4. Stretching gloves (8 points) — *Eero Uustalu.*

Tools At least three pairs of large colorless medical semi-transparent latex rubber gloves; a roll of transparent and strong office tape; a pair of sharp scissors; at least four sheets of A4 or larger size graphing paper; three rulers; a flexible measuring tape with a length of at least one meter; extra-fine point universal surface marker. Rubber gloves can be cut as needed into pieces. The pieces of gloves can be fixed to your working table either directly using the tape and/or with the help of a ruler (to achieve a firmer fixing).

Latex is a highly stretchable elastic material for which it can be assumed that its volume remains constant during stretching, up to the breaking point.

For each of the tasks, sketch your experimental setup and explain the steps you made to obtain the best possible precision, and tabulate the directly measured data.

i) *(1 point)* Determine the maximal strain ε_m of the latex film band (i.e. the strain by which the band breaks). Strain is defined as the relative change in length, $\varepsilon = (l - l_0)/l_0$, where l and l_0 are the stretched and unstretched lengths of the band.

ii) *(7 points)* Determine and plot the stress-strain relationship for latex bands. Stress is defined as the tension force per cross-sectional area. Express the stress σ in relative units, normalised to the maximal stress at the breaking point.