

Exercise sheet nr. 1 for the lecture „Einführung in das Rechnergestützte Arbeiten“

Note: In the digital version, links are clickable.

1 Inkscape

Most Linux distributions deliver Inkscape through their respective package repositories, Windows and macOS can download it for free under <http://www.inkscape.org>.

- a) Start Inkscape and take some time to read the first few sections of the integrated tutorial under „help“ → „Tutorials“. This tutorial itself is a SVG file allowing you directly to try out the steps.

Create following graphics with Inkscape:

- b) Spring: Draw a spring with the „Bezier curves“ tool. For this it can be useful to enable a grid with „View“ → „Page Grid“ and turn on „Snap to grids“. After you are done, disable „Snap to grids“ to be able to place the other parts freely.
- c) Mass: Combine ellipses and rounded rectangles to form a mass. Convert the objects into a path (with „Path“ → „Object to Path“) and combine them into a single closed path by choosing („Path“ → „Union“). Now you can select a border and fill color without additional lines inside the object.
- d) Seesaw: Draw a seesaw which has the mass on one side and is connected to the ceiling by the spring on the other side.
- e) Save: Save the graphic as a SVG file („File“ → „Save“).
- f) Export: For many applications a bitmap format is needed. Export the graphic as a PNG file with *transparent* background. A transparent background should be the default option. Check this by opening the resulting file in an image viewer and change it if needed. (Using „File“ → „Document Properties“ and „File“ → „Export PNG Image“)

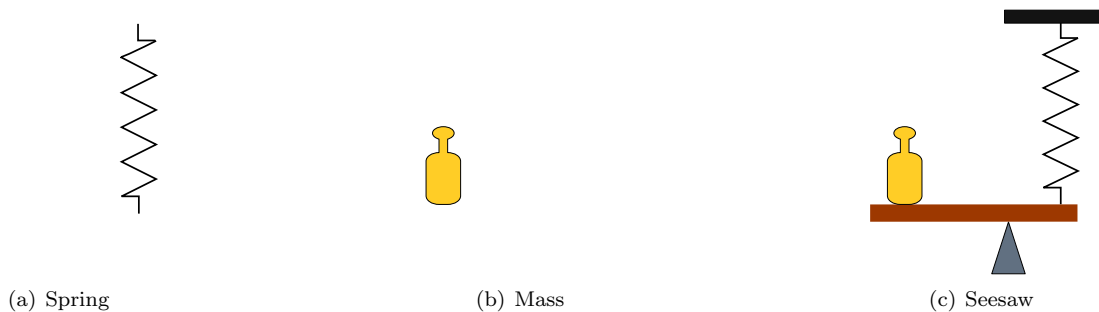


Abbildung 1: Inkscape drawings

- g) Animation, preparation: Generate multiple images with different seesaw angles and adjust the spring accordingly (Fig. 2). Combine mass and seesaw into a group and shift the rotation center in order to rotate them together around the correct point. Enumerate the files, e.g. seesaw1.svg, seesaw2.svg, seesaw3.svg. . .). additionally export the drawings as PNG file with transparent background. Those will be used for a later exercise sheet!

Bitte wenden ...

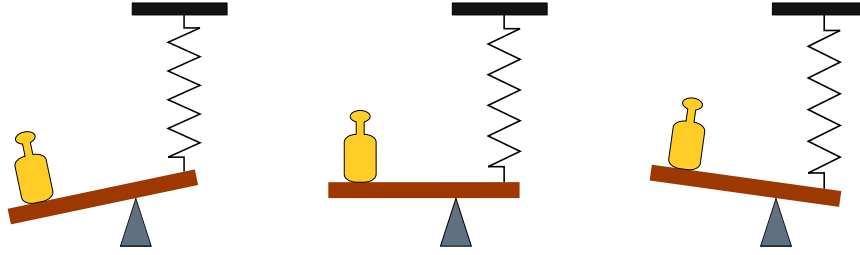


Abbildung 2: Seesaw at different angles

2 Gimp

Gimp is part of most Linux distributions as well. For Mac OS X or Windows you can find installation programs and hints at <http://www.gimp.org/> under *Download*.

- a) Open Gimp and search in „Help“ (in the menu „Help“), or the user manual on the internet, the subsection „I. Getting Started“ → „3. First Steps with Wilber“ → „4. Common Tasks“.

The tutorial gives a very quick introduction into the most frequently used steps without prior knowledge.

- b) Figure 3 a typical graph as it is often found in publication.

- Extract the graph from this PDF document (e.g. with the „Selection Tool“ of Okular or „Edit“ → „Snapshot“ in Acrobat Reader) and open it with Gimp.
- Mark („Rectangle Select Tool“) and delete the inset (i.e. the small graph with the title „Linearer Fit“).
- Under „Colors“ → „Color to Alpha“ you can make selected colors of the picture transparent. Make the background of the graph transparent this way.
- Export the finished graphen as PNG file.

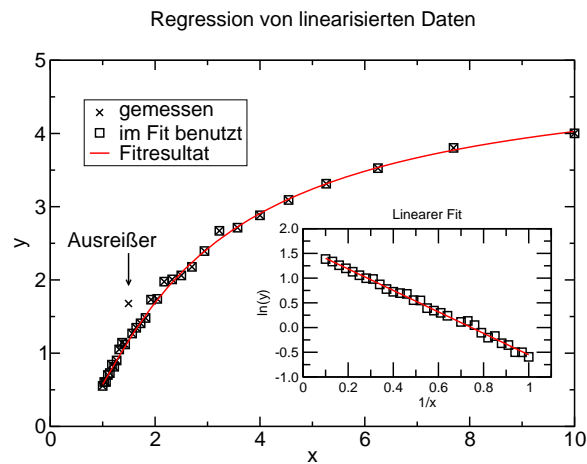


Abbildung 3: Data analysis