



IF2692 Statistical Physics 7.5 credits

Statistisk fysik

Course syllabus for IF2692 valid from Autumn 08

This is a translation of the Swedish, legally binding, course syllabus.

Grading scale: A, B, C, D, E, FX, F

Education cycle: Second cycle

Main field of study: Physics

Intended learning outcomes

State the principal assumptions behind the statistical mechanical description.

- *Derive Boltzmann's law from the above assumptions.*
- *Use knowledge from probability theory and quantum mechanics to calculate the relevant partition function for a given system model.*
- *Motivate the second law of thermodynamics starting from Boltzmann's law.*
- *Calculate thermodynamic functions from the partition function for a given system.*
- *Choose the appropriate (calculable) ensemble for a given system.*
- *Choose and minimize the adequate thermodynamic function in order to find the equilibrium state of a system.*
- *Starting from a real life situation and using knowledge in quantum mechanics, mechanics, solid state physics etc. create a system model whose partition function can be calculated.*
- *Critically evaluate the relevance and applicability of a system model.*

Course main content

- *The microscopic foundations of thermodynamics*
- *Ensembles*
- *Identical particles and distributions*
- *Quantum liquids*
- *Phase transitions*
- *Applications in economics (on request)*

Language of instruction

Language of instruction is specified in the course offering information in the course and programme directory.

Eligibility

Literature

Introductory statistical mechanics, R. Bowley and M. SánchezUpplaga: 2a Förlag: Oxford science publications År: 1999ISBN: 0198505760

Examination

- ANN1 - Exercise, 7.5 credits, grading scale: A, B, C, D, E, FX, F

The examination of the course is done through home work problems.