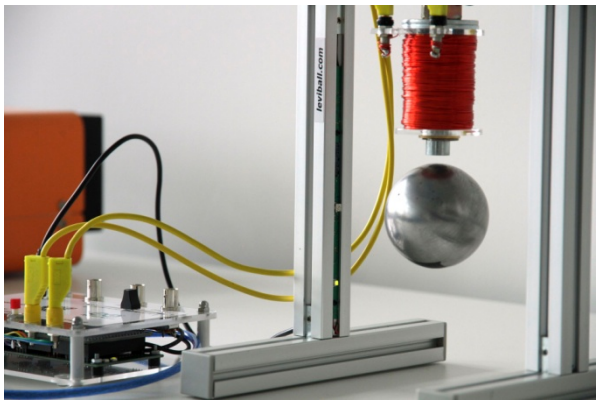
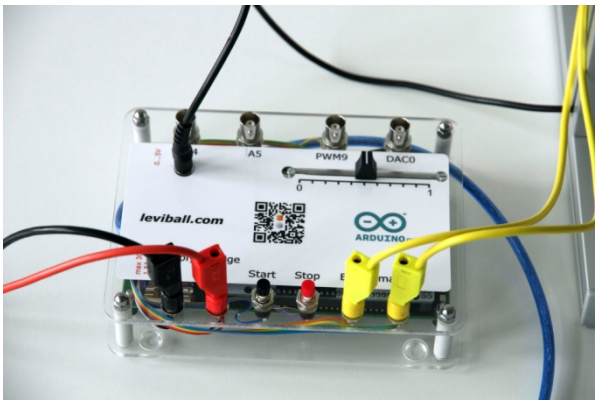
Leviball© – Magnetic Levitation Kit

Leviball is designed for the education of engineering students and demonstrates the effects of magnetic levitation by an iron ball, levitating in space without any mechanical contact.





An IR-sensor measures the gap between coil and ball and software routines calculate and control, using these gap signals, the power supply of an electromagnet to levitate the ball.

Leviball can be used stand alone without pc, but it is advisable to use a computer with Arduino IDE or Matlab/Simulink (soon also with LabView) to professionally control the ball. Alternatively, the free software Scilab/Xcos can be used.

Inputs: power supply: DC-voltage between 24V and 30V, analog input A4 and A5, analog input A2 (slider), analog input A3 (intern), PWM in/out, USB, start knob.

Outputs: analog out (DAC0), electrical actuator.

Programming hints: The Arduino Due Board is programmable directly from graphical Simulink software without typing programming language. Therefore the free Simulink Support Package for Arduino hardware must be installed.

For the usage of **Leviball** solid knowledge of control engineering and of the mathematical-technical basics (differential equations, Laplace transformation, block diagrams, Bode diagram) are assumed; guidance by lecturers is recommended. A number of engineering education work assignments are provided with the manual.

Developed at the Department of Electronic Engineering of the Beuth University of Applied Sciences, D-13353 Berlin, Germany. For further information see www.leviball.com, for questions contact leviball@bit-berlin.de.

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