

Curriculum vitae

Thomas M. Schäfer

Department of Physics

North Carolina State University

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Professional Experience

Distinguished Professor

Department of Physics, North Carolina State University, 2012-present.

Professor of Physics

Department of Physics, North Carolina State University, 2006-present.

Associate Professor

Department of Physics, North Carolina State University, 2003-2005.

Associate Professor

Department of Physics, SUNY Stony Brook, 2003-2004.

Assistant Professor

Department of Physics, SUNY Stony Brook, 2000-2002.

Fellow

Riken-BNL Research Center, Brookhaven National Laboratory, 2000-2004.

Member

Institute for Advanced Study, Princeton, New Jersey, 1998-1999.

Research Associate

Institute for Nuclear Theory, University of Washington, Seattle, 1995-1998.

Research Associate

State University of New York at Stony Brook, 1992-1995.

Visiting Appointments

Visiting Assistant Professor

Department of Physics, Duke University, 2002.

Visiting Scientist

TRIUMF, Vancouver, Canada, 1999-2000.

Higher Education

University of Giessen

1984-1986, Prediploma (1986).

1987-1989, Diploma, with distinction, 1989.

Adviser, Prof. Dr. U. Mosel

University of Washington

1986-1987

University of Regensburg

1989-1992, Ph.D., summa cum laude, 1992.

adviser: Prof. Dr. W. Weise

Awards and Honors

Member

Studienstiftung des deutschen Volkes, 1984-89.

Fellowship

German Academic Exchange Service (DAAD), 1986-87.

Feodor Lynen Fellowship

Alexander v. Humboldt Foundation, 1992-94.

Outstanding Junior Investigator

Department of Energy, Division of Nuclear Physics, 2002.

Fellow

American Physical Society, 2006.

Community Service

Divisional Associate Editor

and Member of the Editorial Board,

Physical Review Letters, 2005-2007, 2008-2010.

Lead-organizer

Workshop on “Dense Matter: From Lattices to Stars”,
Institute for Nuclear Theory, Seattle, 2004.

Organizer

Vth workshop on QCD in Extreme Conditions, Raleigh, 2008.

Co-organizer

Workshop on QCD Phase Transitions, Brookhaven National Laboratory, 1998.

Co-organizer

Conference on Physics and Astronomy at the Millennium, Stony Brook, 2000.

Co-organizer

Quark Matter 2001 Conference, Stony Brook, 2001.

Co-organizer

Workshop on “The First Three Years of Heavy-Ion Physics at RHIC”,
Institute for Nuclear Theory, Seattle, 2003.

Co-organizer

Extremely Strong Quark Gluon Plasma, honoring Edward Shuryak
on the occasion of his 60th birthday, Stony Brook, 2008.

Co-organizer

Quark Matter 2009 Conference, Knoxville, 2009.

Co-organizer

Workshop on Nearly Perfect Fluids: From Quark Gluon Plasma
to Ultra-Cold Atoms, Research Triangle Park, 2009.

Member

Program Committee, Division of Nuclear Physics,
American Physical Society, 2004-2005.

National Advisory Committee

National Institute for Nuclear Theory (INT), 2008-2010.

International Advisory Committee

Workshop on QCD in Extreme Conditions.

Publications in Refereed Journals:

1. U. Kalmbach, T. Schäfer, T. S. Biro, U. Mosel, Dirac Sea Effects in the Chiral Quark Soliton Model, Nucl. Phys. A513 (1990) 621.
2. A. Hosaka, T. Schäfer, U. Kalmbach, Spin Structure of the Nucleon in a Non-topological Chiral Soliton Model, Z. Phys. A337 (1990) 447.
3. T. Schäfer, W. Weise, Neutral Pion Photoproduction at Threshold and Explicit Chiral Symmetry Breaking, Phys. Lett. B250 (1990) 6.
4. T. Schäfer, W. Weise, Threshold Pion Photoproduction and chiral Models of the Nucleon, Nucl. Phys. A 531 (1991) 520.
5. T. Schäfer, V. Koch, G. E. Brown, Charge Symmetry Breaking and the Neutron Proton Mass Difference, Nucl. Phys. A562 (1993) 644.
6. T. Schäfer, E. V. Shuryak, J. J. M. Verbaarschot, Baryonic Correlators in the Random Instanton Vacuum, Nucl. Phys. B412 (1994) 143.
7. T. Schäfer, E. V. Shuryak, Hadronic Wave Functions in the Instanton Model, Phys. Rev. D50 (1994) 478.
8. T. Schäfer, E. V. Shuryak, J. J. M. Verbaarschot, The Chiral Phase Transition and Instanton-Antinstanton Molecules, Phys. Rev. D51 (1995) 1267.
9. T. Schäfer, E. V. Shuryak, Instantons and Glueballs, Phys. Rev. Lett. 75 (1995) 1707.
10. T. Schäfer, E. V. Shuryak, Can Hadrons Survive the Chiral Phase Transition ?, Phys. Lett. B356 (1995) 147.
11. T. Schäfer, E. V. Shuryak, The Interacting Instanton Liquid in QCD at Zero and Finite Temperature, Phys. Rev. D53 (1996) 6522.
12. T. Schäfer, E. V. Shuryak, Hadronic Correlators in the Interacting Instanton Liquid, Phys. Rev. D54 (1996) 1099.

13. T. Schäfer, The $U(1)_A$ Anomaly at Finite Temperature, Phys. Lett. B389 (1996) 445.
14. E. V. Shuryak, T. Schäfer, The QCD Vacuum as an Instanton Liquid, Ann. Rev. of Nucl. Part. Sc. 47 (1997) 359-394.
15. T. Schäfer, E. V. Shuryak, The Instanton Liquid in QCD, Rev. Mod. Phys. 70 (1998) 323-426.
16. T. Schäfer, Instantons and the Chiral Phase Transition at non-zero Baryon Density, Phys. Rev. D57 (1998) 3950.
17. R. Rapp, T. Schäfer, E. V. Shuryak, and M. Velkovsky, Diquark Bose Condensates in High Density Matter and Instantons, Phys. Rev. Lett. 81 (1998) 53.
18. T. Schäfer and F. Wilczek, High Density Quark Matter and the Renormalization Group in QCD with Two and Three Flavors, Phys. Lett. B450 (1999) 325.
19. T. Schäfer and F. Wilczek, Continuity of Quark and Hadron Matter, Phys. Rev. Lett. 82 (1999) 3956.
20. T. Schäfer and F. Wilczek, Quark Description of Hadronic Phases, Phys. Rev. D60 (1999) 074014.
21. R. Rapp, T. Schäfer, E. V. Shuryak, and M. Velkovsky, High Density QCD and Instantons, Ann. of Phys. 280 (2000) 35.
22. T. Schäfer and F. Wilczek, Superconductivity from Perturbative Gluon Exchange in High Density Quark Matter, Phys. Rev. D60 (1999) 114033.
23. T. Schäfer, Patterns of Symmetry Breaking in QCD at High Density, Nucl. Phys. B575 (2000) 269.
24. T. Schäfer, Gluino Condensation in an Interacting Instanton Ensemble, Phys. Rev. D62 (2000) 035013.

25. T. Schäfer, Quark Hadron Continuity in QCD with one Flavor, Phys. Rev. D62 (2000) 094007.
26. T. Schäfer, Kaon Condensation in High Density Quark Matter, Phys. Rev. Lett. 85 (2000) 5531.
27. T. Schäfer and E. Shuryak, Implications of the Aleph Tau-Lepton Decay Data for Perturbative and Non-Perturbative QCD, Phys. Rev. Lett. 86 (2001) 3973.
28. T. Schäfer, Possible Color Octet Quark Anti-quark Condensate in the Instanton Model, Phys. Rev. D64 (2001) 037501.
29. P. F. Bedaque and T. Schäfer, High Density Quark Matter under Stress, Nucl. Phys. A697 (2002) 802.
30. T. Schäfer, D. T. Son, M. A. Stephanov, D. Toublan and J. J. Verbaarschot, Kaon Condensation and Goldstone's Theorem, Phys. Lett. B522 (2001) 67.
31. T. Schäfer, Mass Terms in Effective Theories of High Density Quark Matter, Phys. Rev. D 65 (2002) 074006.
32. T. Schäfer, Instanton Effects in QCD at High Baryon Density, Phys. Rev. D **65**, (2002) 094033.
33. P. Jaikumar, M. Prakash and T. Schäfer, Neutrino Emission from Goldstone Modes in Dense Quark Matter, Phys. Rev. D **66**, 063003 (2002).
34. T. Schäfer, Instantons in QCD with Many Colors, Phys. Rev. D **66**, 076009 (2002).
35. T. Schäfer, QCD and the Eta Prime Mass: Instantons or Confinement?, Phys. Rev. D **67**, 074502 (2003).
36. V. Zetocha and T. Schäfer, Instanton Contribution to Scalar Charmonium and Glueball Decays, Phys. Rev. D **67**, 114003 (2003).

37. T. Schäfer, Hard Loops, Soft Loops, and High Density Effective Field Theory, Nucl. Phys. A **728**, 251 (2003).
38. T. Schäfer, Instantons and scalar multiquark states: From small to large N_c , Phys. Rev. D **68**, 114017 (2003).
39. T. Schäfer and V. Zetocha, Instantons and the spin of the nucleon, Phys. Rev. D **69**, 094028 (2004).
40. D. Lee, B. Borasoy and T. Schäfer, Nuclear lattice simulations with chiral effective field theory, Phys. Rev. C **70**, 014007 (2004).
41. T. Schäfer and K. Schwenzer, Non-Fermi Liquid Effects in QCD at high Density, Phys. Rev. D **70**, 054007 (2004).
42. J. W. Chen, D. Lee and T. Schäfer, Inequalities for Light Nuclei in the Wigner Symmetry Limit, Phys. Rev. Lett. **93**, 242302 (2004).
43. T. Schäfer and K. Schwenzer, Neutrino emission from ungapped quark matter, Phys. Rev. D **70**, 114037 (2004).
44. A. Kryjevski and T. Schäfer, An effective theory for baryons in the CFL phase, Phys. Lett. **606**, 52 (2005).
45. A. Kryjevski, D. B. Kaplan and T. Schäfer, New phases in CFL quark matter, Phys. Rev. D **71**, 034004 (2005).
46. D. Lee and T. Schäfer, Neutron matter on the lattice with pionless effective field theory, Phys. Rev. C **72**, 024006 (2005).
47. T. Schäfer, C. W. Kao and S. R. Cotanch, Many Body Methods and Effective Field Theory, Nucl. Phys. A **762**, 82 (2005).
48. T. Schäfer, Meson supercurrent state in high density QCD, Phys. Rev. Lett. **96**, 012305 (2006).

49. D. Lee and T. Schäfer, Cold dilute neutron matter on the lattice I: Lattice virial coefficients and large scattering lengths, *Phys. Rev. C* **73**, 015201 (2006).
50. D. Lee and T. Schäfer, Cold dilute neutron matter on the lattice II: Results in the unitary limit, *Phys. Rev. C* **73**, 015202 (2006).
51. T. Schäfer and K. Schwenzer, Low energy dynamics in ultradegenerate QCD matter, *Phys. Rev. Lett.* **97**, 092301 (2006).
52. A. Gerhold and T. Schäfer, Meson current in the CFL phase, *Phys. Rev. D* **73**, 125022 (2006).
53. T. Schäfer, The Kohn-Luttinger effect in gauge theories, *Phys. Rev. D* **74**, 054009 (2006).
54. G. Rupak, T. Schäfer and A. Kryjevski, Polarized fermions in the unitarity limit, *Phys. Rev. A*, **75**, 023606 (2007).
55. A. Gerhold, T. Schäfer and A. Kryjevski, Goldstone boson currents in a kaon condensed CFL phase, *Phys. Rev. D* **75**, 054012 (2007).
56. M. G. Alford, M. Braby, S. Reddy and T. Schäfer, Bulk viscosity due to kaons in color-flavor-locked quark matter, *Phys. Rev. C* **75**, 055209 (2007).
57. G. Rupak and T. Schäfer, Shear viscosity of a superfluid Fermi gas in the unitarity limit, *Phys. Rev. A* **76**, 053607 (2007).
58. T. Schäfer, The Shear Viscosity to Entropy Density Ratio of Trapped Fermions in the Unitarity Limit, *Phys. Rev. A* **76**, 063618 (2007).
59. M. G. Alford, K. Rajagopal, T. Schäfer and A. Schmitt, Color superconductivity in dense quark matter, *Rev. Mod. Phys.* **80**, 1455 (2008).
60. R. J. Furnstahl, G. Rupak, and T. Schäfer, Effective Field Theory and Finite Density Systems, *Ann. Rev. Nucl. Part. Sci.* **58**, 1 (2008).

61. T. Schäfer, Euclidean correlation functions in a holographic model of QCD, Phys. Rev. D **77**, 126010 (2008).
62. G. Rupak and T. Schäfer, Density Functional Theory for non-relativistic Fermions in the Unitarity Limit, Nucl. Phys. A **816**, 52 (2009).
63. T. Schäfer and D. Teaney, Nearly Perfect Fluidity: From Cold Atomic Gases to Hot Quark Gluon Plasmas, Rept. Prog. Phys. **72**, 126001 (2009).
64. M. Braby, J. Chao and T. Schäfer, Thermal conductivity of color-flavor locked quark matter, Phys. Rev. C **81**, 045205 (2010).
65. M. Braby, J. Chao and T. Schäfer, Thermal Conductivity and Sound Attenuation in Dilute Atomic Fermi Gases, Phys. Rev. **A82**, 033619 (2010).
66. C. Cao, E. Elliott, J. Joseph, H. Wu, J. Petricka, T. Schäfer and J. E. Thomas, Universal Quantum Viscosity in a Unitary Fermi Gas, Science **331**, 58 (2011).
67. T. Schäfer, Dissipative fluid dynamics for the dilute Fermi gas at unitarity: Free expansion and rotation, Phys. Rev. A **82**, 063629 (2010).
68. J. Chao, M. Braby, T. Schäfer, Viscosity spectral functions of the dilute Fermi gas in kinetic theory, New J. Phys. **13**, 035014 (2011).
69. K. Dusling, T. Schäfer, Elliptic flow of the dilute Fermi gas: From kinetics to hydrodynamics, Phys. Rev. A **84**, 013622 (2011).
70. J. Chao, T. Schäfer, Conformal symmetry and non-relativistic second order fluid dynamics, preprint [arXiv:1108.4979 [hep-th]], Ann. Phys. in press.
71. K. Dusling, T. Schäfer, Bulk viscosity, particle spectra and flow in heavy-ion collisions, Phys. Rev. C **85**, 044909 (2012).
72. T. Schäfer, Shear viscosity and damping of collective modes in a two-dimensional Fermi gas, Phys. Rev. A **85**, 033623 (2012).

73. E. Poppitz, T. Schäfer and M. Unsal, Continuity, Deconfinement, and (Super) Yang-Mills Theory, JHEP, in press (2012).

Preprints:

74. A. Adams, L. D. Carr, T. Schäfer, P. Steinberg and J. E. Thomas, Strongly Correlated Quantum Fluids: Ultracold Quantum Gases, Quantum Chromodynamic Plasmas, and Holographic Duality, preprint, arXiv:1205.5180 [hep-th].
75. K. Dusling and T. Schäfer, Quasiclassical molecular dynamics for the dilute Fermi gas at unitarity, arXiv:1207.5068 [cond-mat.quant-gas].
76. C. Chafin and T. Schäfer, Hydrodynamic fluctuations and the minimum shear viscosity of the dilute Fermi gas at unitarity, arXiv:1209.1006 [cond-mat.quant-gas].

Book Chapters:

77. T. Schäfer, E. V. Shuryak, Phases of QCD at High Baryon Density, Proceedings of the ECT* International Workshop on Physics of Neutron Star Interiors (NSI00), Lect. Notes Phys. 578 (2001) 203-217, D. Blaschke, A. Sedrakian and N. K. Glendenning (eds), Springer Tracts in Modern Physics (2001).
78. T. Schäfer, Quark Matter, Proceedings of the BARC workshop on Quarks and Mesons, Bhabha Atomic Research Center, Mumbai, India (2003), in “Quarks and Mesons”, A. B. Santra et.al, Eds., Narosa Publishing House, New Dehli (2004).
79. T. Schäfer, Phases of QCD, in “Proceedings of the 20th Annual Hampton University Graduate Studies Program (HUGS 2005)”, World Scientific, Singapore.
80. T. Schäfer, The CFL phase and $m(s)$: An effective field theory approach, in “Pairing in fermionic systems: Basic concepts and modern applications”, Series on Advances in Quantum Many-Body Theory, Vol. 8, World Scientific Publishing, Singapore (2006).

81. T. Schäfer, Effective Theories of Dense (and Very Dense) Matter, Proceedings of the ECT* School on Renormalization Group and Effective Field Theory Approaches to Many Body Systems, Springer Tracts in Physics, in press (2012).
82. T. Schäfer and C. Chafin, Scaling Flows and Dissipation in the Dilute Fermi Gas at Unitarity, in “BCS-BEC crossover and the Unitary Fermi Gas”, Lect. Notes Phys. 836 (2012) 375-406, W. Zwerger (ed.), Springer Tracts in Modern Physics (2012).
83. M. G. Alford, K. Rajagopal, T. Schäfer and A. Schmitt, Color superconductivity in dense quark matter, to appear in “The Physics of Unusual Superfluids”, K. H. Bennemann and J. B. Ketterson, eds., Oxford University Press, in press (2012).

Lecture Notes, unpublished:

84. T. Schäfer, Instantons and Monte Carlo Simulations in Quantum Mechanics, Part of a series of Lectures delivered at Brookhaven (1998), Heidelberg (1999), Copenhagen (2001), hep-lat/0411010.

Articles in Popular Journals:

85. T. Schäfer, Tunnelvorgänge in QCD (Tunneling in QCD), Physikalische Blätter (German Physical Society magazine), 55:9 (1999) 52.
86. T. Schäfer, Squeezed Quark Matter, APCTP Bulletin, Asia Pacific Center for Theoretical Physics, Vol. 9-10 (2002) 10.
87. T. Schäfer, The RHIC Gold Rush, Physics World, 16:6 (2003) 31.
88. T. Schäfer, Nearly Perfect Fluidity, Physics 2, 88 (2009).

Conference Proceedings:

89. T. Schäfer, A Note on the Photoproduction Sigma Term, πN news letter 3 (1991), 100.

90. T. Schäfer, Neutral Pion Photoproduction at Threshold and Explicit Chiral Symmetry Breaking, Proceedings of the International Workshop on Pions and Nuclei, E. Oset et al., eds., World Scientific, Singapore (1991).
91. T. Schäfer, Instantons and the Chiral Phase Transition, Proceedings of the 8th Meeting of the Division of Particles and Fields of the American Physical Society, S. Seidel, ed., World Scientific, Singapore (1994).
92. T. Schäfer, The Chiral Phase Transition, Proceedings of Quark Matter 96, H. Specht et al., eds., Nucl. Phys. A610 (1996) 13c.
93. A. Blotz, T. Schäfer, E. Shuryak, Proton Spin in the Instanton Liquid Model, Proceedings of Baryons 95, B. F. Gibson et al., eds., World Scientific, Singapore (1996).
94. E. V. Shuryak, T. Schäfer, The Chiral Phase Transition in the Instanton Liquid, Proceedings of Lattice 96, C. Bernard et al., eds., Nucl. Phys. B (Proc. Supp.) 53, 472 (1997).
95. T. Schäfer, Progress in Instanton Liquid Calculations, Proceedings of the international conference on QCD: Chaos, Confinement and Collisions, E. Fried and B. Müller, eds., World Scientific, Singapore (1997).
96. T. Schäfer, QCD at Finite Baryon Density: Instantons and Color Superconductivity, Proceedings of Quark Matter 97, Nucl. Phys. A638 (1998) 511c.
97. T. Schäfer, Diquark Condensation in High Density Baryon Matter, Proceedings of the workshop on QCD at finite baryon density, Nucl. Phys. A642 (1998) 45.
98. T. Schäfer, Color Superconductivity: Chiral Symmetry Breaking, the Role of the Strange Quark, and Perturbative Results, Proceedings of Quark Matter 99, Nucl. Phys. A661 (1999) 621.
99. T. Schäfer, Color Superconductivity, Proceedings of Many Body X, R. Bishop et al., Eds., Int. J. Mod. Phys. B **15**, 1474 (2001)

100. T. Schäfer, Strange Goings on in Quark Matter, Proceedings of the Sixth Workshop on Non-Perturbative Quantum Chromodynamics, W. Fried and B. Mueller, Eds., World Scientific, Singapore (2001).
101. T. Schäfer, The Ground State of Strange Quark Matter, Proceedings of the International Conference on Statistical QCD, Bielefeld, Germany, Nucl. Phys. A 702, 167 (2002).
102. T. Schäfer, Superdense Matter, Proceedings of International Conference on the Physics and Astrophysics of the Quark Gluon Plasma, ICQGP-2001, Jaipur, India (2001), Pramana **60**, 697 (2003).
103. T. Schäfer, Instantons and the Large N_c Limit of QCD, Proceedings of the INT/Jefferson Laboratory Workshop: The Phenomenology of Large N_c QCD, Tempe, World Scientific, Singapore (2002).
104. T. Schäfer, Effective Theory of the CFL Phase, Proceedings of Quark Matter 2002, Nantes, France (2002), Nucl. Phys. A **715**, 879 (2003).
105. T. Schäfer, Loops and Power Counting in the High Density Effective Theory, Proceedings of the international Conference QCD at work, Bari, Italy (2003), published in eConf C030614:038 (2003).
106. T. Schäfer, Effective Theory of Superfluid Quark Matter, Proceedings of KIAS-APCTP International Symposium in Astro-Hadron Physics “Compact Stars: Quest for New States of Dense Matter”, Seoul, Korea, 2003, World Scientific, Singapore (2004).
107. K. Schwenzer and T. Schäfer, Non-Fermi Liquid Effects in Dense Matter and Neutron Star Cooling, Proceedings of the sixth Conference on Strong and Electroweak Matter, Helsinki, Finland, 16-19 Jun 2004, World Scientific, Singapore (2004).
108. T. Schäfer, Instantons and Large N , Proceedings of the workshop on Large N QCD, ECT, Trento, Italy (2004), World Scientific, Singapore (2004).

109. T. Schäfer, Quasi-particles in QCD at High Baryon Density, Proceedings of Quark Matter 2005, Budapest, Hungary (2005), Nucl. Phys. **A 774**, 877 (2006).
110. T. Schäfer, From trapped atoms to liberated quarks, Proceedings of the International Symposium on Heavy Ion Physics 2006, Int. J. Mod. Phys. E **16**, 853 (2007).
111. T. Schäfer, A Non-Fermi Liquid Effective Field Theory for Dense QCD Matter, Proceedings of the Conference on Strong and Electroweak Matter (SEWM) 2006, Brookhaven National Laboratory, New York, Nucl. Phys. A **785**, 110 (2007).
112. T. Schäfer, Effective Field Theory and the Nuclear Many Body Problem, Proceeding of the International Conference on Quarks in Nuclear Physics (QNP06) 2006, Madrid, Spain. Eur. Phys. J. A **31**, 403 (2007).
113. T. Schäfer, What atomic liquids can teach us about quark liquids, Proceedings of the Yukawa International Seminar (YKIS) 2006 “New Frontiers in QCD”, Kyoto, Japan, Prog. Theor. Phys. Suppl. **168**, 303 (2007).
114. T. Schäfer, Perfect Fluidity in Atomic Physics, Proceedings of the 23rd Winter Workshop on Nuclear Dynamics, Big Sky, Montana, 2007. Acta Phys. Hung.
115. T. Schäfer, From Equilibrium to Transport Properties of Strongly Correlated Fermi Liquids, Proceedings of the 8th Conference on Continuous Advances in QCD, Minneapolis, Minnesota, May 15-18, 2008, World Scientific (Singapore).
116. T. Schäfer, In search of the perfect fluid, Proceedings of CIPANP 2009: 10th Conference on the Intersections of Particle and Nuclear Physics, San Diego, California, 26-31 May 2009; AIP Conf. Proc. **1182**, 755 (2009).
117. T. Schäfer, Phase Structure and Transport Properties of Dense Quark Matter, Proceedings of “Compact stars in the QCD phase diagram II (CSQCD II)”, May 20-24, 2009, KIAA at Peking University, Beijing, P. R. China; SLAC eConf C0905202 (2009).

- 118. T. Schäfer, Elliptic Flow and Nearly Perfect Fluidity in Cold Atomic Gases, in Proceedings of “Quark Confinement And The Hadron Spectrum IX”, Madrid, 2010; AIP Conf. Proc. **1343**, 105 (2011).
- 119. T. Schäfer, Nearly Perfect Fluidity in the Dilute Fermi Gas: An Update, to appear in the Proceedings of the 19th Particles and Nuclei International Conference, PANIC 2011, MIT, Cambridge, MA July 2011.
- 120. T. Schäfer, Transport Properties of Strongly Correlated Fermi Fluids, to appear in the Proceedings of the IX Latin American Symposium on Nuclear Physics and Applications, LASNPA 2011, Quito, Ecuador, 2011.
- 121. T. Schäfer and K. Dusling, Bulk viscosity, chemical equilibration and flow at RHIC, to appear in the Proceedings of Quark Matter 2012, Washington, DC, Nucl. Phys. A, submitted.

Selected Invited Talks at Conferences, Colloquia:

1. T. Schäfer, Neutral Pion Photoproduction at Threshold and Explicit Chiral Symmetry Breaking, Invited Talk, International Workshop on Pions and Nuclei, Peniscola, Spain (1991).
2. T. Schäfer, A Note on the Photoproduction Sigma Term, Invited Talk, International Meeting on πN Physics and the Structure of the Nucleon, Bad Honnef, Germany (1991).
3. T. Schäfer, Instantons and the Chiral Phase Transition, Invited Talk, APS April Meeting, Washington (1995).
4. T. Schäfer, The Chiral Phase Transition, Invited Plenary Talk, Quark Matter 96, Heidelberg, Germany (1996).
5. T. Schäfer, Instantons and Color Superconductivity, Riken/BNL Workshop on Color Superconductivity, Instantons, and Parity Breaking at High Baryon Density, BNL (1997).
6. T. Schäfer, QCD at finite baryon density, Invited Contribution, Quark Matter 97, Tsukuba, Japan (1997).
7. T. Schäfer, Diquark Condensation in High Density Baryon Matter, Invited Talk, Workshop on QCD at finite baryon density, Bielefeld, Germany (1998).
8. T. Schäfer, Tunneling in QCD, Colloquium, University of Frankfurt, Frankfurt, Germany (1998).
9. T. Schäfer, Continuity of Quark and Hadron Matter, Colloquium, University of Illinois at Chicago, Chicago (1999).
10. T. Schäfer, Color Superconductivity, Invited contribution, Quark Matter 99, Torino, Italy (1999).
11. T. Schäfer, Continuity of Quark and Hadron Matter, Invited Talk, Hit99, Cern, Geneva (1999).

12. T. Schäfer, Color Superconductivity, Invited Talk, Gordon Conference on Nuclear Physics, Salve Regina University, Newport, Rhode Island (1999).
13. T. Schäfer, Color Superconductivity, Invited Talk, Many Body X, Seattle, Washington (1999).
14. T. Schäfer, Phases of QCD at High Baryon Density, Invited Talk, ECT* International Workshop on Physics of Neutron Star Interiors, Trento, Italy (2000).
15. T. Schäfer, High Energy Multi-Particle Production, Invited Talk, Workshop on ALICE Physics, GSI, Darmstadt, Germany (2000).
16. T. Schäfer, The Many Phases of QCD at High Baryon Density, Colloquium, University of Bielefeld, Germany (2001).
17. T. Schäfer, Strange Goings on in Quark Matter, Sixth Workshop on Non-Perturbative Quantum Chromodynamics, American University of Paris, Paris, France (2001).
18. T. Schäfer, The Ground State of Strange Quark Matter, International Conference on Statistical QCD, Bielefeld, Germany (2001).
19. T. Schäfer, Color Superconductivity, Plenary Talk, International Conference on the Quark Gluon Plasma, ICQGP-2001, Jaipur, India (2001).
20. T. Schäfer, Instantons and the large N_c limit of QCD, Invited Talk, INT/Jefferson Laboratory Workshop: The Phenomenology of Large N_c QCD, Tempe (2002).
21. T. Schäfer, Extreme QCD, Colloquium, North Carolina State University, Raleigh (2002).
22. T. Schäfer, Phases of QCD at High Baryon Density, Invited Talk, Conference on QCD in the RHIC Era, ITP Santa Barbara (2002).
23. T. Schäfer, Tunneling in QCD, Colloquium, North Carolina State University, Raleigh (2002).

24. T. Schäfer, Effective Theory of the CFL Phase, Invited Contribution, Quark Matter 2002, Nantes, France (2002).
25. T. Schäfer, Instantons and Large N_c , Invited Talk, Workshop on QCD and String Theory, INT, Seattle (2003).
26. T. Schäfer, Hot Results about Cool Matter, Invited Talk, APS April meeting, Philadelphia (2003).
27. T. Schäfer, Quark Matter, Invited Talk, Workshop on Dynamics in Hadron Physics, Giessen, Germany (2003).
28. T. Schäfer, Effective Theories of Dense Quark Matter, Invited Talk, QCD at Work, Bari, Italy (2003).
29. T. Schäfer, Effective theory of superfluid quark matter, Invited Talk, KIAS-APCTP International Symposium in Astro-Hadron Physics: Compact Stars: Quest for New States of Dense Matter, Seoul, Korea (2003).
30. T. Schäfer, Mass without Mass from QCD Instantons, Colloquium, The Ohio State University, Columbus (2004).
31. T. Schäfer, Instantons and Large N , Invited Talk, Workshop on Large N QCD, ECT, Trento, Italy (2004).
32. T. Schäfer, (Quasi)quarks and (quasi)baryons in QCD at High Density, Invited Talk, Workshop on Novel Approaches to the Many Body Problem, ECT, Trento, Italy (2004).
33. T. Schäfer, Effective Theories of Very Dense Matter, Invited Talk, Workshop on Effective Field Theories: From Nano to Terra, Center for Theoretical Science, Ohio State University, Columbus, Ohio (2005).
34. T. Schäfer, Quasi-particles in QCD at High Baryon Density, Invited Contribution, Quark Matter 2005, Budapest, Hungary (2005).

35. T. Schäfer, The CFL phase and $m(s)$: An effective field theory approach, Invited Talk, Workshop on “Pairing in fermionic systems: Basic concepts and modern applications”, Institute for Nuclear Theory, Seattle (2005).
36. T. Schäfer, Phases of QCD, Introductory Lecture, Desy Theory Workshop “QCD: From the MeV to the TeV scale”, Hamburg, Germany (2005).
37. T. Schäfer, From trapped atoms to liberated quarks, Invited Talk, International Symposium on Heavy Ion Physics 2006, Frankfurt, Germany (2006).
38. T. Schäfer, A Non-Fermi Liquid Effective Field Theory for Dense QCD Matter, International Conference on Strong and Electroweak Matter (SEWM) 2006, Brookhaven National Laboratory, Upton, New York (2006).
39. T. Schäfer, Non-perturbative Methods in QCD at finite temperature and density, Invited Talk, International Conference “QCD in the Context of the Standard Model”, Brookhaven National Laboratory, Upton, New York (2006).
40. T. Schäfer, Effective Field Theory and the Nuclear Many Body Problem, Invited Talk, International Conference on Quarks in Nuclear Physics (QNP06), Madrid, Spain (2006).
41. T. Schäfer, A Tale of two Effective Field Theories, Invited Talk, Symposium on Hadrons, Nuclei and Stars in Honor of G. Brown, P. Braun-Munzinger and W. Weise, Darmstadt, Germany (2006).
42. T. Schäfer, Effective Field Theories of Dense and Very Dense Matter, Invited Talk, Workshop on strongly coupled quark matter, Wuhan, China (2006).
43. T. Schäfer, Effective Field Theory and the Nuclear Many Body Problem, Invited Talk, Workshop on QCD and Few-Hadron Systems, Physikzentrum Bad Honnef, Germany (2006).
44. T. Schäfer, What atomic liquids can teach us about quark liquids, Invited Talk, Yukawa International Seminars (YKIS) 2006, New Frontiers in QCD, Yukawa Institute for Theoretical Physics, Kyoto, Japan (2006).

45. T. Schäfer, Perfect Fluidity in Atomic Physics, Invited Talk, 23rd Winter Workshop on Nuclear Dynamics, Big Sky, Montana (2007).
46. T. Schäfer, Phase Structure of QCD at very high baryon density, Invited Talk, Workshop on Exotic States of Hot and Dense Matter and their Dual Description, Perimeter Institute for Theoretical Physics, Waterloo, Canada (2007).
47. T. Schäfer, QCD and dense matter: An introduction, Invited Talk, Workshop on Exploring QCD: Deconfinement, Extreme Environments and Holography, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK (2007).
48. T. Schäfer, Matter at very low baryon density, Invited Talk, 8th Conference on Continuous Advances in QCD, Minneapolis, Minnesota (2008).
49. T. Schäfer, Entropy and viscosity of strongly correlated quantum fluids, Invited Talk, Workshop on Entropy Production before QGP, Yukawa Institute for Theoretical Physics, Kyoto, Japan (2008).
50. T. Schäfer, Perfect Fluid Olympics, Invited Talk, Extreme Matter Institute workshop on “Quark Gluon Plasma meets Cold Atoms”, GSI, Darmstadt, Germany (2008).
51. T. Schäfer, Perfect Fluids: From Nano to Tera, Colloquium, UNC Chapel Hill (2008).
52. T. Schäfer, Phase Structure and Transport Properties of Dense Quark Matter, Nuclear Matter at High Density, Invited Talk, International Workshop XXXVII on Gross Properties of Nuclei and Nuclear Excitations Hirschegg, Austria, January 18 - 24, 2009.
53. T. Schäfer, In search of the perfect fluid, Laboratory for Nuclear Science Colloquium, Massachusetts Institute of Technology, Cambridge, MA (2009).
54. T. Schäfer, The big picture, Introductory Lecture, Student Day, Quark Matter 2009, The 21st International Conference on Ultrarelativistic Nucleus-Nucleus Collisions, March 30-April 4, 2009, Knoxville, TN.

55. T. Schäfer, Phase Structure and Transport Properties of Dense Quark Matter, Invited Talk, Compact stars in the QCD phase diagram II (CSQCD II), May 20-24, 2009, KIAA at Peking University, Beijing, P. R. China.
56. T. Schäfer, In search of the perfect fluid, Invited Talk, CIPANP 2009: 10th Conference on the Intersections of Particle and Nuclear Physics, San Diego, California, 26-31 May 2009.
57. T. Schäfer, In search of the perfect fluid, Invited Talk, Recent Progress in Many Body Theory RPMBT15, Ohio State University, Columbus, Ohio from July 27-31, 2009.
58. T. Schäfer, In search of the perfect fluid, Invited Talk, Dense QCD phases in heavy-ion collisions and in supernovae, HIC-4-FAIR workshop, Prerow (Germany), October 11.-13, 2009.
59. T. Schäfer, Nearly perfect fluidity : From cold atomic gases to hot quark gluon plasmas, Invited Talk, Conference “Strong Interactions in the 21 Century”, Tata Institute for Fundamental Research, Mumbai, India, 2010.
60. T. Schäfer, Nearly perfect fluidity : From cold atomic gases to hot quark gluon plasmas, Colloquium, Department of Physics, Duke University, Durham, 2010.
61. T. Schäfer, Nearly perfect fluidity : From cold atomic gases to hot quark gluon plasmas, Invited Talk, APS March Meeting, Portland, Oregon, 2010.
62. T. Schäfer, Viscous hydrodynamics for the cold Fermi gas at unitarity, Invited Talk, Division of Atomic and Molecular Physics (DAMOP) of the APS, Houston, Texas, 2010.
63. T. Schäfer, Nearly perfect fluidity : From cold atomic gases to hot quark gluon plasmas, Invited Talk, “Strong and Electroweak Matter”, McGill University, Montreal, Canada, 2010.

64. T. Schäfer, Elliptic Flow and Nearly Perfect Fluidity in Cold Atomic Gases, Invited Talk, “Quark Confinement And The Hadron Spectrum IX”, Madrid, 2010.
65. T. Schäfer, Intersections of Nuclear Physics and Cold Atomic Gases, Invited Talk, Fall Meeting of the Division of Nuclear Physics of the APS, Santa Fe, 2010.
66. T. Schäfer, Strongly Correlated Fermi Gases, Invited Talk, Emmi (Extreme Matter Institute) workshop on “Strongly Coupled Systems”, GSI, Darmstadt (2010).
67. T. Schäfer, Nearly Perfect Fluidity: From cold atomic gases to hot quark gluon plasmas. Invited talk, International conference ”In-Medium Effects in Hadronic and Partonic Systems”, University Center Obergurgl, Austria (2011).
68. T. Schäfer, Nearly Perfect Fluidity in the Dilute Fermi Gas: An Update. Invited talk, 19th Particles and Nuclei International Conference, PANIC 2011, MIT, Cambridge, MA July 2011.
69. T. Schäfer, Transport Properties of Strongly Correlated Fermi Fluids. Invited talk, IX Latin American Symposium on Nuclear Physics and Applications, LASNPA 2011, Quito, Ecuador, 2011.
70. T. Schäfer, Conformal Fluid Dynamics for Non-relativistic Fluids. Invited Talk, International conference on “Finite-Temperature Non-Equilibrium Superfluid Systems”, Internationales Wissenschaftsforum der Universität Heidelberg (2011).
71. T. Schäfer, Nearly Perfect Fluidity: From Quark Gluon Plasmas to Cold Atomic Gases. Colloquium, University of Virginia (2011).
72. T. Schäfer, Nearly Perfect Fluidity: From Quark Gluon Plasmas to Cold

Atomic Gases. Colloquium, Institute for Nuclear Physics, Frankfurt University (2012).

- 73. T. Schäfer, Continuity of the Deconfinement Transition in (SUSY) Yang Mills Theory Invited Contribution, Strong and Electroweak Matter, Swansea, UK (2012).
- 74. T. Schäfer, Bulk viscosity, chemical equilibration and flow at RHIC, Invited Contribution, Quark Matter 2012, Washington, DC (2012).
- 75. T. Schäfer, Recent Sightings of the Perfect Fluid, Invited Talk, Extreme Matter Institute workshop on “Quark Gluon Plasma meets Cold Atoms III”, Hirschegg, Austria (2012).

Invited Lecture Series:

- 76. Instantons in QCD, RHIC 98 Summer School, Brookhaven National Laboratory (1998).
- 77. RHIC and QCD in Extreme Conditions, 11'th National Nuclear Physics Summer School, UC San Diego (1999).
- 78. Instantons in QCD, Workshop on Strong Correlations, Wissenschaftskolleg Heidelberg (1999).
- 79. QCD in Extreme Conditions, 13'th National Nuclear Physics Summer School, Bar Harbor, Maine (2001).
- 80. Instantons in QCD, European Graduate College ”Complex Systems of Hadrons and Nuclei” Copenhagen - Giessen, Copenhagen, (2001).
- 81. Color Superconductivity, Second Dense Matter School, APCTP, Pohang, Korea (2001).
- 82. Color Superconductivity, School on QCD Theory and RHIC Physics, Jinan, China (2002).

83. QCD at High Density, 14'th National Nuclear Physics Summer School, Santa Fe (2002).
84. Color Superconductivity, Workshop on Quarks and Mesons, Mumbai, India (2003).
85. QCD in Extreme Conditions, Jorge Swieca School on Nuclear Physics, Sao Paulo, Brazil (2003).
86. Phases of QCD, Hampton University Graduate School (HUGS) at Jefferson Lab, Newport News (2005).
87. Effective Theories of Dense (and Very Dense) Matter, School on Renormalization Group and Effective Theory Approaches to Many-Body Systems, European Centre for Theoretical Studies in Nuclear Physics and Related Areas (ECT*), Trento, Italy (2006).
88. Hot and Dense Nuclear Matter, 20'th National Nuclear Physics Summer School, George Washington University, Washington, DC (2008).
89. Strongly Correlated Fluids, XLI. Arbeitstreffen der deutschen Kernphysik, Schleching, Germany (2010).
90. Collective Dynamics in the Cold Fermi Gas at Unitarity, Berkeley School on Collective Dynamics, Lawrence Berkeley Laboratory (2010).
91. Strongly Correlated Fluids: From Cold Atomic Gases to Hot Quark Gluon Plasmas, Lecture Series, Instituto Superior Tecnico, Lisbon, Portugal (2011).