

Curriculum Vitae

Jens Oluf Andersen

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Personal details

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Date and place of birth: May 20, 1966, Ringsted, Denmark.
Citizenship: Danish.

Education

1989: Bachelor of Science from University of Oslo, Norway
1992: Master of Science from University of Oslo, Norway
1997: Ph.D. from University of Oslo, Norway 1997.

Positions

1992-1997: Research Assistant, University of Oslo, Norway
1997-2000: Postdoctoral Research Associate, Ohio State University, USA
2000-2002: Postdoctoral Research Associate, University of Utrecht, The Netherlands
2003-fall 2005: Postdoctoral Research Associate, Nordita, Copenhagen, Denmark
Fall 2003: Visiting Scientist, Vrije Universiteit Amsterdam, The Netherlands
Fall 2005-present: Professor, Norwegian University of Science and Technology

Language skills

Danish: fluent (mother tongue)
Norwegian: fluent (mother tongue)
English: very good
German, dutch: fair

Publications

- Jens O Andersen and Tomas Brauner, Linear sigma model at finite density in the $1/N$ expansion to next-to-leading order. e-Print: arXiv:0804.4604.
- Jens O. Andersen and Lars Kyllingstad, Pion Condensation at Finite Temperature and Density: The Role of Charge Neutrality. hep-ph/0701033.
- J. O. Andersen, Pion and kaon condensation at finite temperature and density, Phys. Rev. **D75**, 065011 (2007).
- J. O. Andersen, D. Boer and H. J. Warringa, The Effects of Quantum Instantons on the Thermodynamics of the CP^{N-1} Model, Phys. Rev. **D74**, 045028 (2006).
- J. O. Andersen, Phase fluctuations in low-dimensional Gross-Neveu models, hep-th/0506261.
- H. J. Warringa, D. Boer and J. O. Andersen, Color superconductivity versus pseudoscalar condensation in a three-flavor NJL model, Phys. Rev. **D72**, 014015 (2005).
- J. O. Andersen, Relativistic Bose gases at finite density hep-ph/0501094.
- J. O. Andersen, D. Boer and H. J. Warringa, Thermodynamics of $O(N)$ sigma models: $1/N$ corrections Phys. Rev. **D70**, 116007 (2004).
- J. O. Andersen and M. Strickland, Three-loop Phi-derivable Approximation in QED, Phys. Rev. **D71**, 025011 (2005).
- J. O. Andersen and M. Strickland, Resummation in Hot Field Theories, Annals. Phys. **317**, 281 (2005).
- J. O. Andersen, D. Boer and H. J. Warringa, Thermodynamics of the $O(N)$ Nonlinear Sigma Model in 1+1 Dimensions, Phys. Rev. **D69**, 076006 (2004).
- J. O Andersen, Theory of the Weakly Interacting Bose Gas, Rev. Mod. Phys. **76**. 599 (2004).
- U. Al Khawaja, N. P Proukakis, J. O. Andersen, M. Romans, and H. T. C. Stoof, Dimensional and Temperature Crossover in Trapped Bose Gases, Phys. Rev. **A68**, 043603 (2003).
- J. O. Andersen, E. Petitgirard and M. Strickland, Two-loop HTL Thermodynamics with quarks, Phys.Rev. **D70**, 045001 (2004).
- J. O Andersen, Effective Field Theory for Goldstone Bosons in Nonrelativistic Superfluids, cond-mat/0209243.
- J. O. Andersen and M. Strickland, The equation of State for Dense QCD and Quark Stars, Phys. Rev. **D66**, 105001 (2002).
- J. O. Andersen, E. Braaten, E. Petitgirard and M. Strickland, HTL Perturbation Theory to Two Loops, Phys. Rev. **D66**, 085016 (2002).
- U. Al Khawaja, J. O. Andersen, N. P Proukakis, and H. T. C. Stoof, Low-dimensional Bose gases, Phys. Rev. **A66**, 013615 (2002).

- J. O. Andersen, U. Al Khawaja, and H. T. C. Stoof, Phase fluctuations in atomic Bose gases, *Phys. Rev. Lett.* **88**, 070407 (2002).
- J. O. Andersen, Ground State Pressure and Energy Density of a Homogeneous Bose Gas in Two Dimensions, *Eur. Phys. J.B.* **28**, 389 (2002) .
- J. O. Andersen, Effective Field Theories for the Casimir Effect at Finite Temperature, [quant-ph/0108009](#).
- J. O. Andersen, Thermal Effects in Low-Temperature QED, *Phys. Rev.* **D65**, 025014 (2002).
- J. O. Andersen and M. Strickland, Mass Expansions of Screened Perturbation Theory, *Phys. Rev.* **D64**, 105012 (2001).
- J. O. Andersen and H. Haugerud, Ground State of a Trapped Bose-Einstein Condensate in Two Dimensions; Beyond the Mean-Field Approximation, *Phys. Rev.* **A65**, 033615 (2002).
- J. O. Andersen, E. Braaten and M. Strickland, Screened Perturbation Theory to three Loops, *Phys. Rev.* **D63**, 105008 (2001).
- J. O. Andersen, E. Braaten and M. Strickland, The Massive Thermal Basketball Diagram, *Phys. Rev.* **D62**, 045004 (2000).
- J. O. Andersen, E. Braaten and M. Strickland, Hard-thermal-loop Resummation of the Free Energy of a Hot Quark-Gluon Plasma, *Phys. Rev.* **D61**, 74016 (2000)
- J. O. Andersen, E. Braaten and M. Strickland, Hard-thermal-loop Resummation of the Thermodynamics of a Hot Gluon Plasma, *Phys. Rev.* **D61**, 014017 (2000).
- F. Antonuccio and J. O. Andersen, Two-loop Calculations in ϕ^4 Light Front Field Theory, [hep-th/9904140](#).
- J. O. Andersen, E. Braaten and M. Strickland, Hard-thermal-loop Resummation of the Free Energy of a Hot Gluon Plasma, *Phys. Rev. Lett.* **83**, 2139 (1999).
- J. O. Andersen and M. Strickland, Application of Renormalization Group methods to a Homogeneous Bose Gas at Finite Temperature, *Phys. Rev.* **A60**, 1442 (1999).
- J. O. Andersen and E. Braaten, Semiclassical Corrections to a Static Bose-Einstein Condensate at Zero Temperature, *Phys. Rev.* **A60**, 2330 (1999).
- J. O. Andersen, Dimensional Reduction of the Two-Higgs Model at High Temperature, *Eur. Phys. J.* **C11**, 563 (1999).
- J. O. Andersen, The Free Energy in Scalar Electrodynamics, [hep-ph/9709294](#).
- J. O. Andersen, 3D Effective Theory for Finite Temperature Scalar Electrodynamics, *Phys. Rev.* **D59**, 65015 (1999).
- J. O. Andersen, Screening Mass in Hot Scalar Theory to Order g^5 Using Effective Field Theory, *Phys. Rev.* **D57**, 5004 (1998)
- T. Haugset, H. Haugerud and J. O. Andersen, Bose-Einstein Condensation in Anisotropic Harmonic Traps, *Phys. Rev.* **A55**, 2922 (1997).

- J. O. Andersen, The Electric Screening Mass in Scalar Electrodynamics at High Temperature, Z. Phys. **C75** , 147 (1997).
- J. O. Andersen, Free Energy of High-temperature QED to Order e^5 from Effective Field Theory, Phys. Rev. **D53**, 7286 (1996).
- J. O. Andersen, Effective Potentials and Symmetry Restoration in the Chiral Abelian Higgs Model, Mod. Phys. Lett. **A10**, 997 (1995).
- J. O. Andersen and T. Haugset, Magnetization in 2+1 Dimensional QED at Finite temperature and Density , Phys. Rev. **D51**, 3073 (1995).
- J. O. Andersen and L. Veseth, Many-body Calculation of Total and Partial Cross Sections in Atomic Nitrogen, Phys. Script. **50**, 13 (1994).
- J. O. Andersen and K. Aashamar, Oscillator Strengths for Transitions Among Low-lying Quartet Terms in the Nitrogen Isoelectronic Sequence, Phys. Script. **47**, 160 (1993).

Conference proceedings

- J. O. Andersen, Hard Thermal Loops and QCD Thermodynamics, Talk given at SEWM 2002 Heidelberg, Germany, October 2-5, 2002. hep-ph/0210195.
- J. O. Andersen, Three Loop Free Energy using Screened Perturbation Theory, Talk given at SEWM Marseille June 14-17 2000. In Proc. SEWM 2000, 142, (2001).
- J. O. Andersen, Thermal Field in Equilibrium, Invited talk given at the 5th workshop in QCD, Villefranche-sur-Mer, France January 3-7 2000. In Proc. 204, (2000),
- J. O. Andersen, Free Energy of a Hot gluon Plasma and Hard-thermal-loop Resummation, Proc. of 15th International Conference on Particle and Nuclei (PANIC 99), Uppsala, Sweden, June 10-16 1999, Nucl. Phys. **A663** & **664**, 733, 2000.

Invited Talks

- QCD Thermodynamics and Hard Thermal Loops, Theoretical Physics Colloquium, Dept. of Physics, Freie Universität Berlin, June 7 2004.
- Bose Condensates, General colloquium, Dept. of Phys. NTNU, Trondheim Norway, February 20 2003.
- QCD Thermodynamics and HTL perturbation theory, Dept. of Phys. NTNU, Trondheim Norway, February 18 2003.
- Low-temperature Bose gases. 11th International Laser Physics Workshop 2002 (LPHYS'02), Bratislava, Slovakia, July 2 2002.
- Low-temperature Bose gases. NTNU, Trondheim, April 3 2002.
- Hard-thermal-loop Improved Thermodynamics for QCD, University of Marseilles and CERN, June 18 and 21 2001.
- The Phase diagram of QCD, University of Oslo, Norway, April 18 2001.
- Three-loop Free Energy using Screened Perturbation, Hot non-perturbative particle physics, Trondheim, Norway, October 28 2000.
- Hard-thermal-loop Perturbation Theory and the Free Energy of a Hot Gluon Plasma, Purdue University, February 2000.
- Thermal field theory, 5th Workshop on QCD, Villefranche Sur-Mer, France, January 3-7 2000.
- Semiclassical corrections to the oscillation frequencies of a Bose-Einstein condensate. University of Utrecht, The Netherlands, November 30 1998.

Lectures

- Introduction to Bose-Einstein Condensation (three lectures), University of Oslo, Norway, 6-10 October 2003.

Talks/Presentations

- Bose-Einstein condensates, General Colloquium, Nordita, Denmark April 1, 2004.
- High-temperature QCD and resummation, Vrije Universiteit, The Netherlands, November 20 2003.
- Hard Thermal Loops and QCD Thermodynamics, SEWM 2002, Heidelberg, Germany, October 2-5 2002.
- Low-dimensional Bose gases, University of Oslo, Norway April 5 2002.
- Hard-thermal-loop perturbation theory for a quark-gluon plasma, Nordita, Copenhagen, Denmark, January 15 2002.

- Low-dimensional Bose gases, Nordita, Copenhagen, Denmark, January 14, 2002.
- Bose-Einstein Condensation and Effective Field Theory, University of Oslo, Norway, April 20 2001.
- Thermodynamics of High-temperature QCD, University of Oslo, Norway, April 19 2001.
- Hard-thermal-loop Resummation of the Thermodynamics of QCD, ITF, University of Utrecht, The Netherlands, September 29 2000.
- Semiclassical Corrections to the Oscillation Frequencies of a Trapped Bose-Einstein Condensate, NORDITA meeting on Low-Dimensional Physics in Solids and Trapped Atoms, Copenhagen, Denmark, August 31 2000.
- Three-loop free energy using screened perturbation theory, SEWM 2000, Marseille, France, June 14-17 2000.
- Bose-Einstein condensation of atoms in harmonic traps. NTNU Trondheim, Norway, December 1999.
- Hard-thermal-loop perturbation theory for a quark-gluon plasma, Brookhaven National Laboratory, November 1999.
- Hard-thermal-loop resummation of the free energy of a hot gluon plasma, University of Heidelberg, Germany, NORDITA, Copenhagen, Denmark, PANIC conference Uppsala, Sweden, and CERN, Geneva, Switzerland, June 1999.
- Hard-thermal-loop resummation of the free energy of a hot gluon plasma, Indiana University, Bloomington, April 1999.
- Bose-Einstein condensation of atoms in harmonic traps. University of Oslo Norway, December 1998.
- Application of Renormalization Group Techniques to a Homogeneous Bose Gas, Workshop on Quantum Fields in and Out of Equilibrium, Brookhaven National Laboratory, October 1998.
- Renormalization Group Treatment of a nonrelativistic Bose Gas at Finite Temperature, NORDITA, Copenhagen, Denmark, University of Bielefeld, Germany, and University of Oslo, Norway, August 1998.
- Effective field theories at finite temperature, Ohio State University, September 1997.
- Effective field theories at finite temperature, Fall meeting Norwegian Physical Society, Utstein, Norway, November 1996.
- Magnetization in 2+1 dimensional QED at finite temperature and density, Fall meeting Norwegian Physical Society, Utstein, Norway, November 1994.
- Resummation of ring diagrams, NORDITA, Copenhagen, August 1993.
- Structure calculations and lifetimes in atomic Nitrogen, Fall meeting Norwegian Physical Society, Utstein, Norway, November 1992.

Workshops/Conferences

- Strong and Electroweak Matter 2004, Helsinki, Finland, June 16-19, 2004
- Bose-Einstein Condensation, San Feliu, Spain, September 13-18 2003.
- Leviso Workshop on BEC, June 12-14 2003, Trento, Italy.
- Strong and Electroweak Matter 2002, Heidelberg, Germany, October 2-5 2002.
- 11th International Laser Physics Workshop 2002 (LPHYS'02) Bratislava, Slovakia, July 1-5 2002.
- Wetenschappelijk Vergadering Werkgemeenschap voor Statistische Physics, Lunteren, The Netherlands, February 1-2 2001.
- Huygens Vaksymposium, Quantum gases, Amsterdam, The Netherlands, November 8 2000.
- Hot non-perturbative particle physics, Trondheim, Norway, October 28 2000.
- NORDITA meeting on Low-Dimensional Physics in Solids and Trapped Atoms, Copenhagen, Denmark, August 31-September 2 2000.
- Strong and Electroweak Matter 2000, Marseilles, France, June 14-17 2000.
- 5th Workshop on QCD, Villefranche-sur-Mer, France, January 3-7 2000.
- Nonequilibrium Dynamics in Quantum Field Theory, INT, Seattle, USA, October 4-December 16 1999.
- QCD in Extreme Conditions, Aspen, USA, August 16 - September 12 1999.
- 15th International Conference of Particle and Nuclei (PANIC 99), Uppsala, Sweden, June 10-16 1999.
- Strong and Electroweak Matter (SEWM 98), Copenhagen, Denmark, December 2-5 1998.
- Quantum Fields in and Out of Equilibrium, Brookhaven National Laboratory, October 26-30 1998.
- Bose-Einstein Condensation, July 12-17, Castelvechio Pascoli, Italy, 1997.

Poster presentations

- J. O. Andersen and M. Strickland, Critical Behaviour of a Homogeneous Bose Gas at Finite Temperature, hep-ph/9808346. Proc. of the 5th International Workshop on Thermal Field Theories and Their Applications, Regensburg, Germany, August 10-14 1998.

Referee

- I am refereeing papers for Physics Letters A, Journal of High Energy Physics, Journal of Physics B, European Physics Journal B, Europhysics Letters, Nuclear Physics B and Physical Review A, B and D, Physical Review Letters, and Rep. Prog. Phys.

Teaching experience

I have been a teaching assistant in undergraduate and graduate courses:

- General physics.
- Classical mechanics.
- Group theory.
- Quantum field theory.

Students

- I was the co-supervisor for M. Romans on his master thesis “Dimensional crossover in homogeneous Bose gases”, ITP, Utrecht University 2002.

References

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