# Experimental Physics II
# Summer 2012

**Dr. Mareike Zink /**
**Prof. Dr. Josef A. Käs**

# Experimental Physics 2

Prof. Dr. Josef Käs, Dr. Mareike Zink

Lectures (Prof. Käs):

Tu, Fr: 11:00 am, GrHS

Seminar (Hans Kubitschke):

Th: 11:00 am, SR 225

To graduate every student has to do the homework and gain 50% of the points

Homework exercises will be announced every Friday during the lecture + on the internet.

Homework deadline: Friday BEFORE 11:00 am
Postbox 1st floor next to room 302

Written exam: July 20th, 11:00 – 13:00 h (GrHS)

**Contact: jkaes@physik.uni-leipzig.de** **zink@physik.uni-leipzig.de (Room 325)**

**www.softmatterphysics.com** **(to go "teaching")**

# Lecture Experimental Physics 2 - Summer Term 2012

| Mo | | Th | |
|---|---|---|---|
| 10.04. | Organisation<br>Introduction: Thermodynamics<br>Temperature and thermal energy | 13.04. | Absolute temperature<br>Specific heat<br>intrinsic energy |
| 17.04. | Specific heat of solid matter<br>heat of melting + evaporation<br>Heat transport | 20.04. | Convection, heat transport in solid matter, Wiedemann-Franz-law<br>Heat radiation |
| 24.04. | Laws of thermodynamics:<br>state variables | 27.04. | First law<br>Second Law<br>Carnot Process |
| 01.05. | Bank Holiday | 04.05. | Entropy<br>Free energy and enthalpy<br>Third Law |
| 08.05. | Thermodynamic machines:<br>Fridge and heat Pump | 11.05. | Thermodynamics of real gases and liquids |
| 15.05. | Electric charges<br>electric field<br>electrostatic potential | 18.05. | electric dipole<br>conductor in electric fields |
| 22.05. | Capacitor<br>Energy of electric fields | 25.05. | Dielectric media |
| 29.05. | Atomic description of charges and electricity | 01.06. | Ohm's laws and resistance<br>Electric power<br>Joule's heat |

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| 05.06. | Kirchhoff's rules<br>series and parallel connection | 08.06. | Current transport in gases<br>Gas conduction and discharge |
| 12.06. | Current sources<br>thermoelectric voltage<br>Seebeck-Effect | 15.06. | Static magnetic fields<br>magnetic fields of static currents |
| 19.06. | Magnetic flux<br>magnetic field of a line conductor<br>Magnetic field inside a coil | 22.06. | Vector potential<br>Biot-Savart Law |
| 26.06. | Forces on moving charges<br>within a magnetic field | 29.06. | Conductor inside a magnetic field<br>Lorentz force |
| 03.07. | Hall effect | 06.07. | Electric field of a moving charge<br>electric vs. magnetic field |
| 10.07. | Effect of matter in a magn. Field<br>magn. Dipole | 13.07. | magn. Suszeptibility<br>diamagnetism |
| 17.07. | paramagnetism<br>ferromagnetism<br>diamagnetism | 20.07. | EXAM |