8. Experiment (12 points)

Determination of attraction force between iron plate and a permanent magnet as a function of distance. Tools: iron plate, wooden brick, ruler, dynamometer, paper stripes.

Attention! the permanent magnets are very strong, keep them far from credit cards etc. Avoid also hitting them against each other and against the iron plate, because they are fragile and can be broken.

1) Determine the static and dynamic coefficients of friction between the iron plate and a paper stripe. Draw the scheme of your set-up.

2) (4 points) Determine the attraction force between the iron plate and a magnet for those distances which allow direct usage of dynamometer. Draw the scheme of your set-up.

3) (4 points) Determine the attraction force between the iron plate and a magnet for smaller distances. For that purpose, you can use the wooden brick sliding down an inclined plate and hitting the magnet. You do not need to study the zero-distance (direct contact of magnet and iron plate) case. Draw the scheme of your set-up. Depict all the measurement result graphically.

4) Join two permanent magnets by a bridge made of a piece of iron (a) as shown in figure. Put a stripe of paper (b) on the iron plate (c) and put the system of magnets upon it. Determine the attraction force between the system of magnets and iron plate.

