge Theories.
- National Science Foundation, DMS 9400961 (1994-1997): Gauge Theory on Compact Surfaces.
- DePSCOR (Defense Experimental Program to Stimulate Competitive Research) 1994-1997 (jointly with W.G. Cochran, H. -H. Kuo, P. Sundar) US Army Research Office DAAH 04-94-G-0249: Stochastic Analysis and Applications.
- Alexander von Humboldt Fellowship (1995-1996 and extensions).
- Visiting Experts Program in Mathematics LEQSF (2002-2004) ENH -TR-13 (jointly with P. Gilmer).

- Louisiana Education Quality Support Fund : LEQSF (1992-93) RD -A -08 (jointly with W.G. Cochran, H. -H. Kuo, P. Sundar).
- Louisiana State University Faculty Summer Research Fellowship (1992).

d. Five Selected Publications

- Irina Holmes and Ambar N. Sengupta, *A Gaussian Radon Transform for Banach Spaces*, Journal of Functional Analysis, Volume 263, Issue 11, 1 December 2012, Pages 3689-3706.
- Jeremy J. Becnel and Ambar N. Sengupta, *A Support Theorem for a Gaussian Radon Transform in Infinite Dimensions*, Transactions of the American Mathematical Society, **364** (2012), 1281-1291.
- Michael Anshelevich and Ambar N. Sengupta, *Quantum Free Yang-Mills on the Plane*, Journal of Geometry and Physics, Volume 62, Issue 2 (2012), p. 330-343.
- Sergio Albeverio and Ambar Sengupta, *A Mathematical Construction of the non-Abelian Chern-Simons Functional Integral*, Communications Mathematical Physics **186**, 563-579 (1997).
- Ambar Sengupta, *Gauge Theory on Compact Surfaces*, Memoirs of the American Mathematical Society **126** number 600 (1997)

e. Selected Other Activities

- Co-organizer of an AIM Workshop in 2013. Co-organizer, AMS Annual Meeting Special Sessions at New Orleans, 2001, 2007, and 2011. Co-organizer, conference on Quantum Gauge Theory and Gravity in Kolkata, India, January 2008.
- Editorial Board member for “Communications on Stochastic Analysis.”
- Referee for Journal of Functional Analysis, Communications in Mathematical Physics, numerous other journals, and funding agencies such as the US National Science Foundation. Referee on promotion cases at universities in the US and internationally.

Research Support, Grants and Awards

US Federal
<ul style="list-style-type: none">• National Security Agency: Probability and Analysis in Geometric Problems (2013-2015).• National Science Foundation, NSF DMS 0601141 (2006-2009; ext. 2011) Geometric and Probabilistic Problems from Low Dimensional Gauge Theories.• National Science Foundation, NSF DMS 0201683 (2002-2005; extended to 2006), Mathematical Problems from Geometric/Topological Quantum Field Theories.• National Science Foundation, NSF DMS 9800955 (1998-2001; ext. 2002), Mathematical Problems in Low Dimensional Gauge Theories.• National Science Foundation, DMS 9400961 (1994-1997) : Gauge Theory on Compact Surfaces.• Defense Experimental Program to Stimulate Competitive Research (1994-1997) (jointly with W.G. Cochran, H. -H. Kuo, P. Sundar) US Army Research Office DAAH 04-94-G-0249: Stochastic Analysis and Applications.
State of Louisiana
<ul style="list-style-type: none">• Visiting Experts Program in Mathematics LEQSF (2002-2004) ENH -TR-13 (jointly with P. Gilmer).• Louisiana Education Quality Support Fund : LEQSF (1992-93) RD -A -08 (jointly with W.G. Cochran, H.-H. Kuo, P. Sundar).
International
<ul style="list-style-type: none">• Mercator Guest Professorship from the Deutsche Forschungsgemeinschaft at the University of Bonn, awarded 2011.• Alexander von Humboldt Fellowship (1995-1996 and extensions).
University (Louisiana State University)
<ul style="list-style-type: none">• Distinguished Faculty Award, 2015.• Graduate Teaching Award, 2015.• Tiger Athletic Foundation Teaching Award, 2014.• LSU Alumni Association Faculty Excellence Award, 2004.• Louisiana State University Faculty Summer Research Fellowship, (1992)

Research Advising

- Presently advising Tyler Brannan.
- Yunyun Yang. Expected PhD in 2015. Co-advisor with Prof. R. Estrada.
- Irina Holmes, PhD (2014). Hale Postdoctoral Fellow at Georgia Tech.
- Saikat Chatterjee, PhD (2011) in Physics at the SN Bose National Centre for Basic Sciences (Kolkata, India). Co-advisor with Prof. A. Lahiri. First employment (2011): Tata Institute of Fundamental Research, and presently at Institut des Hautes Études Scientifiques.
- Junyue Xu, PhD (2011) in Economics. Co-advisor with Prof. E. Hillebrand. Employment: Moody's Analytics.
- Chao Meng, PhD (August 2008), analysis of correlated default phenomena. Employment (2011): J.P. Morgan (Tokyo).
- Jeremy Becnel, PhD (2006), on a mathematical problem originating in quantum-computing using infinite dimensional Gaussian analysis. Employment: Associate Professor, Stephen F. Austin University (Nacogdoches, Texas).
- Vochita Mihai, PhD (2004), developed an infinite-dimensional form of the Radon transform. Employment (2011): Associate Professor, Medaille Collge (Buffalo, New York).
- Xiaoxue Shan, MS (May 2012), Mathematical Models for Interest Rate Dynamics.
- Adam Lodygowski, MS (June 2010), exploration of correlation phenomena in Gaussian copulas. Employment (2011): UniCredit (London).
- Dongxiang Yan, MS (August 2010), correlation phenomena in portfolios. Employment (2011): Sagen Group LLC (New York).
- Ryan Coelho, MS (December 2006), application of the copula method to study currency exchange rates. Employment: Deloitte (New York).

Participation in Professional Society Activities and Conferences

Memberships

- American Mathematical Society
- American Physical Society
- American Statistical Association

Conference Organization Activity

1. AIM Workshop on Geometric Perspectives in Mathematical Quantum Field Theory, April 2013. Co-organizer wth Jonathan Weitsman.
2. American Mathematical Society Sectional Meeting, New Orleans, October 2012. Co-organizer (with H.-H. Kuo and P. Sundar) of a Special Session on Stochastic Analysis: Current Directions and Applications.
3. American Mathematical Society Annual Meeting, New Orleans, January 2011. Co-organizer (with P. Sundar) of a Special Session on Stochastics and Random Phenomena.
4. American Mathematical Society Sectional Meeting, Baton Rouge, March, 2008. Co-organizer (with Arkadev Chatterjee) of a Special Session *Challenges in Financial Mathematics*.
5. Co-organizer of international conference *Non-perturbative gauge theories and gravity* in January 2008, in Kolkata, India.
6. American Mathematical Society Annual Meeting, New Orleans, January 7, 2007. Co-organized (with Padmanabhan Sundar) the Special Session *Infinite Dimensional Analysis Honoring Hui-Hsiung Kuo*.
7. Co-organized (with Padmanabhan Sundar) Workshop on Stochastic Analysis at LSU, January 5, 2007.
8. American Mathematical Society meeting, Baton Rouge, March 14-16, 2003. Overall local organizer.
9. American Mathematical Society Annual Meeting, New Orleans January 10-13, 2001. Co-organized (with Hui-Hsiung Kuo) the Special Session “Analysis on Infinite Dimensional Spaces (in Honor of Leonard Gross)”
10. Organizer of a section of the Midwest Geometry Conference in Baton Rouge, in October 1998.
11. Member, Local Committee, US-Japan Seminar on Probability Theory, Baton Rouge, 1994.

Selected Recent Invited Presentations

1. *Four chapters in low dimensional gauge theories*, lectures given jointly with Thierry Lévy at the Centre Interfacultaire Bernoulli, EPFL (Lausanne, Swizerland), April, 2015.

2. *Representing the Heisenberg Group: a look back at von Neumann's Uniqueness Result*, at the Mathematical Physics, Fourier analysis, and Applications Seminar, The Graduate Center, The City University of New York, March 27, 2015.
3. *Mathematical Methods for Default Events*, at a Special Session of the American Mathematical Meeting in Albuquerque, April 5, 2014.
4. *Gaussian Inequalities and Tranche Sensitivities*, at The 5th Annual Modeling High Frequency Data in Finance in Hoboken, NJ, October 26, 2013.
5. *Categorical Geometry*, at a Special Session of the American Mathematical Society Annual Meeting in San Diego, January 9, 2013.
6. *Categorical Parallel Transport*, at Recent Advances in Topological Quantum Field Theory Lisbon, September 2012.
7. *Free Noise Stochastics and Geometry*, at a Special Session at the American Mathematical Society Annual Meeting in Boston, January 4, 2012.
8. *Two-dimensional Quantum Yang-Mills in the Free Limit*, at conference titled Mathematical Aspects of Quantization at the University of Notre Dame, June 8, 2011.
9. *Yang-Mills in 2 dimensions its free large- N limit*. At joint meeting of the American Mathematical Society and Chilean Mathematical Society, in Pucón, Chile, December 18, 2010.
10. At Special Session of the American Mathematical Society Meeting in Albuquerque, April 18, 2010
11. At the conference 'Stochastic Analysis and Mathematical Physics' (NSF funded conference in honor of Leonard Gross) at Cornell University, April 12, 2010
12. At the conference 'Classical and Random Dynamics in Mathematical Physics' (University of Texas, Austin, and Portuguese government funded) at University of Texas, Austin, April 2, 2010.
13. Seminar on two-dimensional Yang-Mills theory at the Physics Department at Rochester University, March 4, 2010.
14. Colloquium Speaker and two lectures on low-dimensional quantum gauge theories at CIMAT in Guanajuato, Mexico, February 2010.
15. *Functional Integrals in Low-Dimensional Gauge Theories*, 4th August, 2009, at the conference 'Chern-Simons Gauge Theory: 20 years after' held by the Hausdorff Center for Mathematics at the Max Planck Institute for Mathematics in Bonn, Germany.
16. *Modeling Securitization Structures in the Subprime Crisis*, May 1, 2009, University of Louisiana, Lafayette, Keynote address at Louisiana American Statistical Association Chapter Spring 2009 Meeting.
17. *The Gaussian Copula in Modeling Correlated Events*, February 28, 2009, Lamar University Mathematics Conference.

18. *Mathematical Problems in Low-Dimensional Gauge Theories*, June 2008, Plenary Lecture at XXVII Workshop on Geometric Methods in Physics, Białowieża, Poland.
19. *Large- N Aspects of Two-dimensional Yang-Mills Theory*, American Mathematical Society meeting, Baton Rouge, March 30, 2008, Special Session on Lie Groups and Holomorphic Function Spaces: Analysis, Geometry, and Mathematical Physics.
20. *Yang-Mills in Two Dimensions and Its Large- N Limit*, on March 27, 2007 at the conference *Free Probability and Large- N Limit*, organized by A. Guionnet, D. Shlyakhtenko, and D. Voiculescu at the University of California, Berkeley.
21. Lecture at *Stochastic Analysis in Mathematics*, a satellite meeting of the International Congress of Mathematicians 2006, in Lisbon, Portugal.
22. *Functional Integrals in Low-dimensional Gauge Theories*, at the conference *The Feynman Integral and Related Topics in Mathematical Physics in Honor of G. W. Johnson and David Skoug*, Lincoln, Nebraska, May 12th, 2006.
23. *Traces in 2-dimensional QCD*, at the workshop ‘Traces in Geometry, Number Theory and Quantum Fields’, at the Max Planck Institute for Mathematics, Bonn, 27th October, 2005.
24. *A Quantum Algorithm and an Integral Identity*, international conference on ‘Operator Theory, Quantum Theory, and Noncommutative Geometry’ at the Indian Statistical Institute (Kolkata), December 23, 2004.
25. *A Rigorous Study of the Kauffman-Lomonaco Algorithm*, at an international conference ‘Infinite Dimensional Analysis and Path Integrals’, in Luminy, France, on 29th November, 2004.
26. *Pricing Functionals and Pricing Measures*, AMS Meeting Albuquerque October 17, 2004.
27. *Functional Integrals applied to Topology and Algebra* at the International Congress of Mathematical Physics, Lisbon (Portugal) July 28-August 2, 2003, on August 1, 2003.
28. *The Dirac Magnetic Charge Quantization Condition*, at the American Mathematical Society meeting, Baton Rouge, March 14-16, 2003, on March 16, 2003.
29. *The 2-D Yang Mills Functional Integral: Physics applied to Geometry* at a conference on ‘The Feynman Integral with Related Topics and Applications’ at the Mathematical Sciences Research Institute, Berkeley, December 9-12, 2002. on December 11, 2002.
30. *Functional Integrals from Geometric QFTs* at the conference ‘The Mathematical Legacy of Feynman’s Path Integral Approach: Analysis, Geometry, and Probability,’ in Lisbon (Portugal), June 25-28, 2002, on June 26, 2002.

Service Activities

LSU Mathematics Department

- Porcelli Committee (chair) 2012-.
- Hiring Committee, current (till 2015) and numerous prior terms.

- Executive Committee, current (2015-2017) and numerous prior terms.
- Graduate Studies Committee (2015-2018).
- Internal Review Committee: 2015-2016, 2012-2013, 2009-2010 (chair), 2002-2003.
- Committee to re-allocate teaching for several pre-calculus course (Chair) December 2009.
- LSU VIGRE Grant proposal committee (till 2005)
- Textbook selection committee (Chair) for Math 3355 (Probability), Spring 2008.
- Committee for administering the Carruth McGehee Award (LSU), 2007.
- Colloquium Chair : 1996-97, 2002-2003, co-chair 2003-2004.
- Probability Seminar Coordinator (2002, 2003)
- Co-organizer of joint Mathematics Department - Physics Department Colloquium: 2005-2006
- Coordinator, with Patrick Gilmer, of the Visiting Experts Program in the Department of Mathematics (2003-2005)
- Department of Mathematics representative (along with W. George Cochran) to National Science Foundation conference April 30-May 2, 2004
- Represented Mathematics Department at the IAFE (International Association of Financial Engineers) Meeting at NYU, October 8, 2004
- Chair for a Promotional Case Committee, Department of Mathematics, 2002
- Member, Committee on Redesigning Math 1431 (2003) [this is a basic Calculus course which was successfully redesigned for large-lecture and online delivery from the original small-sections format.]

University

- Member, College of Science Dean Search Committee, 2012-2013.
- Member, Promotion & Tenure Committee, College of Science, 2012-2013.
- Chair, Promotion & Tenure Committee, College of Science, 2011-2012.
- Policy Committee member, College of Science, 2011-2012.
- Co-Chair, Promotion & Tenure Committee, College of Science, 2010-2011.
- Chair, Committee of the Faculty (appointed by the Chancellor) Jan 2004-May 2005.
- Dean's Representative at several PhD Examinations.
- President, LSU Faculty Science Club, Jan-Dec 2003. Treasurer for Spring 2004.

Professional

- Advisory Committee, XVIII Workshop on Geometric Methods in Physics, Białowieża (Poland), 2009.
- Referee, Board of Experts of the CIVR (Committee for Research Evaluation of Italian Universities), 2005.
- Referee for several journals including Annals of Physics, Communications in Mathematical Physics, Journal of Functional Analysis, and Probability Theory and Related Fields.
- Referee for numerous grant proposals, including as panelist, for the US National Science Foundation, CRDF., and European Research Council.
- Referee for promotion cases at several universities.
- Participated in organizational activities for the LSU Mathematics Department's High School Math Contest (most recently in 2013 and 2014) and gave lectures at the LSU summer Math-Circle program (most recently in 2013).
- Judge, Baton Rouge Science Fair, March 2000.

Scholarly Works

Refereed Papers

1. Bires K. Bandyopadhyay and Ambar Sengupta, *Magnetic Monopoles : A Brief Review*, Fortschritte der Physik **32**, 175-184 (1984).
2. Francois Destrempes and Ambar Sengupta, *Configurations of Points in Sets of Positive Measure and in Baire Sets of Second Category*, Fundamenta Mathematicae, 133, 155-159 (1989).
3. Leonard Gross, Christopher King, and Ambar Sengupta, *Two Dimensional Yang-Mills Theory via Stochastic Differential Equations*, Annals of Physics, 194, 65-112 (1989).
4. Ambar Sengupta, *The Yang-Mills Measure for S^2* , Journal of Functional Analysis, 108, 231-271 (1992).
5. Ambar Sengupta, *The Semiclassical Limit of the Yang-Mills Measure on S^2* , Communications in Mathematical Physics, 147, 191-197 (1992).
6. Ambar Sengupta, *Quantum Gauge Theory on Compact Surfaces*, Annals of Physics, **221**, 17-52 (1993).
7. Ambar Sengupta, *Limiting Measure in Yang-Mills Theory*, in Stochastic Analysis on Infinite Dimensional Spaces, ed. H. Kunita and H. -H. Kuo, Pitman Research Notes in Mathematics **310**, 297-307 (1994).
8. Ambar Sengupta, *Gauge Invariant Functions of Connections*, Proceedings of the American Mathematical Society, **121**, 897-905 (1994).
9. Christopher King and Ambar Sengupta, *An Explicit Description of the Symplectic Structure of Moduli Spaces of Flat Connections*, Journal of Mathematical Physics (Special Issue on Topology and Physics) **35**, 5338-5353 (1994).
10. Christopher King and Ambar Sengupta, *The Semiclassical Limit of the Two Dimensional Quantum Yang-Mills Model*, Journal of Mathematical Physics (Special Issue on Topology and Physics) **35**, 5354-5361 (1994).
11. Ambar Sengupta, *The Semiclassical Limit of $SU(2)$ and $SO(3)$ Gauge Theory over the Torus*, Communications in Mathematical Physics, **169**, 297-314 (1995).
12. Christopher King and Ambar Sengupta, *A New 2-form for Connections on Surfaces with Boundary*, Letters in Mathematical Physics **34**, 135-147 (1995).
13. Christopher King and Ambar Sengupta, *A Symplectic Structure for Connections on Surfaces with Boundary*, Communications in Mathematical Physics **175**, 657-671 (1996).
14. Ambar Sengupta, *The Moduli Space of Yang-Mills Connections over Compact Surfaces*, Reviews in Mathematical Physics **9**, 77-121 (1997).
15. Ambar Sengupta, *Yang-Mills on Surfaces with Boundary : Quantum Theory and Symplectic Limit*, Communications in Mathematical Physics **183**, 661-706 (1997).

16. Sergio Albeverio and Ambar Sengupta, *A Mathematical Construction of the non-Abelian Chern-Simons Functional Integral*, Commun. Math. Phys. **186**, 563-579 (1997).
17. Sergio Albeverio and Ambar N. Sengupta, *The Chern-Simons Functional Integral as an Infinite Dimensional Distribution*, in Proceedings of the Second World Congress of Nonlinear Analysts , Elsevier Science Ltd (1997). [This is largely descriptive of item 18.]
18. Ambar Sengupta, *Gauge Theory on Compact Surfaces*, Memoirs of the American Math. Soc. 126 number 600 (1997).
19. Brian C. Hall and Ambar N. Sengupta, *The Segal-Bargmann transform for path spaces in groups*, Journal of Functional Analysis **152** (1998).
20. Claas Becker and Ambar Sengupta, *Sewing Yang-Mills Measures and Moduli Spaces over Compact Surfaces*, Journal of Functional Analysis **152**, 74-99, (1998).
21. Ambar Sengupta, *A Yang-Mills Inequality for Compact Surfaces*, Infinite Dimensional Analysis, Quantum Probability and Related Topics **1** (1998) 1-16.
22. W. George Cochran, Hui-Hsiung Kuo and Ambar Sengupta, *A new class of white noise generalized functions*, Infinite Dimensional Analysis, Quantum Probability and Related Topics **1** (1998) 43-67.
23. Ambar Sengupta, *The Moduli Space of Flat $SU(2)$ and $SO(3)$ Connections over Surfaces*, Journal of Geometry and Physics, **28** (1998) 209-254.
24. Sergio Albeverio, Brian C. Hall and Ambar N. Sengupta, *The Segal-Bargmann Transform for Two Dimensional Yang-Mills*, Infinite Dimensional Analysis, Quantum Probability and Related Topics **2** (1999) 27-49.
25. Hui-Hsiung Kuo, Izumi Kubo and Ambar Sengupta, *White Noise Analysis on a New Space of Hida Distributions*, Infinite Dimensional Analysis, Quantum Probability and Related Topics **2** (1999) 315-335.
26. Ambar N. Sengupta, *Sewing Symplectic Volumes for Flat Connections over Compact Surfaces*, Journal of Geometry and Physics, **32** (2000) 269-292.
27. Ambar N. Sengupta, *The Yang-Mills Measure and Symplectic Structure on Spaces of Connections*, in Quantization of Singular Symplectic Quotients, edited by N. P. Landsman, M. Pflaum and M. Schlichenmaier. Progress in Mathematics, vol. 198. Publisher: Birkhauser. (2001)
28. Ambar N. Sengupta, *The Moduli Space of Flat Connections over Compact Oriented Surfaces with Boundary*, Journal of Functional Analysis **190** (2002) 179-232. This is a *special volume* in honor of Irving E. Segal, founder of this journal.
29. Ambar N. Sengupta, *Sewing Yang-Mills Measures for Non-Trivial Bundles*, Infinite Dimensional Analysis, Quantum Probability and Related Topics **6** (Special Issue on Probability and Geometry) (2003) 39-52.

30. Ambar N. Sengupta, *The Volume Measure for Flat Connections as Limit of the Yang–Mills Measure*, Journal of Geometry and Physics **47** 398-426 (2003).
31. Sergio Albeverio, Atle Hahn, Ambar N. Sengupta, *Chern-Simons theory, Hida distributions and State Models*, Infinite Dimensional Analysis, Quantum Probability and Related Topics **6**(Special Issue on Probability and Geometry) (2003) 65-81.
32. Sergio Albeverio, Atle Hahn, Ambar N. Sengupta, *Rigorous Feynman Path Integrals, with Applications to Quantum Theory, Gauge Fields, and Topological Invariants*, Pages 1-60 in “Stochastic Analysis and Mathematical Physics” (Editors: R. Rebolledo, J. Rezende, and J.-C. Zambrini), World Scientific (2004).
33. Jeffrey Mitchell and Ambar N. Sengupta, *Monopole Charge Quantization or Why Electromagnetism is a $U(1)$ -Gauge Theory*, Annals of Physics, **312**, Issue 2, August 2004, Pages 411-430.
34. Ambar N. Sengupta, *Symplectic Reduction for Yang-Mills on a Cylinder*. International Journal of Geometric Methods in Modern Physics, Vol. 1, Number 4, August 2004, 289-298.
35. Ambar N. Sengupta, *Connections over Two-Dimensional Cell Complexes*. Reviews in Mathematical Physics, Vol. 16, No. 3 (2004) 331-352.
36. Ambar Sengupta, *Rigorous Models for Chern-Simons Functional Integrals*, in the *Encyclopedia of mathematical physics*, edited by Jean-Pierre Francoise, Gregory L. Naber, Tsou Sheung Tsun. Elsevier (2006).
37. Ambar N. Sengupta, *A functional integral applied to topology and algebra*, in *XIVth International Congress on Mathematical Physics: Lisbon 28 July - 2 August 2003*, World Scientific Publishing Company (2006).
38. Ray Fabec, Gestur Ólafsson, Ambar N. Sengupta, *Fock spaces corresponding to positive definite linear transformations*. Mathematica Scandinavica, **98**, 262-282 (2006).
39. Jeremy Becnel and Ambar N. Sengupta, *An infinite dimensional integral identity for the Segal-Bargmann transform*, Proceedings of the American Mathematical Society 135 (2007), 2995-3003.
40. Vochita Mihai and Ambar N. Sengupta, *The Radon-Gauss transform*, Soochow J. Math. **33**, 415-434 (2007).
41. Ambar N. Sengupta, *Traces in Two-Dimensional QCD: The Large- N Limit*, pages 193-212 in ‘Traces in Geometry, Number Theory and Quantum Fields’, edited by Sergio Albeverio, Matilde Marcolli, Sylvie Paycha, and Jorge Plazas, published by Vieweg (2008). <http://www.math.lsu.edu/~sengupta/papers.html>
42. Ambar N. Sengupta, *Gauge Theory in Two Dimensions: Topological, Geometric and Probabilistic Aspects*, pages 109-129 in ‘Stochastic Analysis in Mathematical Physics’ edited by Gerard Ben Arous, Ana Bela Cruzeiro, Yves Le Jan, and Jean-Claude Zambrini, published by World Scientific (2008). Online at <http://arxiv.org/abs/0707.4136>

43. Saikat Chatterjee, Amitabha Lahiri, Ambar N. Sengupta, *Negative forms and path space forms*, International Journal of Geometric Methods in Modern Physics, Vol. 5, No. 4 (June 2008) 573-586.
44. Eric Hillebrand and Ambar N. Sengupta, *Pricing Functionals and Measures*, Communications on Stochastic Analysis, Vol. 2 Number 1 (2008) 53-70.
45. Ambar N. Sengupta, *The Large- N Yang-Mills Field on the Plane and Free Noise*, pages 121-132 in “Geometric Methods in Physics - Proceedings of the XVII Workshop on Geometric Methods in Physics” edited by P. Kielanowski, A. Odziejewicz, M. Schlichenmaier, and T. Voronov, published by the American Institute of Physics (2008). Online at <http://www.math.lsu.edu/~sengupta/papers/YMfreeSengupta16Sep08.pdf>
46. Ambar N. Sengupta, *Finite Geometries with Qubit Operators*, Infinite Dimensional Analysis, Quantum Probability, and Related Topics, Volume: 12, Issue: 2 (2009) pp. 359-366.
47. Saikat Chatterjee, Amitabha Lahiri, Ambar N. Sengupta, *Parallel Transport over Path Spaces*, Reviews in Mathematical Physics **9** (2010) 1033-1059.
48. Chao Meng and Ambar N. Sengupta, *CDO tranche sensitivities in the Gaussian Copula Model*, Communications on Stochastic Analysis, vol. 5, no. 2, June 2011, 387-403.
49. Ambar N. Sengupta, *Yang-Mills in Two Dimensions and Chern-Simons in Three*, in *Chern-Simons Theory: 20 years after*, Editors Jorgen Ellegaard Anderson, Hans U. Boden, Atle Hahn, and Benjamin Himpel. AMS/IP Studies in Advanced Mathematics (pp. 311-320), July 2011.
50. Eric Hillebrand, Ambar N. Sengupta, and Junyue Xu, *Impact of Correlation Fluctuations on Securitized Structures*, in “Handbook of Modeling High-Frequency Data in Finance”, Editors Frederi G. Viens, Maria C. Mariani, Ionut Florescu. Wiley (2011).
51. Michael Anshelevich and Ambar N. Sengupta, *Quantum Free Yang-Mills on the Plane*, Journal of Geometry and Physics, Volume 62, Issue 2, February 2012, Pages 330343.
52. Jeremy J. Becnel and Ambar N. Sengupta, *A Support Theorem for a Gaussian Radon Transform in Infinite Dimensions*, Transactions of the American Mathematical Society, **364** (2012), 1281-1291.
53. Eric Hillebrand, Ambar N. Sengupta, Junyue Xu, *Serially Correlated Defaults in Subprime Securitization*, Communications on Stochastic Analysis, Vol. 6, Number 3 (2012) 487-511.
54. Irina Holmes and Ambar N. Sengupta, *A Gaussian Radon Transform for Banach Spaces*, Journal of Functional Analysis, Volume 263, Issue 11, 1 December 2012, Pages 3689-3706.
55. Saikat Chatterjee, Amitabha Lahiri, Ambar N. Sengupta, *A Morphism Double Category and Monoidal Structure*, Algebra, Volume 2013 (2013), Article ID 460582.
56. Claas Becker and Ambar N. Sengupta, *Identities and Inequalities for CDO Tranche Sensitivities*, Communications on Stochastic Analysis, vol. 7, no. 3 (2013).

57. Saikat Chatterjee, Amitabha Lahiri and Ambar N. Sengupta, *Path space Connections and Categorical Geometry*, Journal of Geometry and Physics, Volume 75, January 2014, Pages 129–161.
58. Saikat Chatterjee, Amitabha Lahiri and Ambar N. Sengupta, *Twisted actions of categorical groups*, Theory and Applications of Categories, Vol. 29, 2014, No. 8, pp 215-255.
59. Irina Holmes and Ambar N. Sengupta, *The Gaussian Radon Transform in Classical Wiener Space*. Communications on Stochastic Analysis Vol 8, No. 2 (2014) 247-268.

Refereed expository papers

60. Ambar Sengupta, *The Yang-Mills Measure for the Two-Sphere*, in Differential Geometry II: Geometry and Mathematical Physics, PSUPM342 (American Mathematical Society), 539-546 (1993).
61. Ambar Sengupta, *Quantum Yang-Mills Theory on Compact Surfaces*, in Stochastic Analysis and Applications in Physics, ed. A.I. Cardoso et al., NATO ASI Series, Kluwer Academic Publishers (1994).
62. Jeremy J. Becnel and Ambar N. Sengupta, *White Noise Analysis: Background and a Recent Application*, 18 pages, in “Infinite-dimensional Stochastic Analysis honoring H.-H. Kuo”, edited by P. Sundar and Ambar N. Sengupta, World Scientific (2008).
63. Saikat Chatterjee, Amitabha Lahiri, Ambar N. Sengupta, *Path space forms and surface holonomy*, in “Geometric Methods in Physics - Proceedings of the XVII Workshop on Geometric Methods in Physics” edited by P. Kielanowski, S. Twareque Ali, A. Odziejewicz, M. Schlichenmaier, and T. Voronov, published by the American Institute of Physics (December 2009).

Accepted papers

64. Irina Holmes and Ambar N. Sengupta, *The Gaussian Radon Transform and Machine Learning*. (2014) Accepted for publication in Infinite Dimensional Analysis, Quantum Probability, and Related Topics.
65. Claas Becker and Ambar N. Sengupta, *Gaussian Inequalities and Tranche Sensitivities*, accepted to appear in the *Handbook of High-Frequency Trading and Modeling in Finance*. (2014)
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1. Sergio Albeverio and Ambar N. Sengupta, *Complex Phase Space and Weyl's Commutation Relations*. (2014) Submitted.
2. Saikat Chatterjee, Amitabha Lahiri and Ambar N. Sengupta, *Connections on decorated path space bundles*. (2014) Submitted.
3. Saikat Chatterjee, Amitabha Lahiri and Ambar N. Sengupta, *Twisted-Product Categorical Bundles*. (2015) Submitted.
4. Ambar N. Sengupta, *The Gaussian Radon Transform as a Limit of Spherical Transforms*. (2015) Submitted.
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- Ambar N. Sengupta, *Pricing Derivatives: The Financial Concepts Underlying the Mathematics of Pricing Derivatives*, McGraw-Hill (2005).
- Ambar N. Sengupta, *Representing Finite Groups: A Semisimple Introduction*, Springer (2011).

Edited Books

- *Finite and Infinite dimensional Analysis in Honor of Leonard Gross*, Edited by Hui-Hsiung Kuo and Ambar N. Sengupta, *Contemporary Mathematics Series*, American Mathematical Society (2003).
- *Infinite Dimensional Analysis Honoring H.-H. Kuo*, edited by Ambar N. Sengupta and P. Sundar, World Scientific (2008).

Other works

The following are available through my webpage:

- Ambar N. Sengupta, *Representations of Algebras and Finite Groups: An Introduction*
- Ambar N. Sengupta, *Notes in Introductory Real Analysis* (123 pages)
- Ambar N. Sengupta, *Topics in Number Theory, Algebra, and Geometry* (77 pages)

Online academic activity

I maintain a blog <http://ambarnsg.wordpress.com/> Although most of it is used for collaborative research work, part of it is public.