

08.128.140 Theoretische Physik 4, Statistische Physik

JGU Mainz, winter semester 2023/24

Instructor:

Dr. Felix Yu (yu001@uni-mainz.de)

Course assistants:

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- Lectures:
Mondays, 8-10 (c.t.), Minkowski room
Tuesdays, 12-14 (c.t.), Minkowski room
- Discussion/homework sessions:
Section A: Tuesdays, 14-16 (c.t.), Seminar room F (Lucas, Deutsch)
Section B: Wednesdays, 10-12 (c.t.), Seminar room A (Riccardo, English)
Section C: Wednesdays, 12-14 (c.t.), Seminar room A (Emanuele, English)
- Office hours: by email appointment
- Homework: due on Mondays at the beginning on lecture (8:30 am)
- Exam: Written exam, Friday, March 1, 2024, 9-12 pm (s.t.) (Lorentz + Minkowski rooms)
Second make-up exam: Written exam, Wednesday, March 27, 2024, 9-12 pm (s.t.) (Lorentz + Minkowski rooms)
- Exam requirement: 50% of homework credits

Main topics

Introduction and motivation

Unit 1: Thermodynamics

Unit 2: Statistics

Unit 3: Classical statistical mechanics

Unit 4: Quantum statistical mechanics

Primary references

Mehran Kardar Statistical Physics of Particles, Cambridge University Press, 2007, ISBN 978-0-521-87342-0. Freely available for viewing as an e-book on the university network:
<https://doi.org/10.1017/CBO9780511815898>

Stephen J. Blundell and Katherine M. Blundell Concepts in Thermal Physics, Oxford University Press, 2010, ISBN 978-0-19-956209-1. Freely available online as an e-book using your university account:
<http://dx.doi.org/10.1093/acprof:oso/9780199562091.001.0001>

Supplementary references

Raj K. Pathria and Paul D. Beele Statistical Mechanics, Elsevier, 2011, ISBN 978-0-123-82189-8. Freely available for viewing as an e-book using your university account:
<https://ebookcentral.proquest.com/lib/umainz/detail.action?docID=670212>

Keith Stowe An Introduction to Thermodynamics and Statistical Mechanics, 2007, ISBN 978-0-521-86557-9.

L. D. Landau and E. M. Lifshitz Statistical Physics, Elsevier, 1980, ISBN 978-0-7506-3372-7.