

Some Invited Talks

by S. G. Rajeev

March 2006

1. **Spectral Gap for Laplace and Schrödinger Operators** Workshop on 2+1 Yang-Mills Theory, CCNY Jan 2007 (Scheduled).
2. **Randomness and Geometry of Two Dimensional Turbulence** Workshop on Complex Matter, Syracuse University December 2006
3. **Stochastic Geometry of Two Dimensional Hydrodynamics** Felix Klein Seminar, Department of Mathematics, Notre Dame, Indiana November 2006
4. **Randomness and Geometry in Hydrodynamics** Department of Mathematics Colloquium, Louisiana State University, Baton Rouge, LA October 2006.
5. **Quantization of Contact Geometry** XXVIth International Colloquium on Group Theoretical Methods in Physics, New York June 2006
6. **Incompressible Hydrodynamics** Mathematics Department, University of Metz, France May 2006
7. **Quantum Geometry applied to Classical Fluids** Seminar at CCNY March 2006
8. **Geometrical and Topological Methods in the Physics of Fluids** University of Rochester Colloquium Feb 2006
9. **Quantization of Contact Manifolds** Workshop on Non-Commutative Geometry at the SN Bose National Centre for Basic Sciences, Kolkata, India, Jan 2006
10. **A Model of Dissipation in Fluids** Colloquium at the Virginia Polytechnic Institute Fall 2005
11. **Random Matrices** Mathematical Physics seminar University of Rochester Sep 2005
12. **Incompressible Fluids** Invited talk at the MRST conference SUNY Utica May 2005
13. **Neither Newton nor Leibnitz: The Pre-History of Calculus in Medieval Kerala** Six Lectures Supported by the Oshei Foundation at Canisius College, Buffalo, NY March 2005.
14. **Yangian Symmetry in Yang-Mills Theories** Dept of Physics, Cornell University Dec 2004
15. **The Simple Pendulum and the Rigid Body** Dept of Physics, Mahatma Gandhi University, Kottayam, India June 2004.
16. **Non-commutative Entropy** Institute for Mathematical Sciences, Chennai, India June 2004.
17. **Matrix Models and Spin Chains** Institute for Mathematical Sciences, Chennai, India June 2004.
18. **Bound States in Strongly Coupled Yukawa Theory** Dept of Physics, University of Kentucky, Lexington April 2004.
19. **Ricci Flow** Mathematical Physics Seminar, U. of Rochester Jan 2004.

20. **The Ricci Flow With Torsion**
Institute for Mathematical Sciences, Chennai, India Dec 2003.
21. **The Ricci Flow**
Seminar at the Center for Theoretical Studies, Bangalore India Dec 2003.
22. **The Ricci Flow**
Seminar at the Bose Institute for Basic Sciences, Kolkata India Dec 2003.
23. **Random Matrices**
Seminar at the Saha Institute, Kolkata, India Dec 2003.
24. **Monotonicity in the Ricci Flow**
Seminar at the Indian Institute of Technology, Kawnpur, India Dec 2003.
25. **The Fundamental Constituents of Matter**
Colloquium at CMS College, Kottayam, India Dec 2003.
26. **Matrix Model of Two Dimensional Turbulence**
Seminar at the Mahatma Gandhi University, Kottayam, India Dec 2003.
27. **The Ricci Flow with Torsion**
Talk at the Workshop "Geometry and Topology inspired by Physics" 4-8, December, 2003 Kochi, Kerala, India.
28. **Matrix Regularization of Symplectic and Conformally invariant Theories**
Invited talk at the Workshop on Branes and Generalized Dynamics October 20-24, 2003. Spires Conf Number C03/10/20.2, Argonne National Laboratory
<http://www.hep.anl.gov/czachos/ANLworkshop.html>
29. **An Invitation to Theoretical Physics**
Talk to the Freshman physics class at SUNY Oswego, Oct 1, 2003 (Host Alok Kumar).
30. **Three Dimensional Simplicial Yang-Mills Theory: An Approach to the Mass Gap**
Talk at the Third Conference on Quantum Theory and Symmetries at the University of Cincinnati, Sep 10-14 2003
31. **A Theory of Errors in Quantum Computation**
Invited talk at Spacetime and Fundamental Interactions: Quantum Aspects,
A conference to honour A. P. Balachandran's 65th birthday
32. **Yang-Mills Theories**
Mathematical Physics seminar, Dept. of Physics and Astronomy, U. of Rochester.
33. **Yang-Mills Theory on Loop Space**
Plenary Talk at the MRST Conference in honor of J. Schechter, Syracuse, May 2003.
34. **On K.T. Chen's Iterated Integrals in Gauge Theories**
April 2003 Department of Mathematics, University of Rochester
35. **A Theory of Errors in Quantum Measurement**
April 2003 Quantum Information Seminar, Departments of Physics and Optics, U. of Rochester
36. **Entropy in Physics and Probability Theory**
March 2003, Colloquium, Department of Mathematics, Canisius College, Buffalo.
37. **NonCommutative Geometry in a Model for Turbulence**
The Institute of Mathematical Sciences Workshop on NON COMMUTATIVE GEOMETRY AND QUANTUM FIELD THEORY, Chennai, India January 2003.
38. **Entropy in Matrix Models** Seminar at the Graduate Center, City University of New York, January 2003.

39. **Feynman Integrals and Non-commutative Probability Theory**
Invited talk at the Mathematical Sciences Research Institute, Berkeley, December 2002
as part of the Program The Feynman Integral Along with Related Topics and Applications
40. **Entropy in Hydrodynamics**
November 2002, Colloquium, Department of Physics, SUNY Genesee.
41. **Large N Limits in Atomic Physics**
November 2002 Operator Algebra Seminar at the Mathematics Department, University of California, Berkeley.
42. **Entropy in Matrix Models**
Invited talk at the Erwin Schrödinger Institute, Vienna, October 2002
as part of the Program on Noncommutative geometry and quantum field theory, Feynman diagrams in mathematics and physics
43. **Neo-Classical Limits of Quantum Theories**
October 2002, Feza Gursey Institute, Istanbul.
44. **Variational Principles for Large N Matrix Models**
Invited talk at the Erwin Schrödinger Institute, Vienna, September 2002
as part of the Program on Noncommutative geometry and quantum field theory, Feynman diagrams in mathematics and physics
45. **New Classical Limits of Quantum Theories**
Invited talk at La 70ème RENCONTRE entre PHYSICIENS THÉORICIENS ET MATHÉMATIENS
held at l'Institut de Recherche Mathématique Avancée de Strasbourg
May 2002 on the topic
INFINITE DIMENSIONAL GROUPS AND MANIFOLDS, IN MATHEMATICS AND QUANTUM PHYSICS
46. **Entropy as Cohomology of Free Algebras** Invited talk at the Workshop on "Free Probability and Random Matrices", Fields Institute, Toronto, Canada, Dec 2001.
47. **NonCommutative Integration in Physics** Mathematics department, University of Waterloo, Canada, Nov 2000.
48. **Vector Fields in Non-Commutative Geometry** Invited talk at the MidWestern Geometry Conference, University of Iowa, Nov 2000.
49. **Structure of the Proton: Soliton or Bound State** Departmental Colloquium, Syracuse University, Nov 2000.
50. **Structure Functions of Hadrons** , Lattice QCD 2000, Bangalore August 2000.
51. **Derivations of Cuntz Algebras and Vector Fields in Non-Commutative Geometry** , International Congress of Mathematics Physics, London July 2000
52. **A String Field Theory of Strong Interactions Equivalent to QCD** QCD00, Montpellier July 2000.
53. **Two Dimensional Quantum HadronDynamics** , "From Strings to Hadrons", Heidelberg, June 2000.
54. **Renormalization of Bound States** U. of Iowa April 2000.
55. **The Challenge of the Twentyfirst Century: Strong Interaction Physics** Departmental Colloquium, U. of Iowa April 2000.
56. **Confinement and Asymptotic Freedom in a Matrix Model** Syracuse University, March 2000.
57. **Invariants of Plane Curves from Two Dimensional Gauge Theory** Topology Seminar at the U. of Rochester Mathematics Department. Feb 2000.

58. **Renormalization in Quantum Mechanics and New Measures for Path Integrals** AMS National meeting, January 2000.
59. **Structure Functions of the Proton** Orbis Scientiae Conference, Ft; Lauderdale, Florida. Dec 1999.
60. **Derivation of the Structure Functions of the Proton** U. of Delaware, November 1999.
61. **Structure of the Proton** HERMES workshop, MIT, Oct 1999.
62. **Structure Functions of the Protons from a Soliton Model** Departmental Colloquium, University of Florida, September 1999
63. **Two Dimensional Hadron Dynamics** Particle Physics Seminar, U. of Florida, September 1999.
64. **Structure of the Proton** Two Invited Talks at the Workshop on Quantum Field Theory, Pacific Insitute of Mathematical Sciences, University of British Columbia, August 1999.
65. **Solitons** Association of Physics Teachers, University College, Trivandrum, India July 1999
66. **Particle Physics Today** University of Kerala, Kariavattom, Trivandrum, India, July 1999
67. **Geometry of Grassmannians and the Structure of the Proton** , AMS Sectional meeting April 24, 1999 .
68. **What is Inside a Proton?** Colloquium, Department of Physics and Astronomy, University of Rochester, February 99.
69. **Particle Physics Today** , University College, Trivandrum, India, December 1998.
70. **Graduate Education in Physics at American Universities** , University College, Trivandrum, India, December 1998.
71. **Large N limit of Yang–Mills Theories** , Set of talks at the Mittag–Lefler Institute, Stockholm, Program on Topology and Quantum Field Theory, September–October 98.
72. **Mathematical Principles of Hadronic Structure** , set of 15 lectures at Feza Gursey Institute, Istambul, Turkey, August 98.
73. **Structure Functions of Hadrons** , SISSA Summer Institute, Trieste, Italy, July 98.
74. **Large N Quantum Chromodynamics** , PASCOS conference, Boston, Mar 98.
75. **Matrix Models of Hadron Masses** , Orbis Scientiae II conference in Miami Florida, Dec. 97.
76. **Two Dimensional Quantum Hadron Dynamics** , U. of Montreal, Oct 97.
77. **Symmetry Algebras of Planar Matrix Models** , Institut de Hautes Etudes Scientifiques, Paris May 1997.
78. **Conformal Field Theory in Four Dimensions** , Orbis Scientiae conference in Miami, Florida, Jan 1997.
79. **Poisson Algebra of Wilson Loops** , Erwin Schrodinger Institute, Vienna July 1995.
80. **Kahler Metric on Universal Teichmuller Space** , Erwin Schrodinger Institute, Vienna July 1995.
81. **Geometry of Quantum Yang–Mills Theory** State University of New York at Buffalo, Nov. 1994.
82. **Two Dimensional Hadron Dynamics and Open String Field Theory** , Univ. of North Carolina Oct 1994
83. **Two Dimensional Hadron Dynamics and Open String Field Theory** , Iowa State University Oct 1994
84. **Two Dimensional Hadron Dynamics** Chalmers Institute of Technology, Göteborg, Sweden March 1994.

85. **Two Dimensional Hydrodynamics** Royal Institute of Technology, Stockholm, March 1994.
86. **Renormalization in Quantum Mechanics** ,Pennsylvania State University, Feb 94.
87. **Two dimensional Hadron Theory** , Pennsylvania State University, Feb 94.
88. **Two dimensional Hadron Theory** , Cornell University, Feb 94
89. **Two Dimensional Hadron Theory** , State University of New York at Buffalo, Nov. 93
90. **Introduction to Quantum Groups** , University of Naples, Naples, Italy, August 1993
91. **Two Dimensional Hadron Theory** , University of Naples, Naples, Italy, July 1993
92. **Strong Interactions** , Society of Physics Students, University of Rochester, April 1993.
93. **Two Dimensional Hadron Theory** Trinity College, Dublin, Ireland, June 1993
94. **Two Dimensional Hadron Theory** University of Cincinnati, Feb. 1993
95. **Towards a theory of Strong Interactions** University of Iowa, Feb. 1993
96. **Two Dimensional Hadron Theory** , Syracuse University, Feb. 1993
97. **Three Dimensional QCD and Current Algebra** Talk at the XXVIth International Conference on High Energy Physics, Dallas, Texas, August 1992
98. **Three Dimensional QCD** , International Center for Theoretical Physics and SISSA, Trieste, Italy, July 1992.
99. **Three Dimensional QCD** , Department of Physics, University of Naples, Naples, Italy, July 1992.
100. **Introduction to Quantum Groups and Poisson Lie Groups** , Series of Talks at the Department of Physics, University of Naples, Naples, Italy, July 1992.
101. **Two Dimensional Meson Theory** , Department of Mathematics, University of Jyvaskyla, Finland, November 1991.
102. **Meson Theory and QCD** , Lectures at the Helsinki-Leningrad Summer School, University of Helsinki, September 1991.
103. **Two-Dimensional Meson Theory** , Lectures at the Summer School on High Energy Physics and Cosmology, ICTP, Trieste. August 1991
104. **Anomalous Scaling of Strong Interactions at Low Energies** , Invited Talk at the ICTP Workshop on Superstrings, August 1991.
105. **Non-Commutative Generalizations of Yang-Mills Theory** , Invited Talk at the Lepton-Photon Symposium, Geneva, Switzerland. July 1991.
106. **Matrix Models with Global $SO(3)$ Invariance** , Invited talk at the XXth Differential Geometry Conference, Baruch College, New York. June 1991
107. **Matrix Models for Gauge Theories** , University of California at Los Angeles, April 1991.
108. **Non-perturbative Approach to Gauge Theories** , Series of talks at California Institute of Technology, April 1991
109. **Matrix Models for Gauge Theories** , University of Southern California, April 1991.
110. **Non-Perturbative Approaches to Gauge Theory** , University of British Columbia, February, 1991
111. **Bose-Fermi Correspondence and Number Theory** , Simon Fraser University, February, 1991.
112. **Matrix Models for Gauge Theories** , Fermilab, February 1991.

113. **Yang–Mills Theories and Matrix Models** , Indian Institute of Physics, Bangalore, India, January 1991.
114. **Universal Yang–Mills Theory** Los Alamos National Laboratory, December 1990
115. **Non–perturbative methods in Yang–Mills Theory** Aspen Institute of Physics, Aspen, Colorado, August, 1990.
116. **Universal Yang–Mills Theory** Princeton University (Joint Theory Seminar with Institute for Advanced Study) April 1990
117. **Universal Yang–Mills Theory** Cornell University, March 90