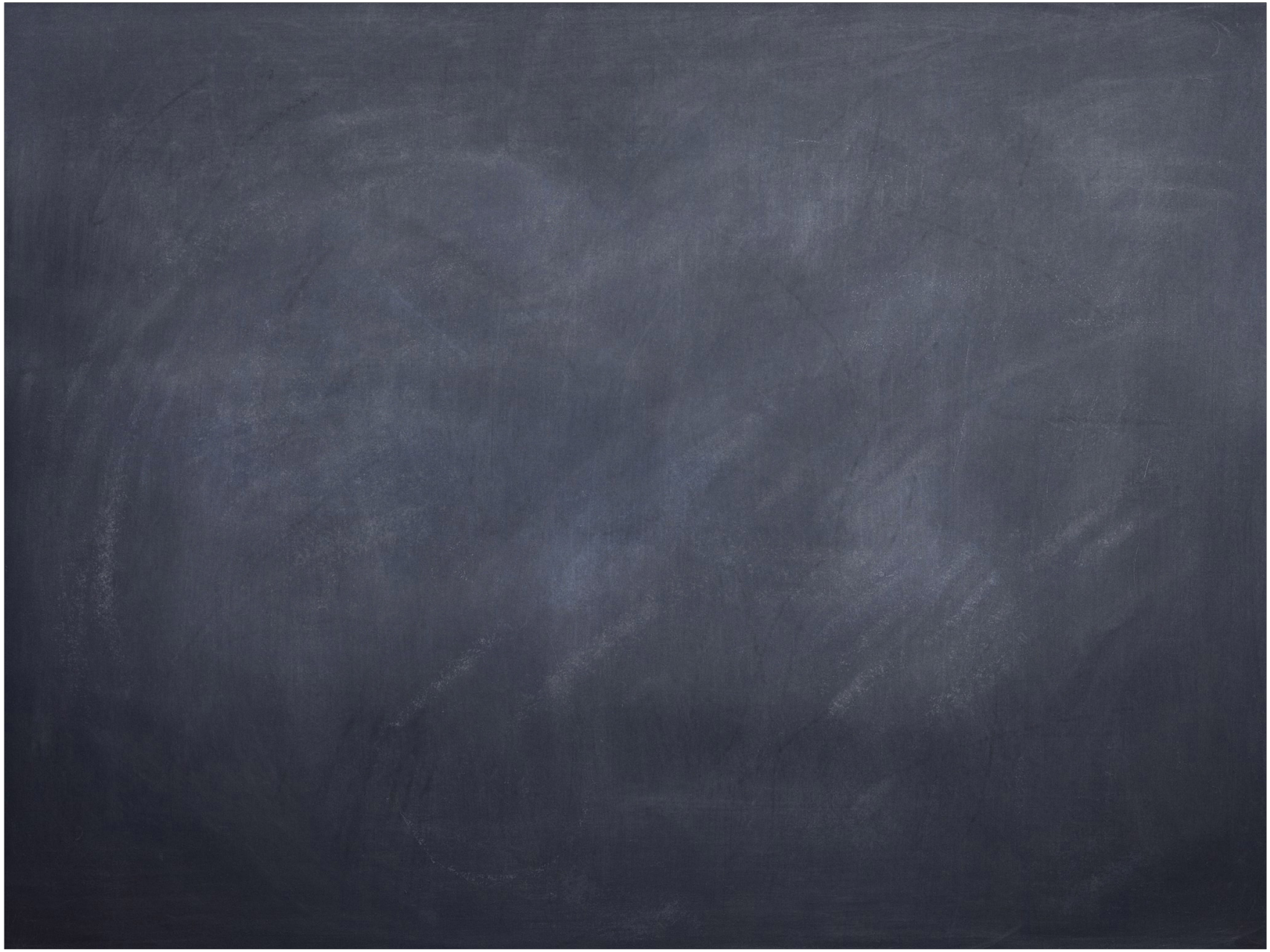
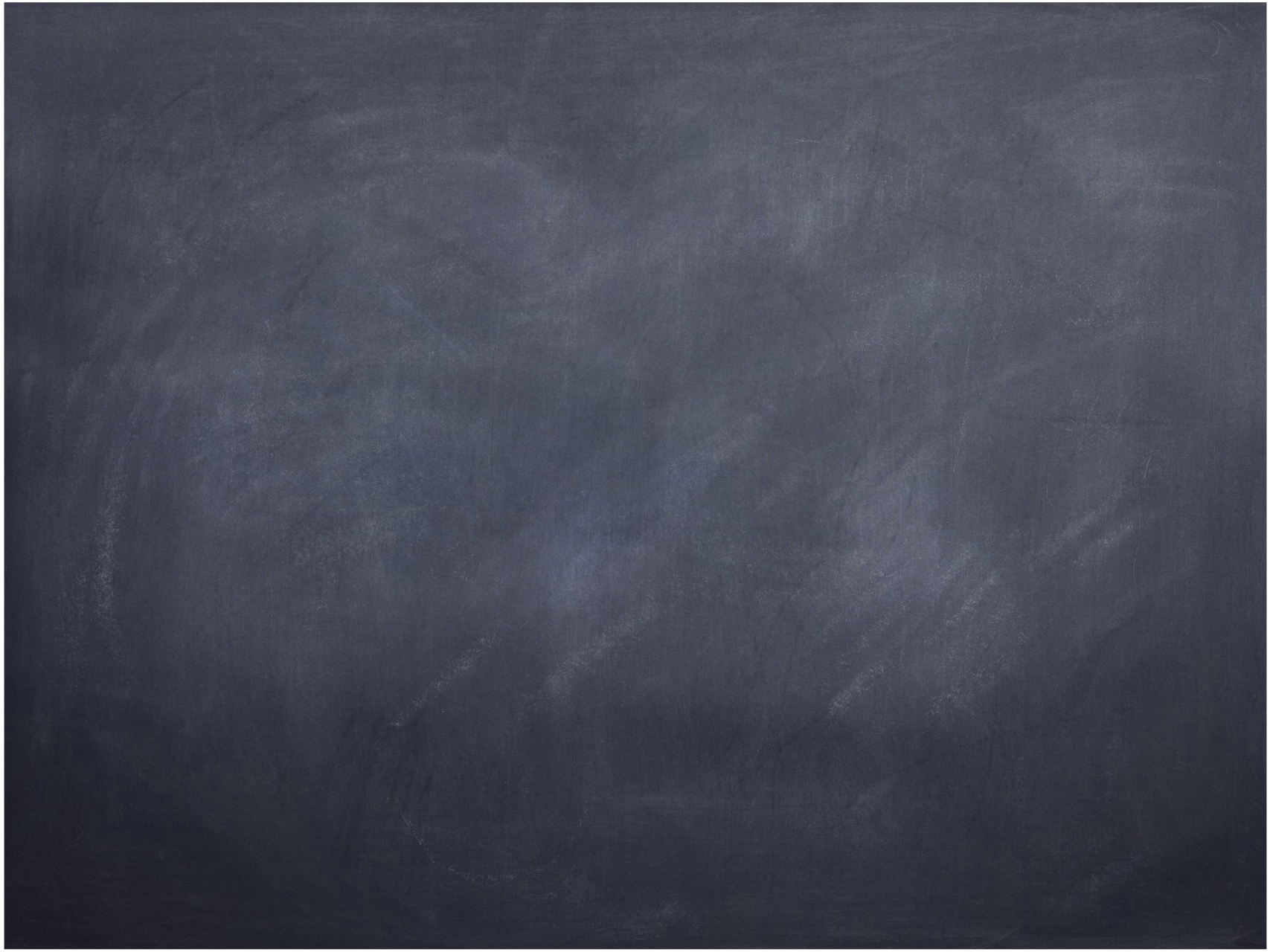
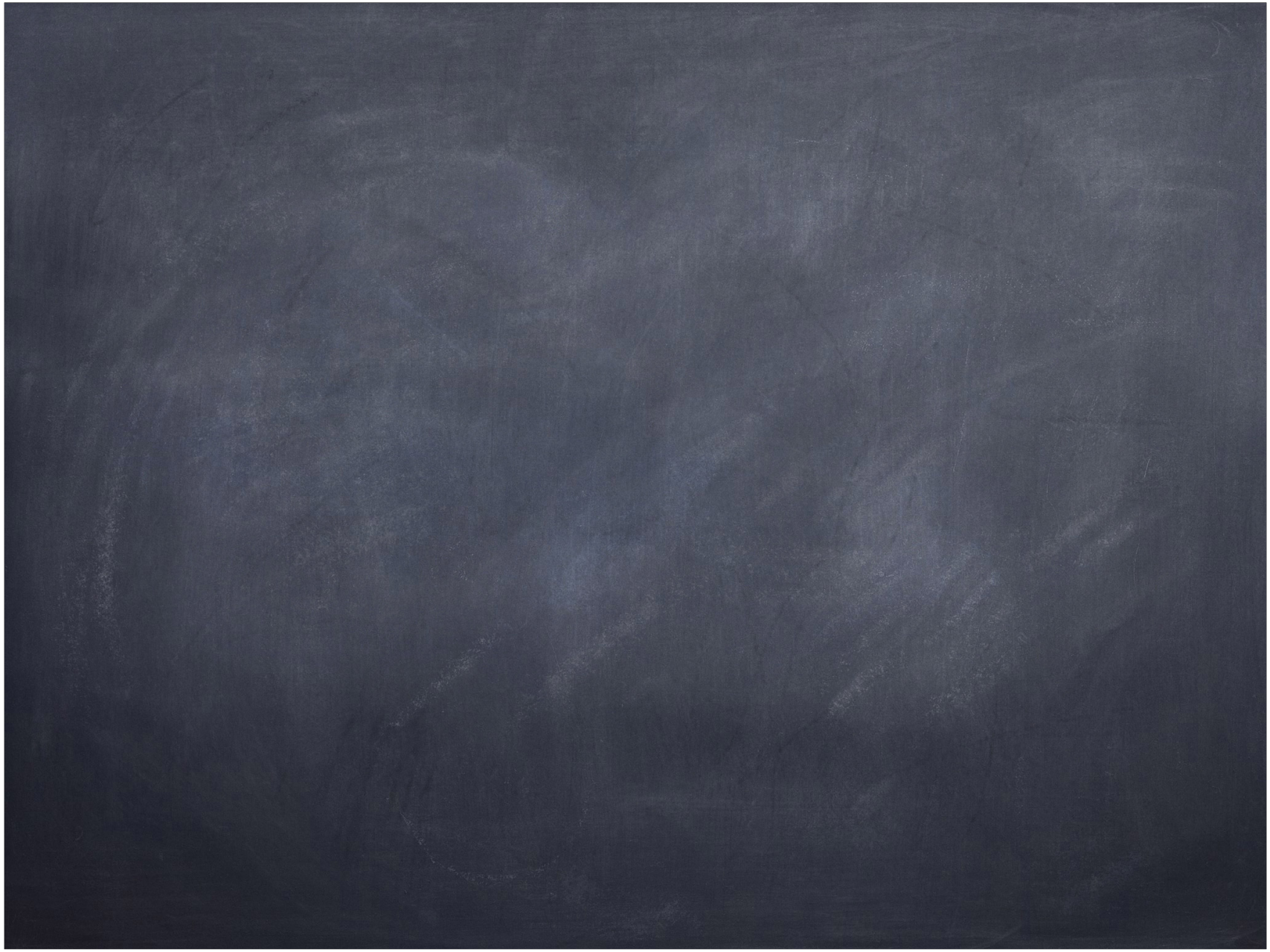
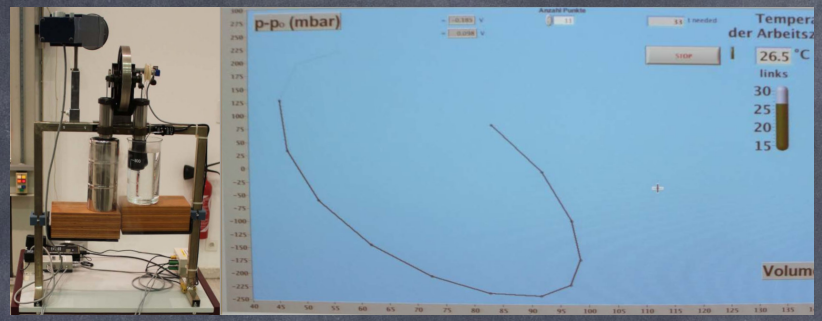
PHY 117 HS2024

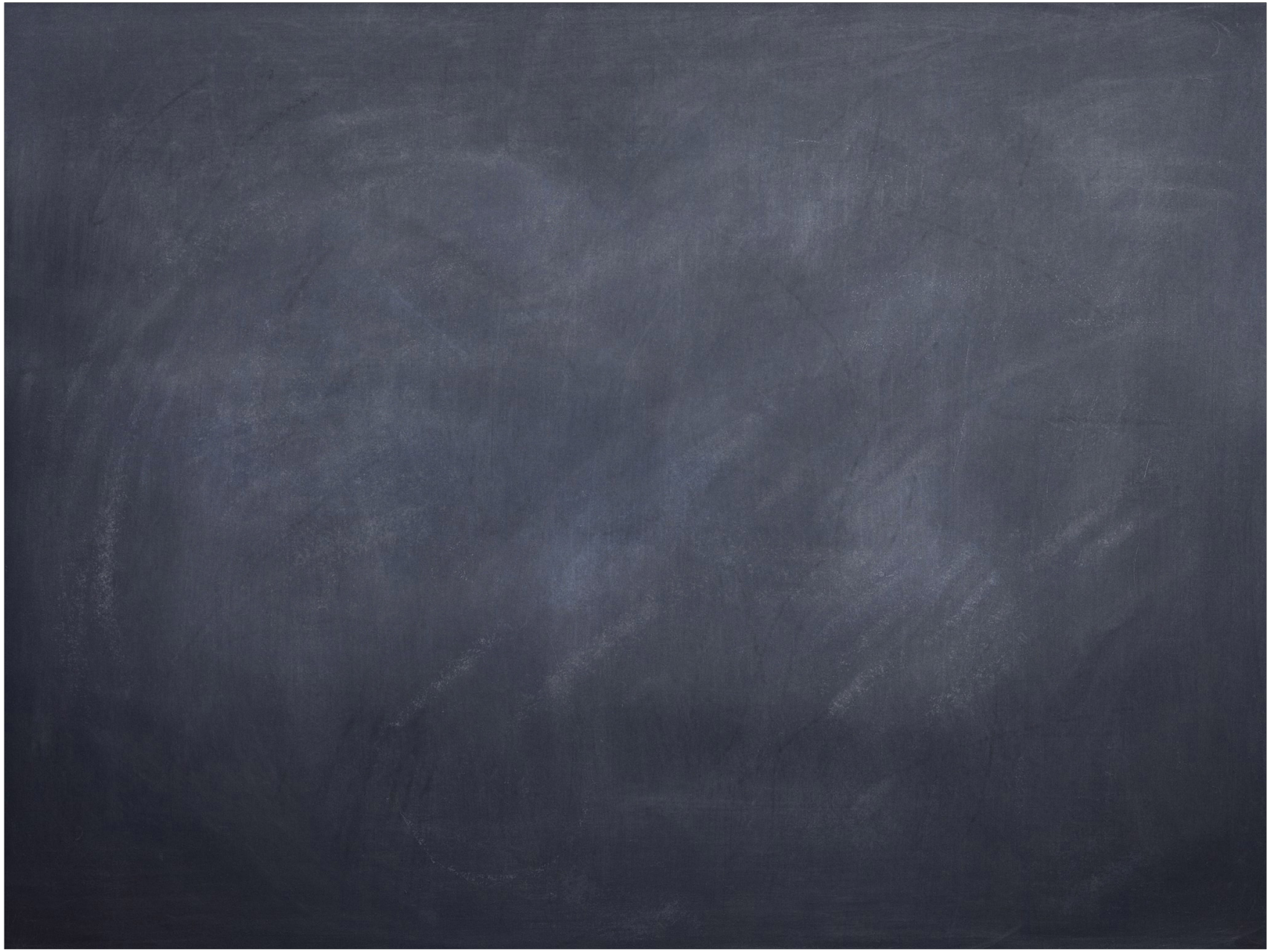
Week 8, Lecture 1
Nov. 5th, 2024
Prof. Ben Kilminster

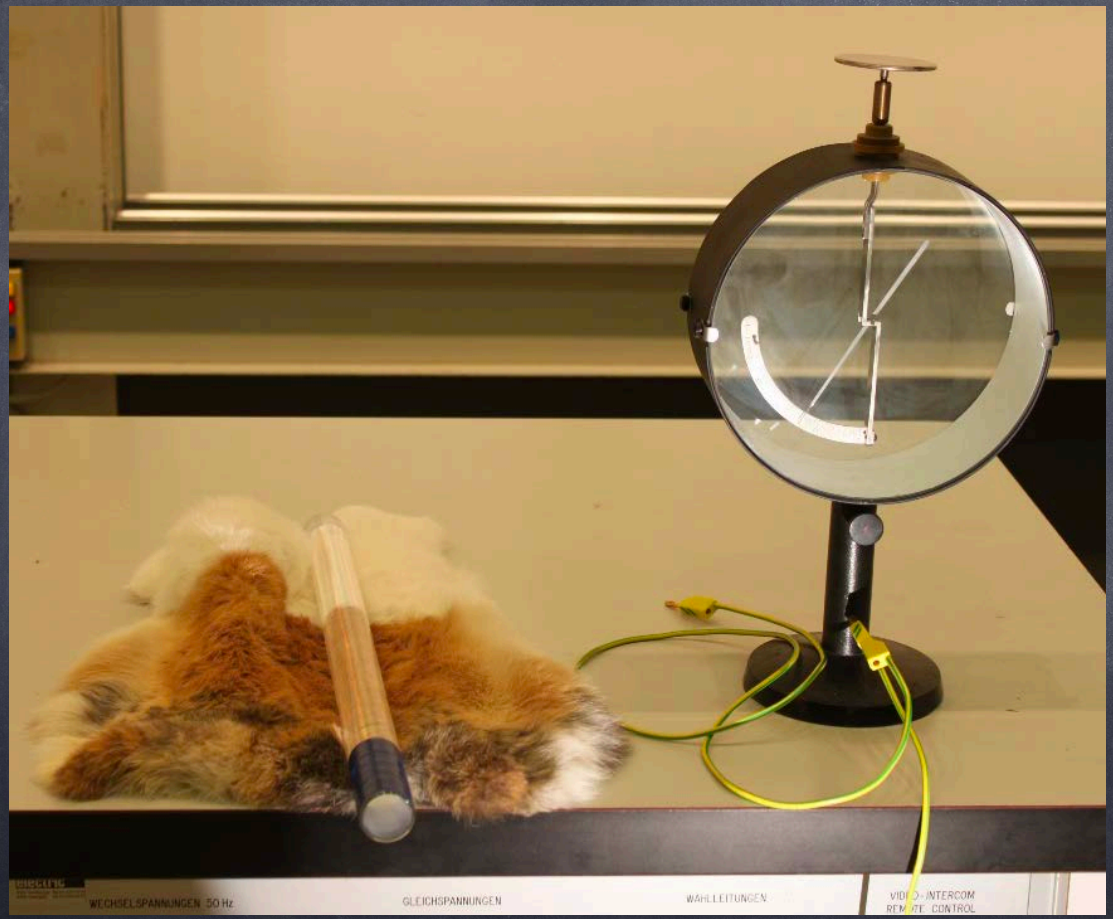







p-p₀ (mbar)
Anzahl Punkte
STOP
Temperatur der Arbeitsz
26.5 °C
links
30
25
20
15
Volum




WECHSELSPANNUNGEN 50 Hz
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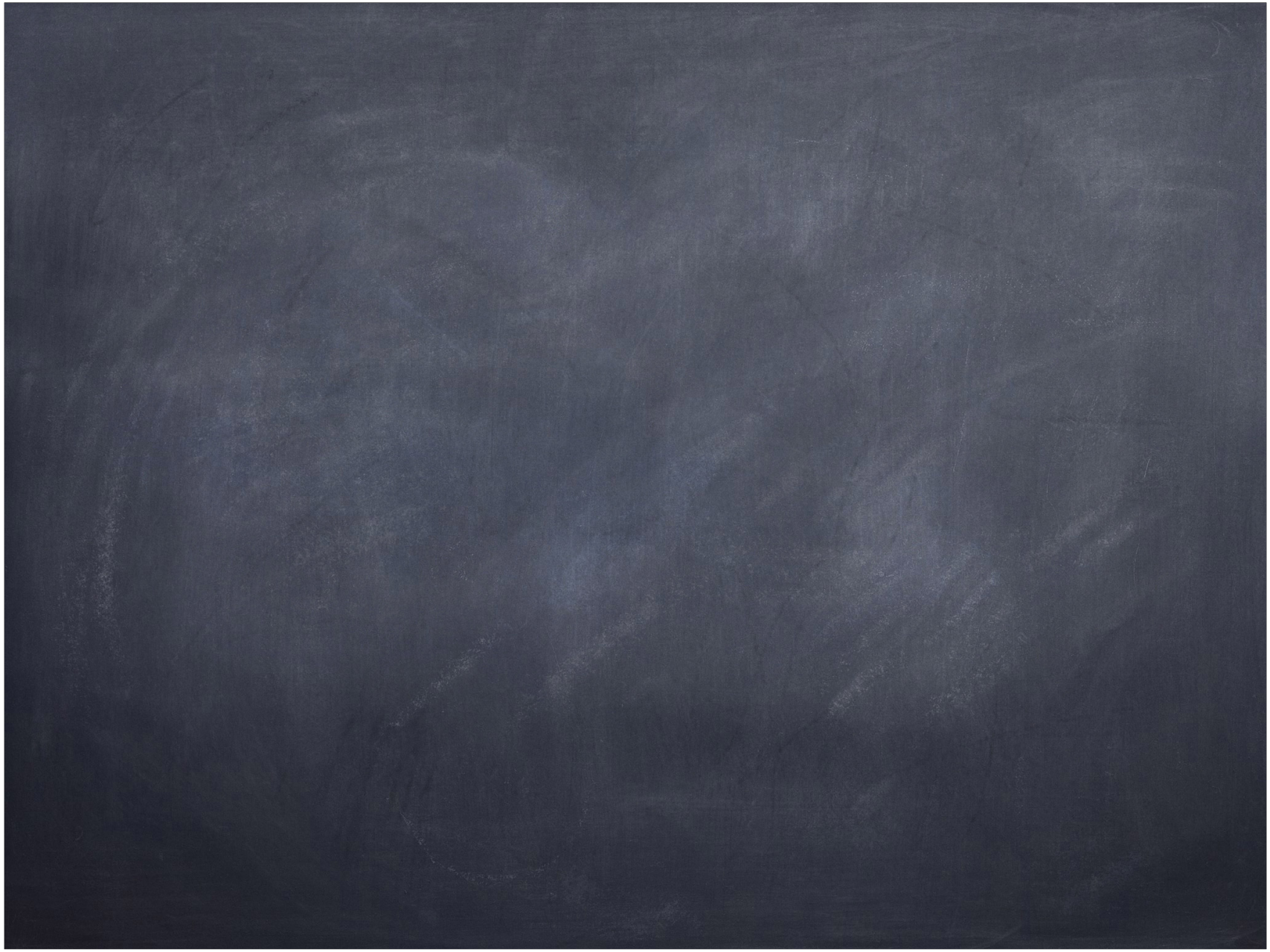
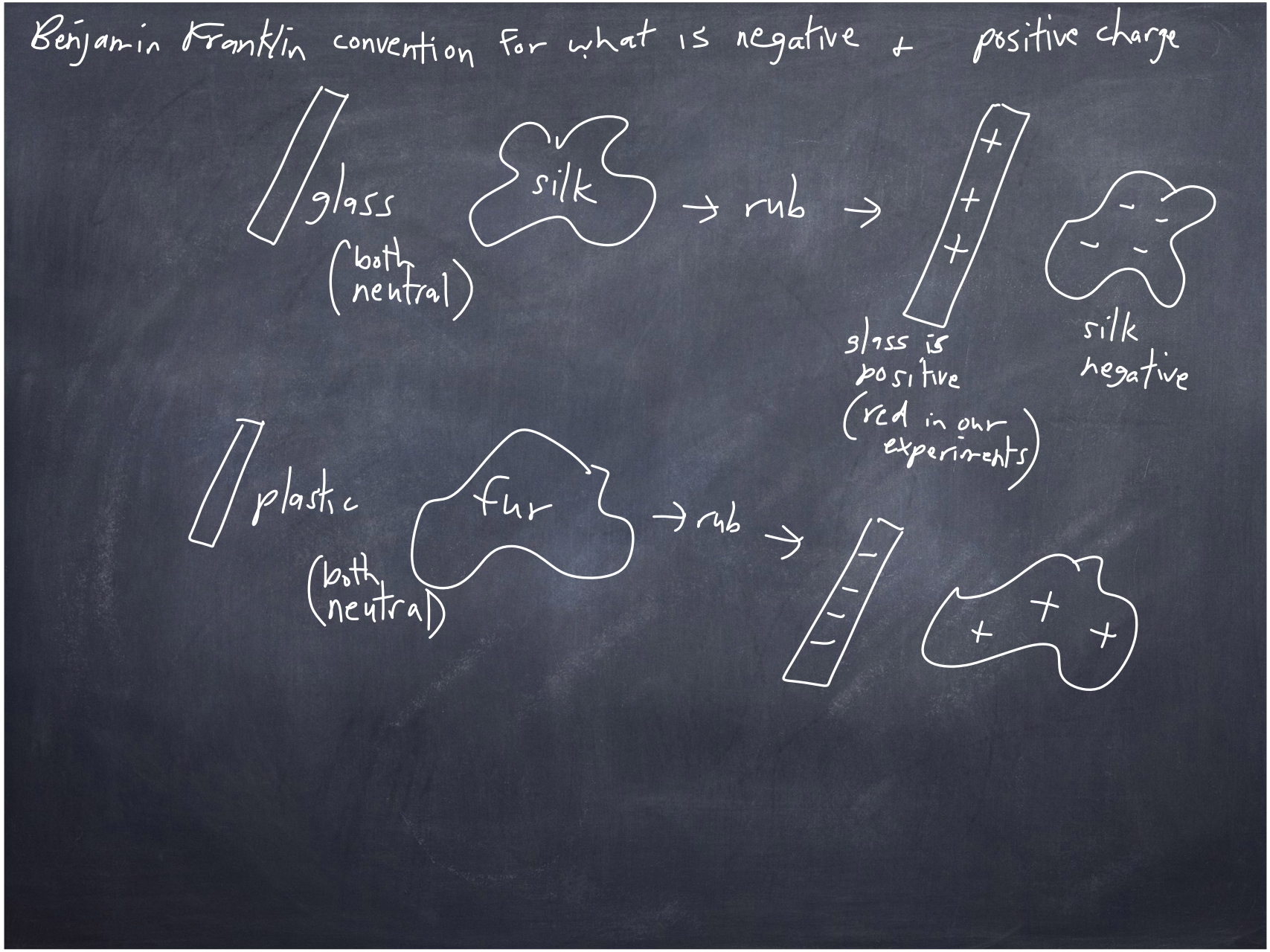
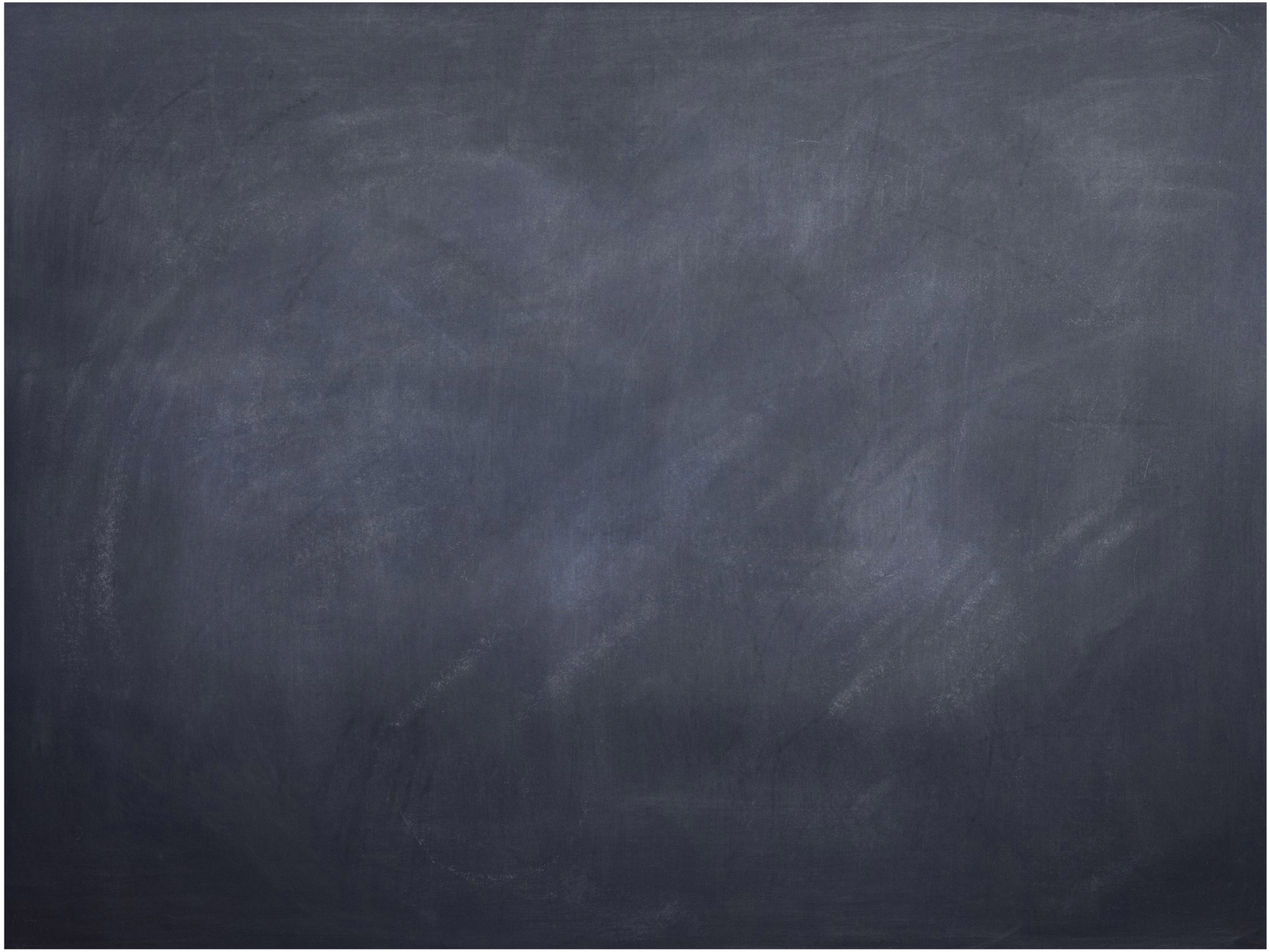
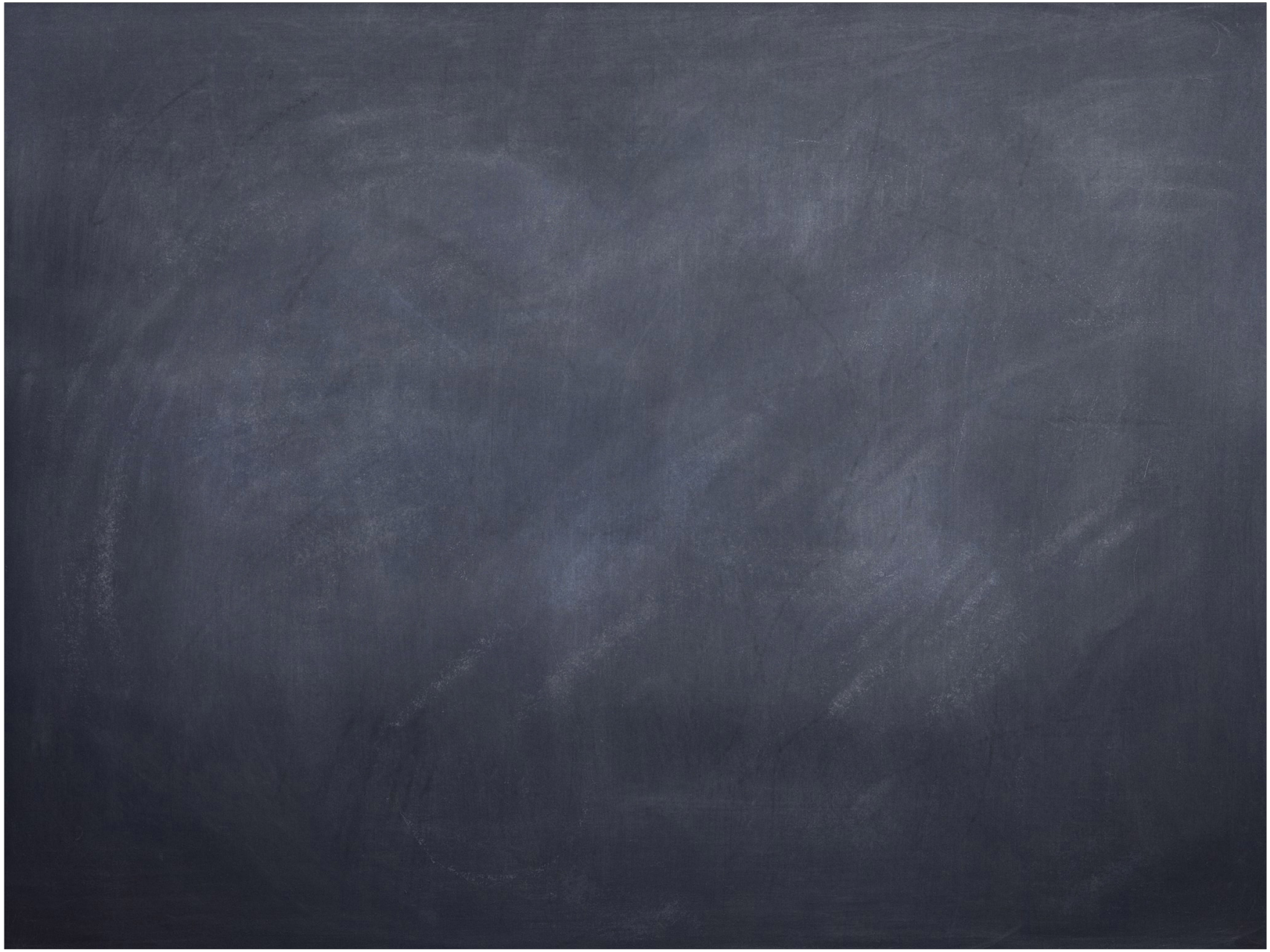
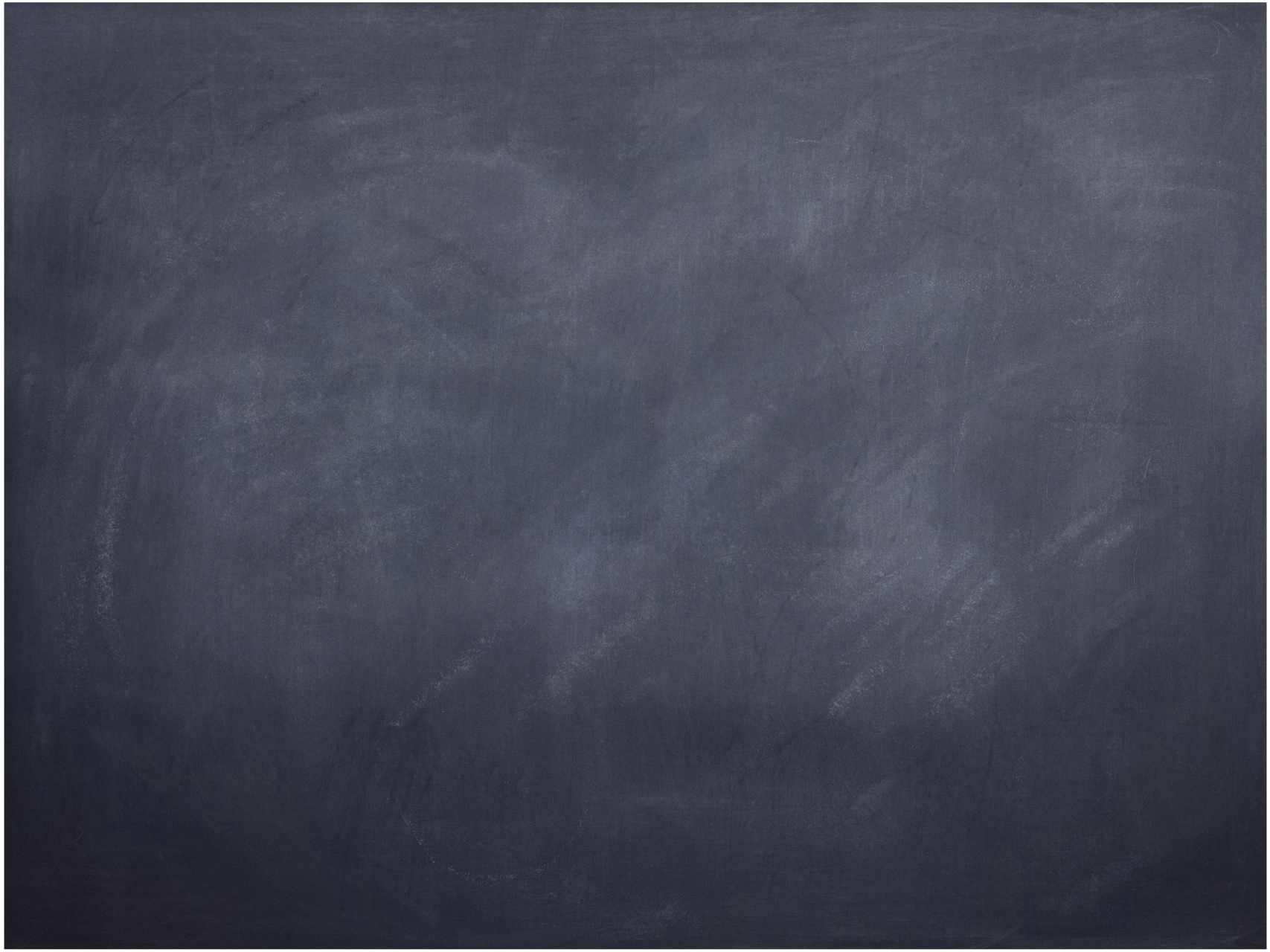
VIDEO-INTERCOM
REMOTE CONTROL

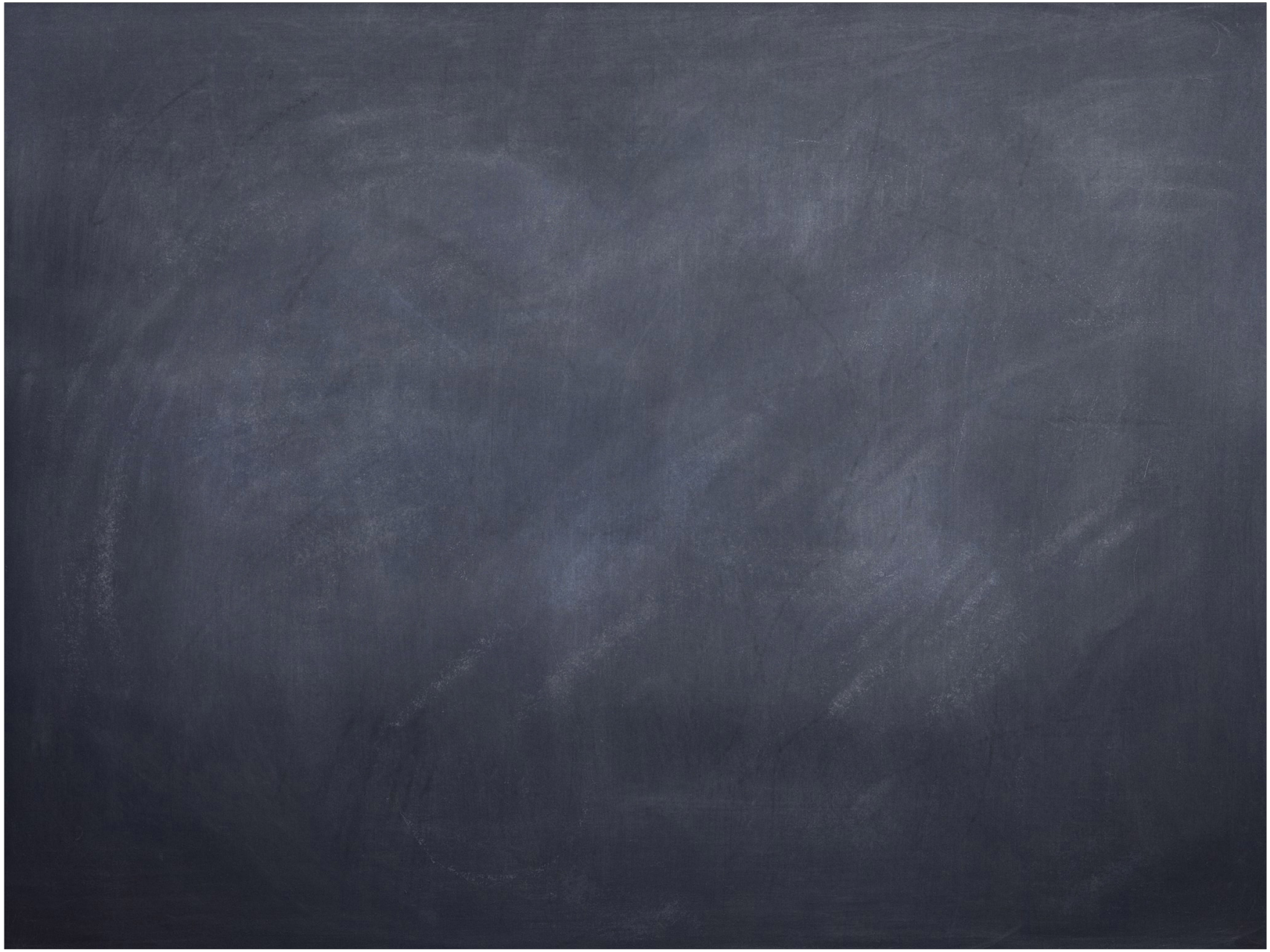


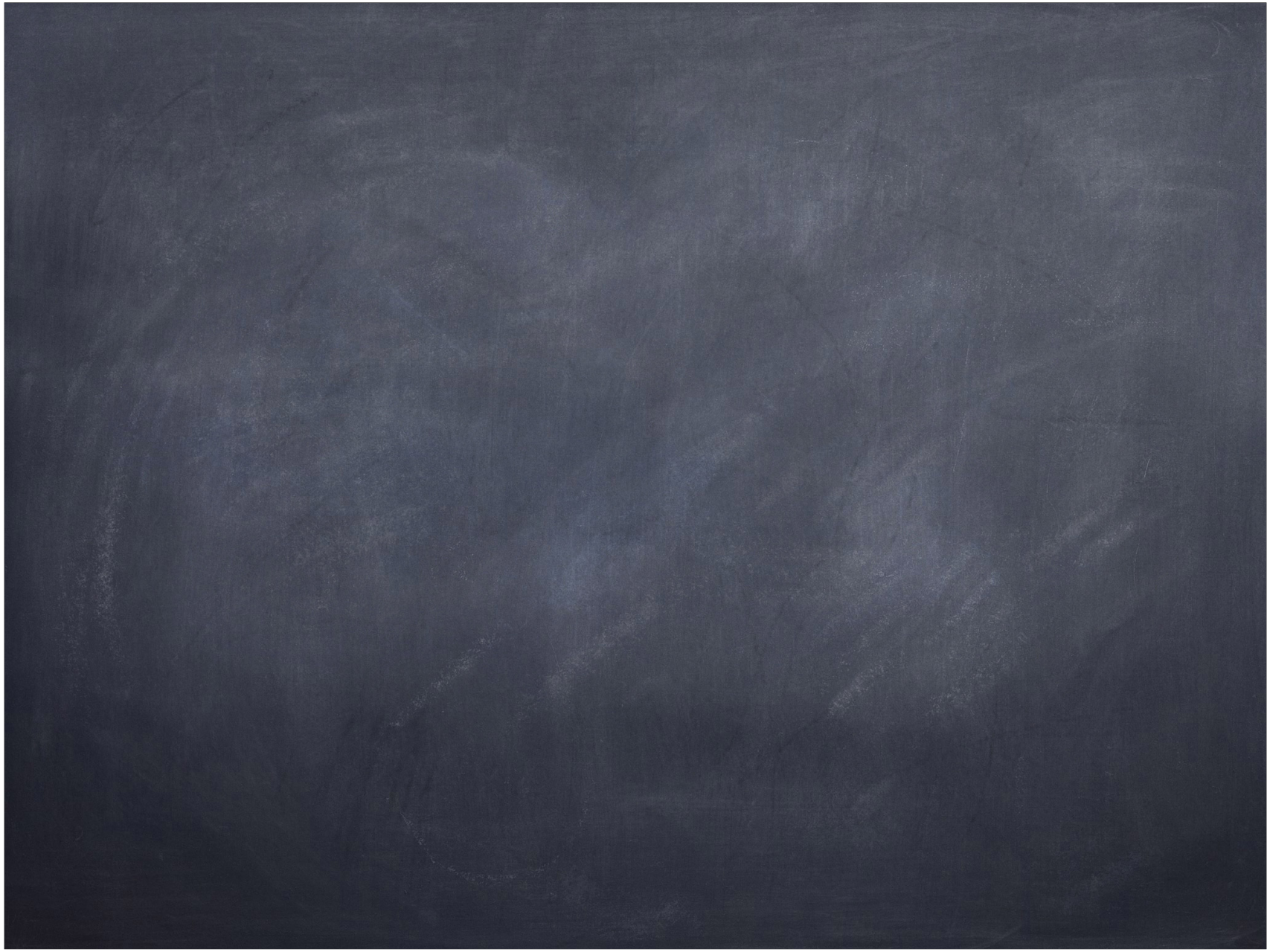

Benjamin Franklin convention for what is negative + positive charge
glass
(both neutral)
silk
→ rub →
+
+
+
glass is positive (red in our experiments)
silk negative
plastic
fur
(both neutral)
→ rub →



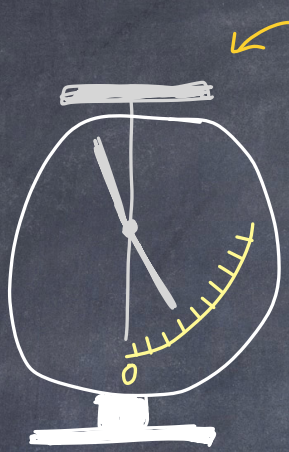


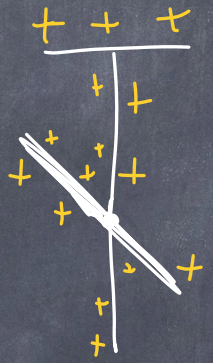


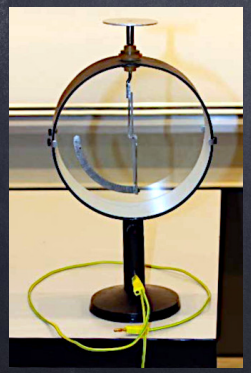


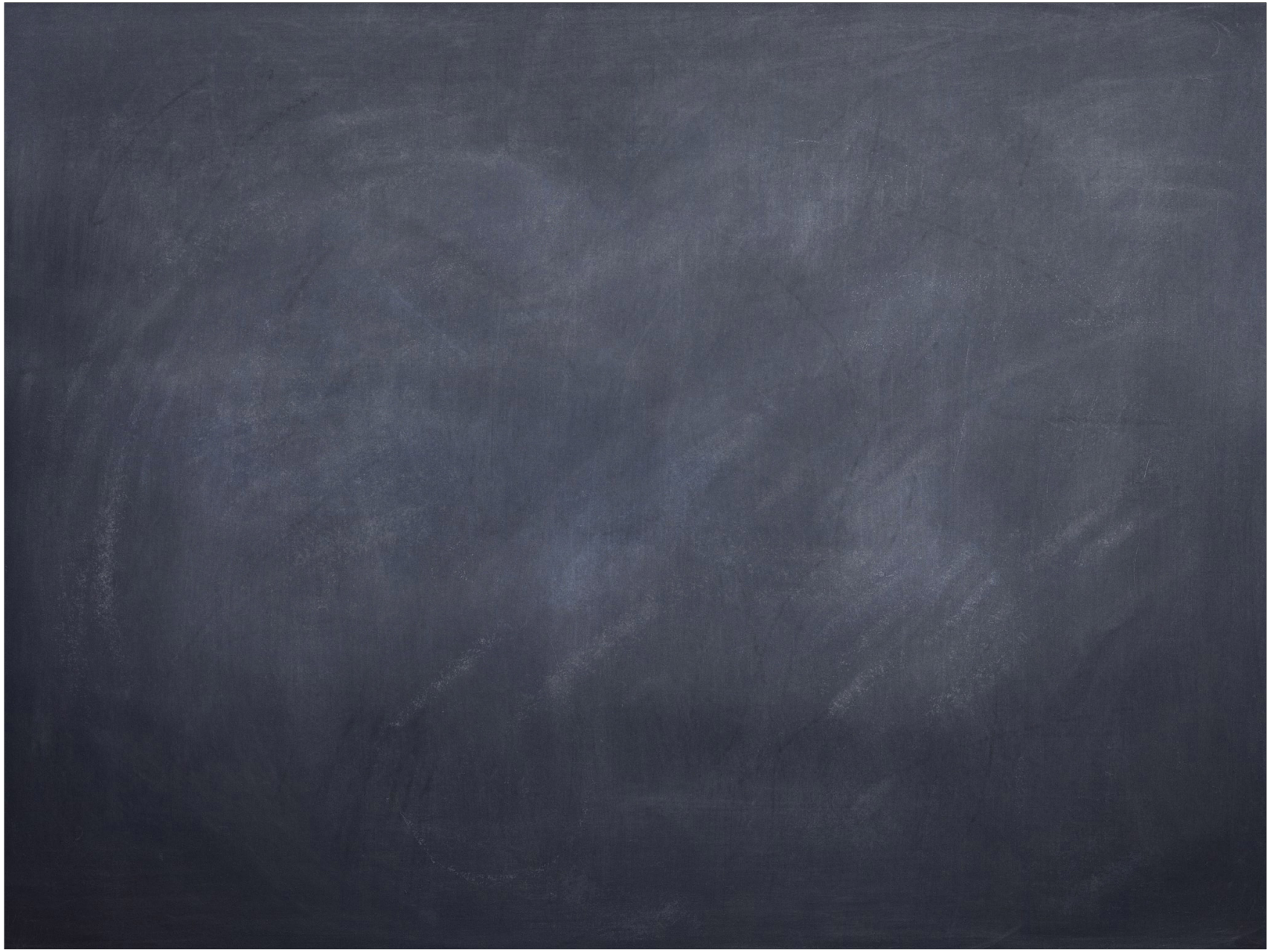


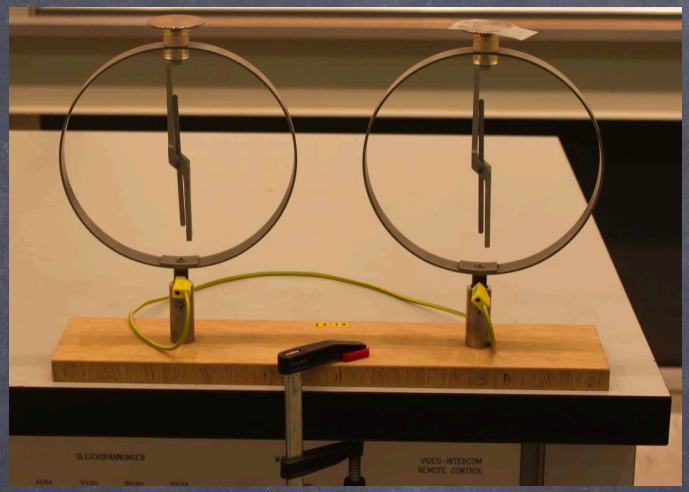
How to measure electric charge:



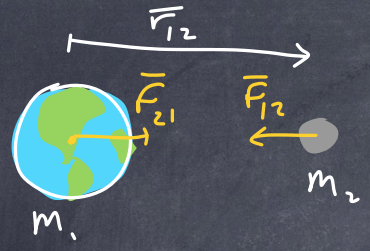


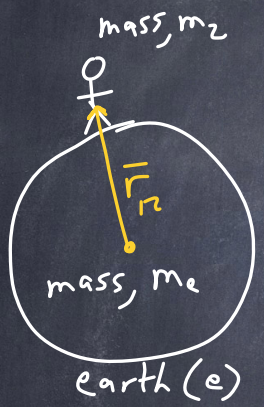




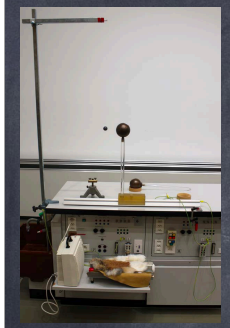

GLEICHSPANNUNGEN
VIDEO-INTERCOM
REMOTE CONTROL

Remember! What is the gravitational force between two masses:





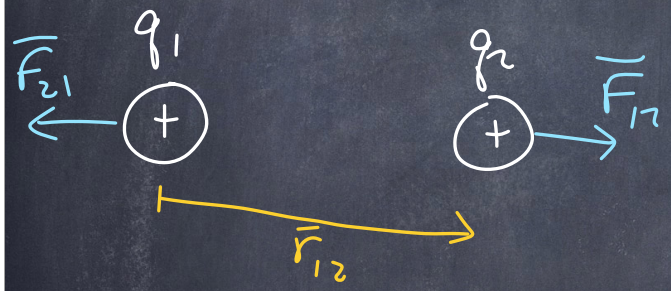
What is the electric force between 2 charges.

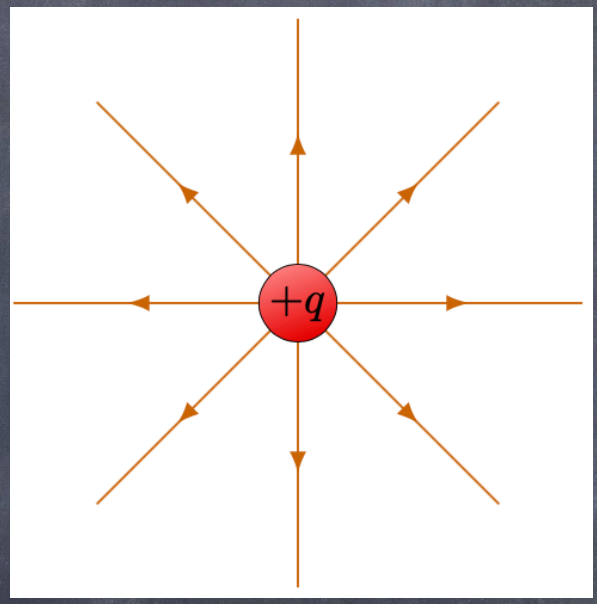


Coulomb's Law: $\vec{F}_{12} = \frac{k q_1 q_2}{r_{12}^2} \hat{r}_{12}$

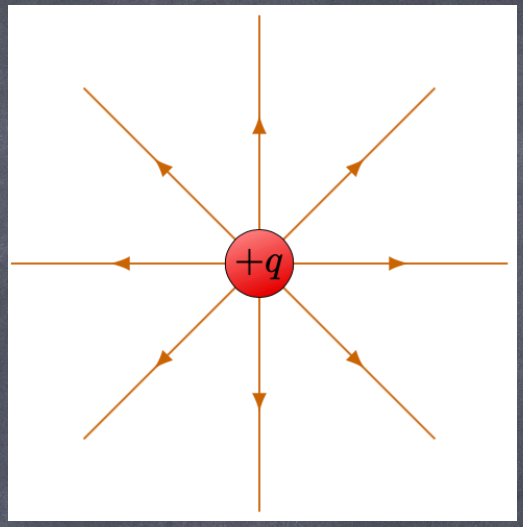
force of q_1 on q_2

(Force q_2 feels due to q_1)



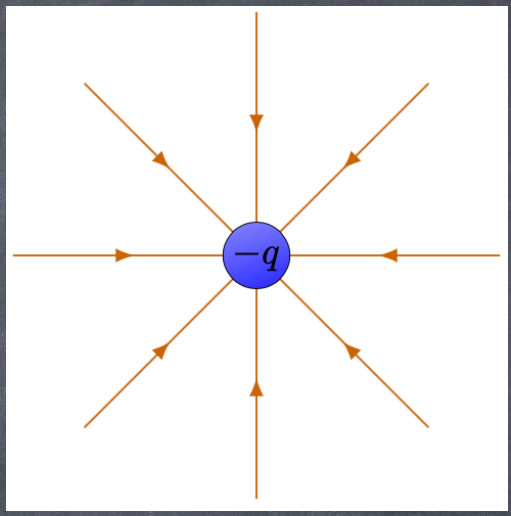

+q

Rules for drawing $\vec{E}$-Field lines



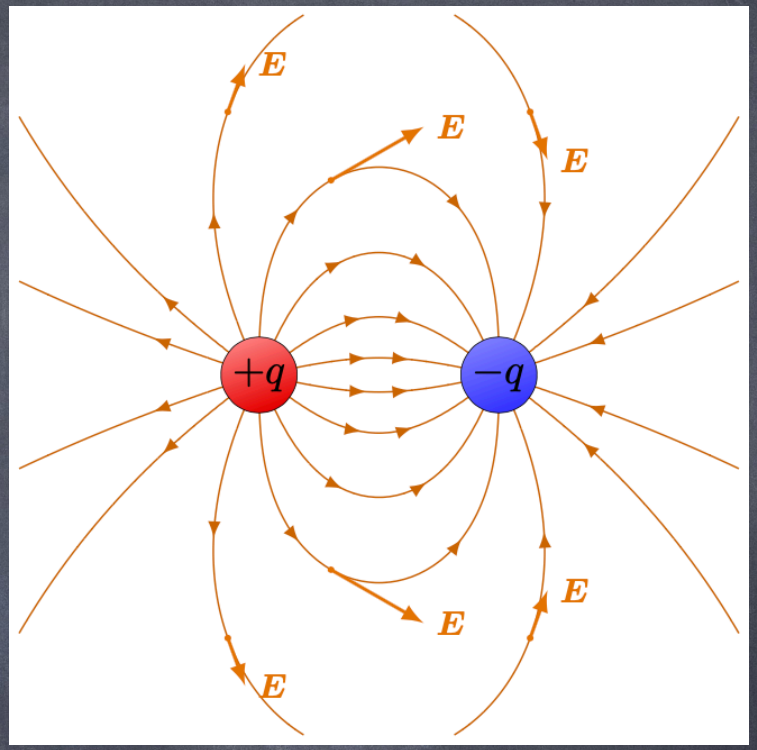
Rules for drawing E-field lines:

1) Start on positive charges



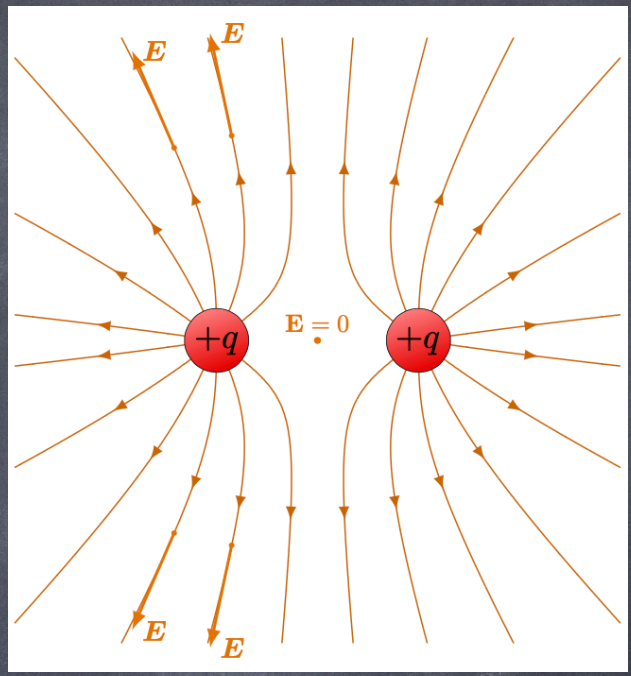
Rules For drawing E-Field lines:

1) Start on positive charges
2) End on negative charges



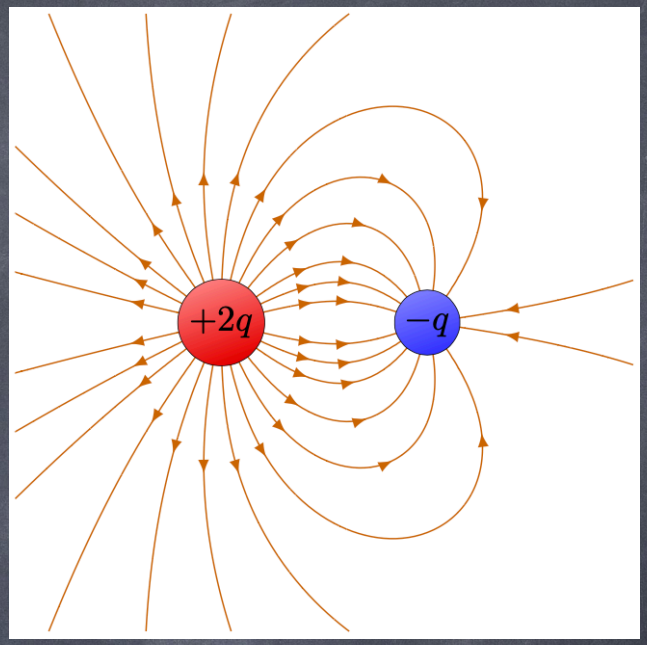
Rules For drawing E-Field lines:

1) Start on positive charges
2) End on negative charges
3) Lines are symmetric as they enter or leave charge



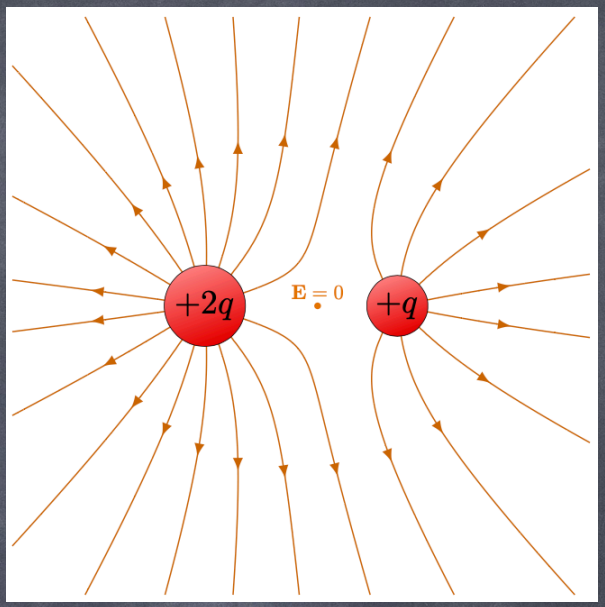
Rules For drawing E-Field lines:

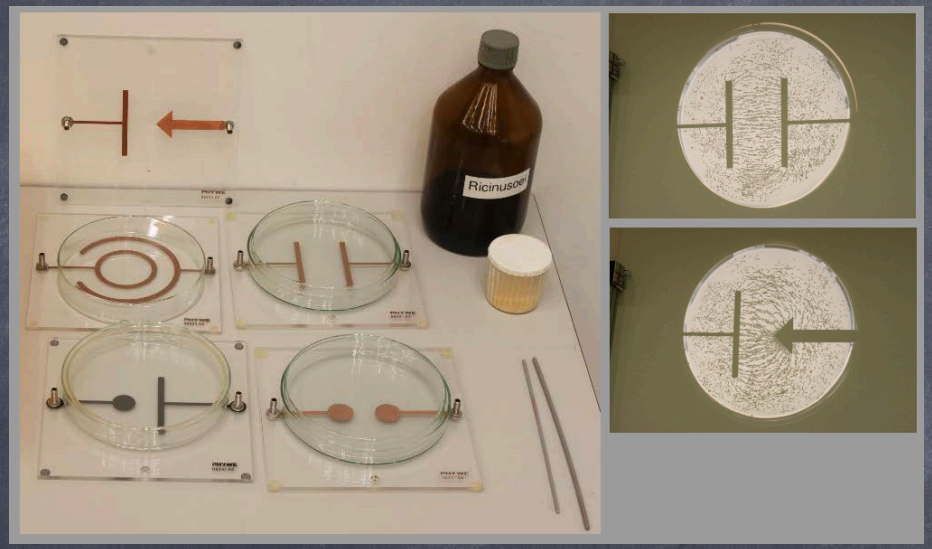
1) Start on positive charges
2) End on negative charges
3) Lines are symmetric as they enter or leave charge
4) Lines do not cross



Rules For drawing $\in$-Field lines:

1) Start on positive charges
2) End on negative charges
3) Lines are symmetric as they enter or leave charge
4) Lines do not cross
5) The number of lines is proportional to the charge.
6) The density of lines is proportional to the magnitude of $\frac{}{\in}$

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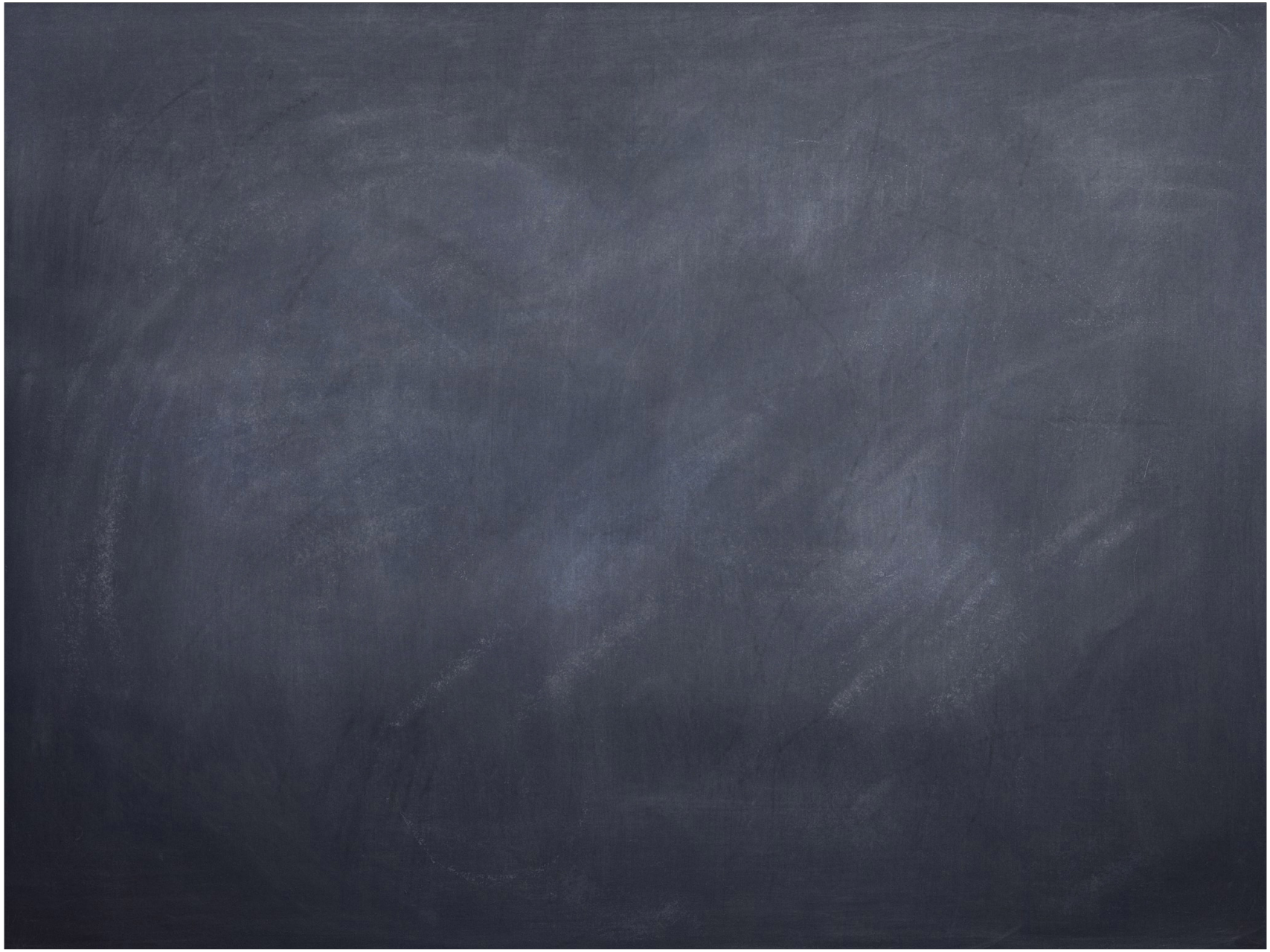
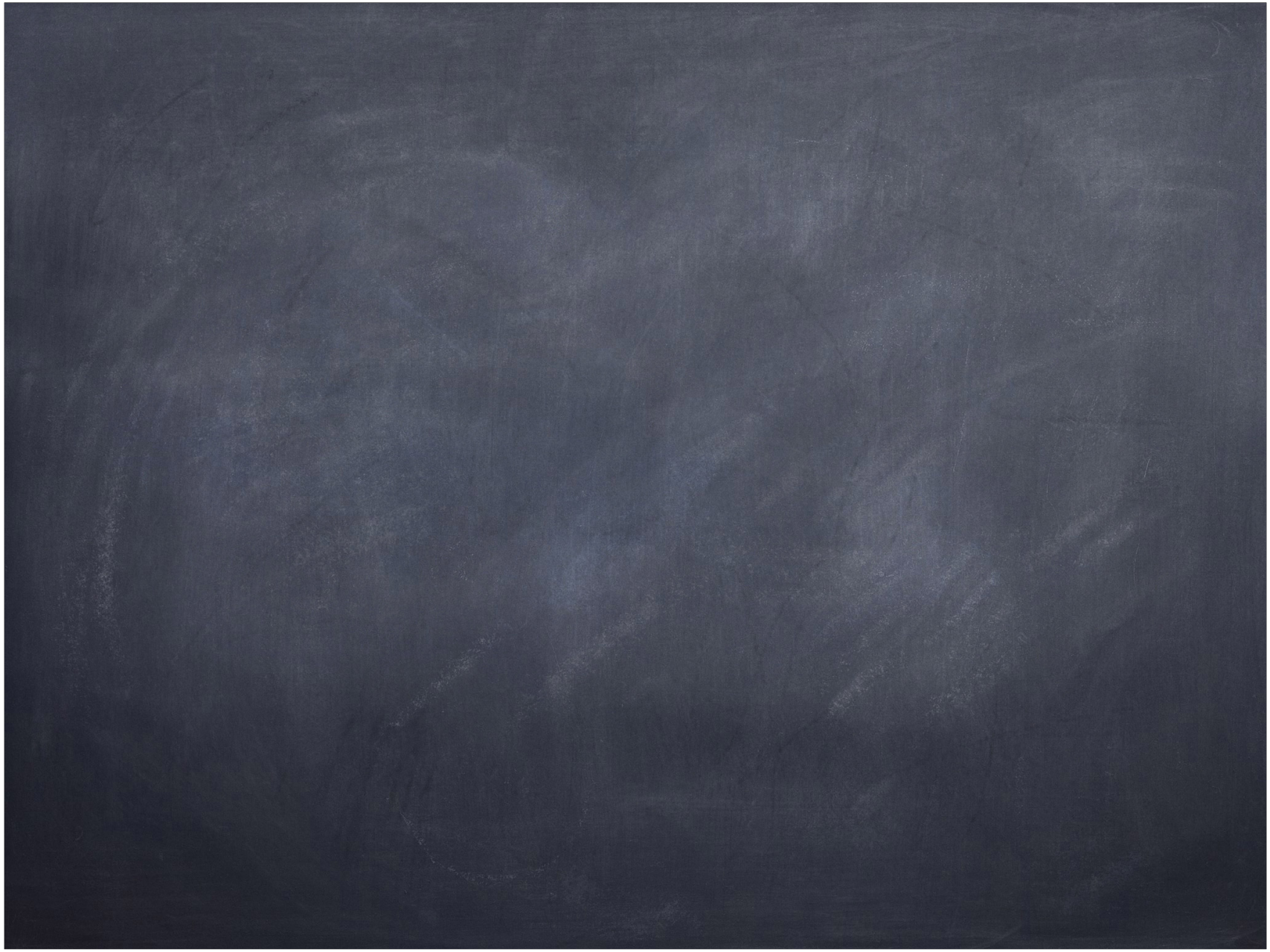
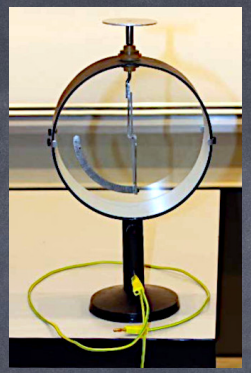
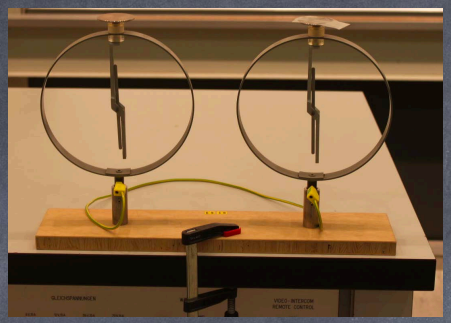




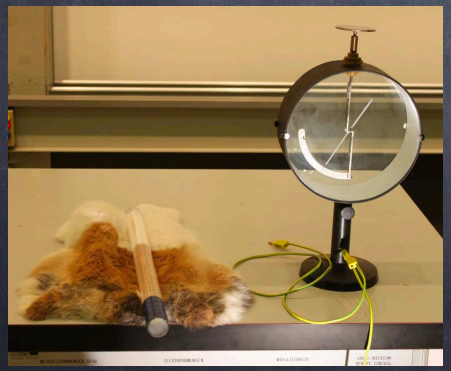
ES2



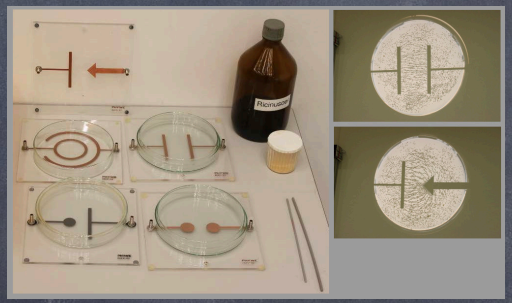
ES8



ES19



ES24



ES40