

Versuche zur Vorlesung Physik für Maschinenbau

Vorlesung 3

Dr. Thomas Kirn



Übersicht Aufbau Bühne Fo1

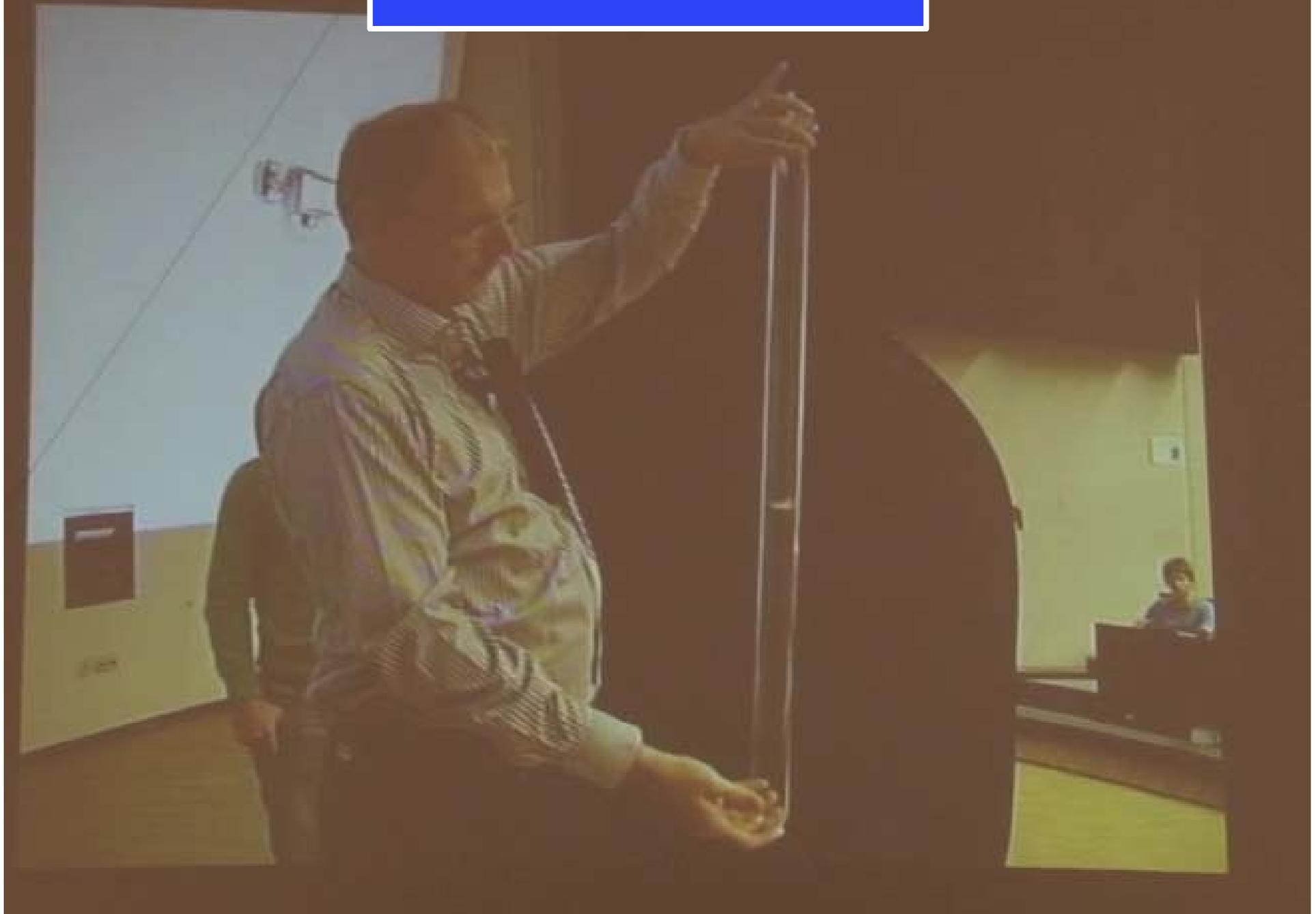


28/10/2011

Freier Fall im Vakuum



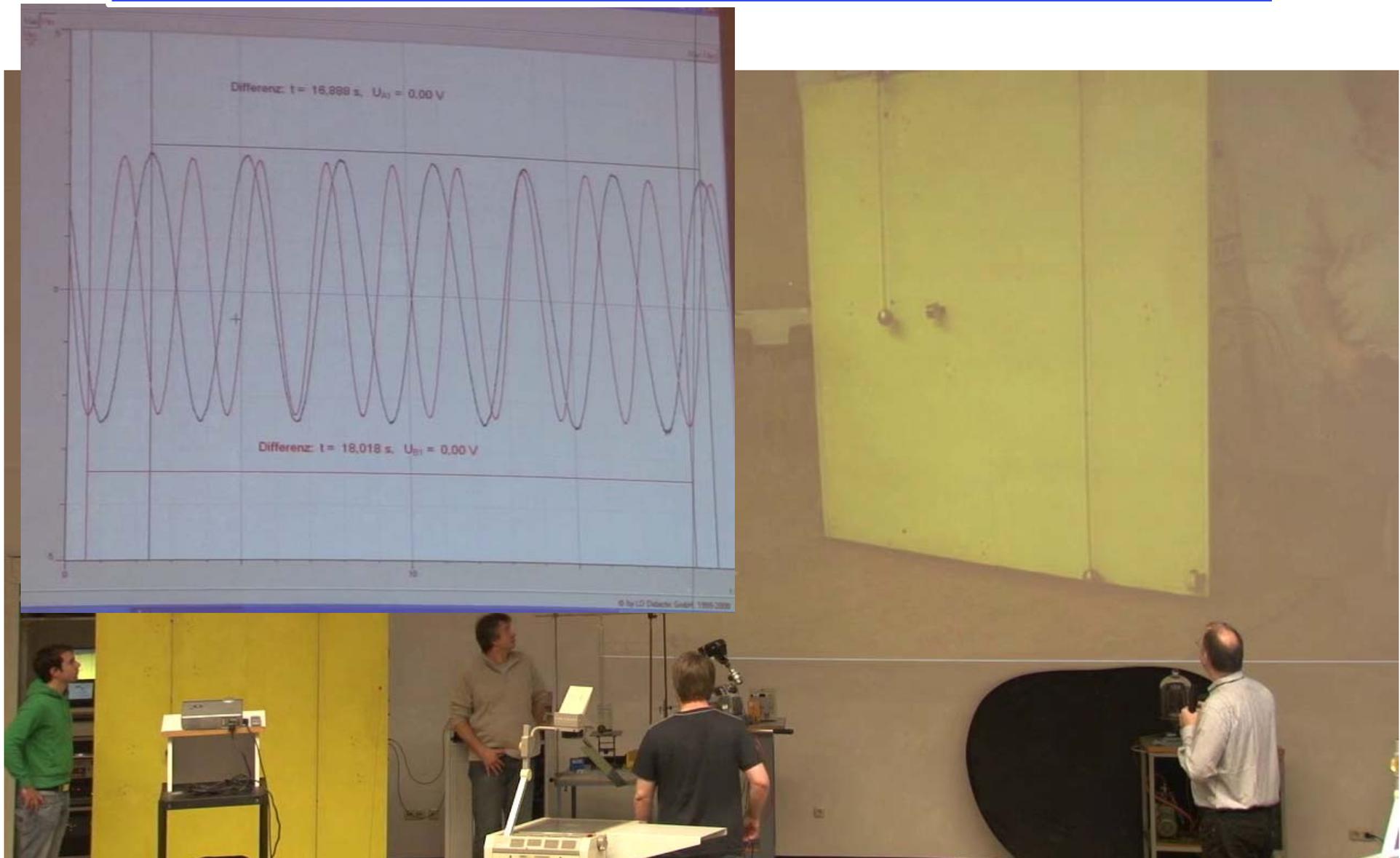
Freier Fall im Vakuum



Schwingungen: Fadenpendel

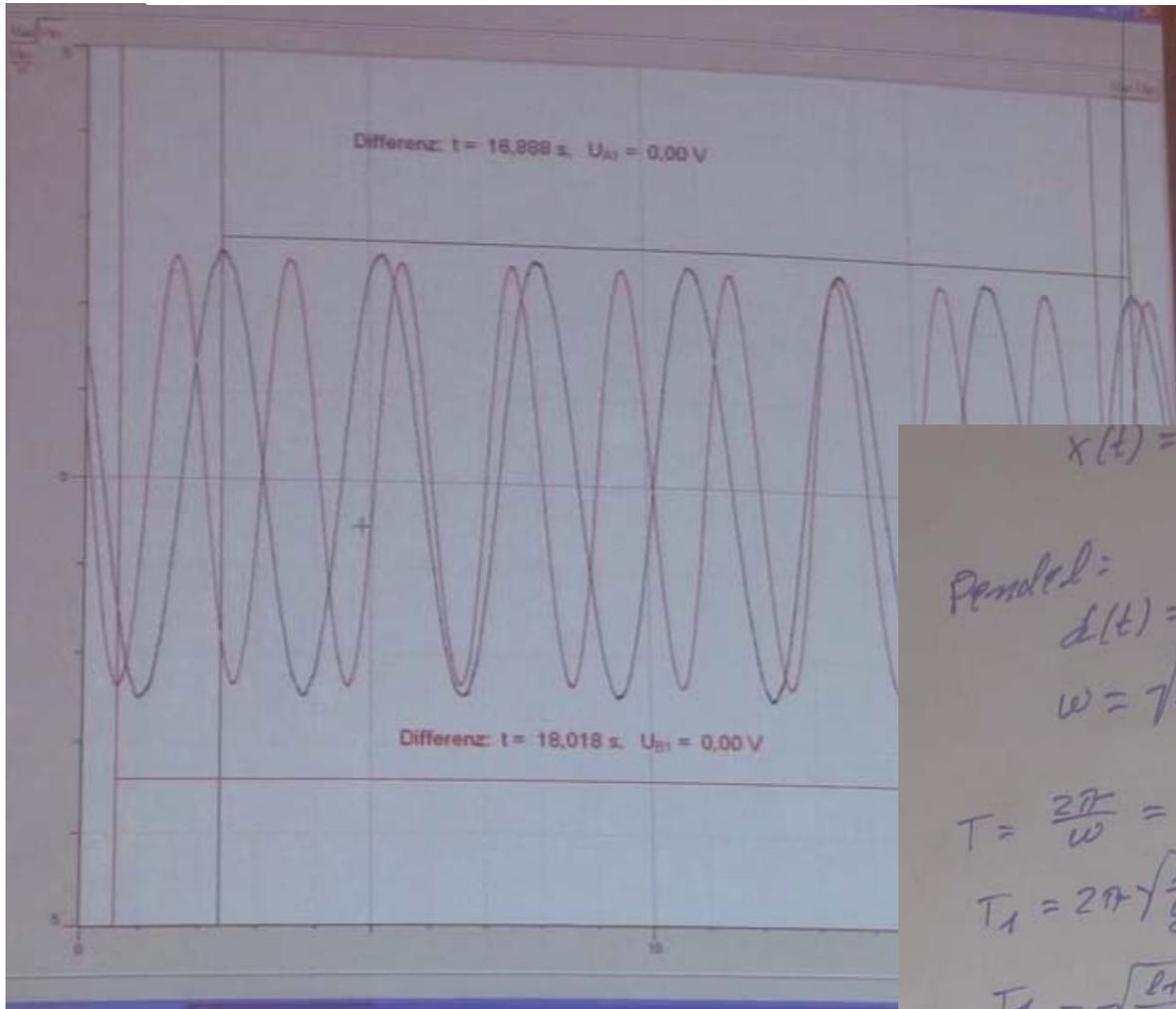


Schwingungen: verschiedene Pendellängen



Cassy-File: Pendel_gelbe_Wand_v2.lab

Schwingungen: verschiedene Pendellängen



$x(t) = C \cdot \cos(\omega t + \phi)$

Pendel:
 $d(t) = C \cdot \cos(\omega t + \phi)$
 $\omega = \sqrt{\frac{g}{l}}$ $[\omega] = \frac{1}{\text{s}}$

$T = \frac{2\pi}{\omega} = 2\pi \sqrt{\frac{l}{g}}$

$T_1 = 2\pi \sqrt{\frac{l_1}{g}}$ $T_2 = 2\pi \sqrt{\frac{l_2}{g}}$

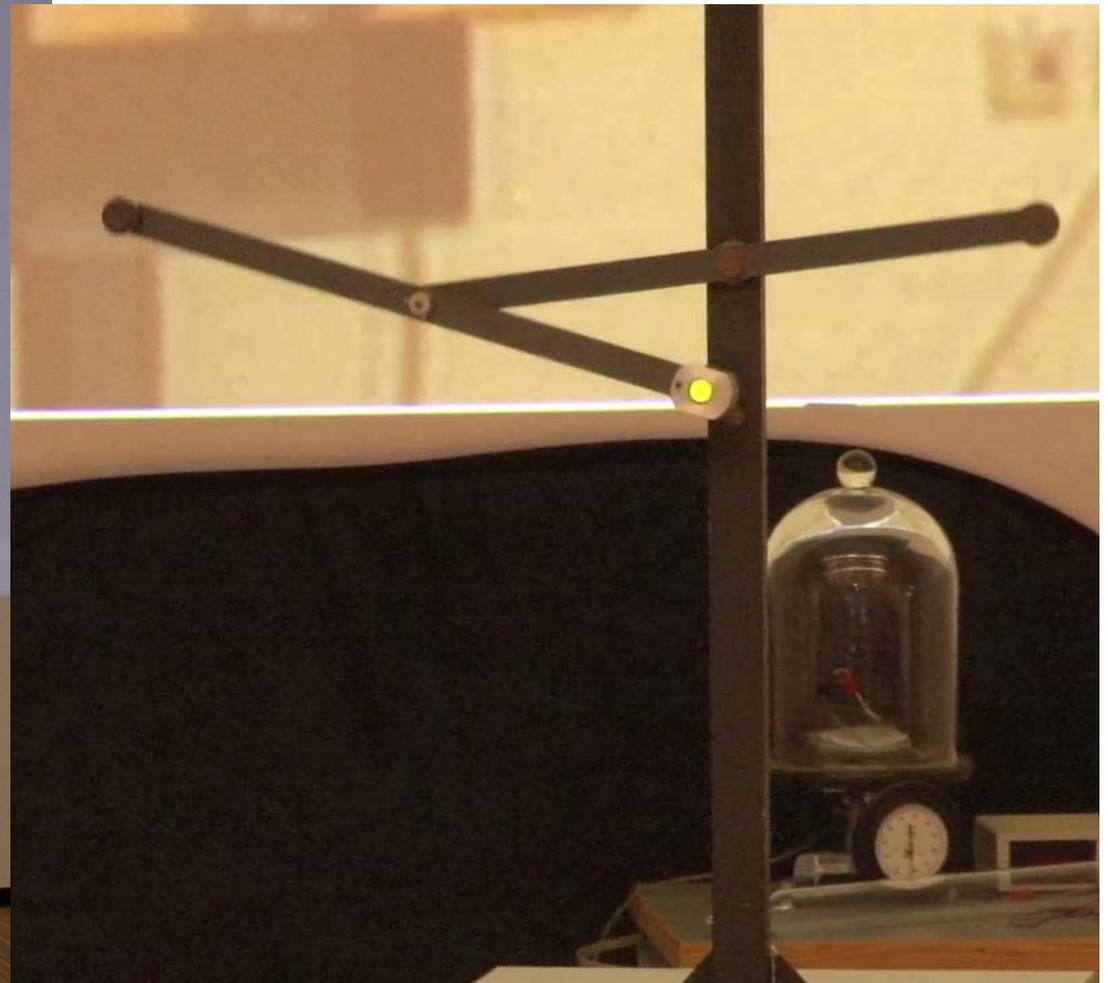
$\frac{T_1}{T_2} = \sqrt{\frac{l_1}{l_2}} = \sqrt{\frac{2 \text{ m}}{1 \text{ m}}} = \sqrt{2} = 1.41$

gemessen: $\frac{2.81 \text{ s}}{2.00 \text{ s}} \approx \underline{\underline{1.4}}$

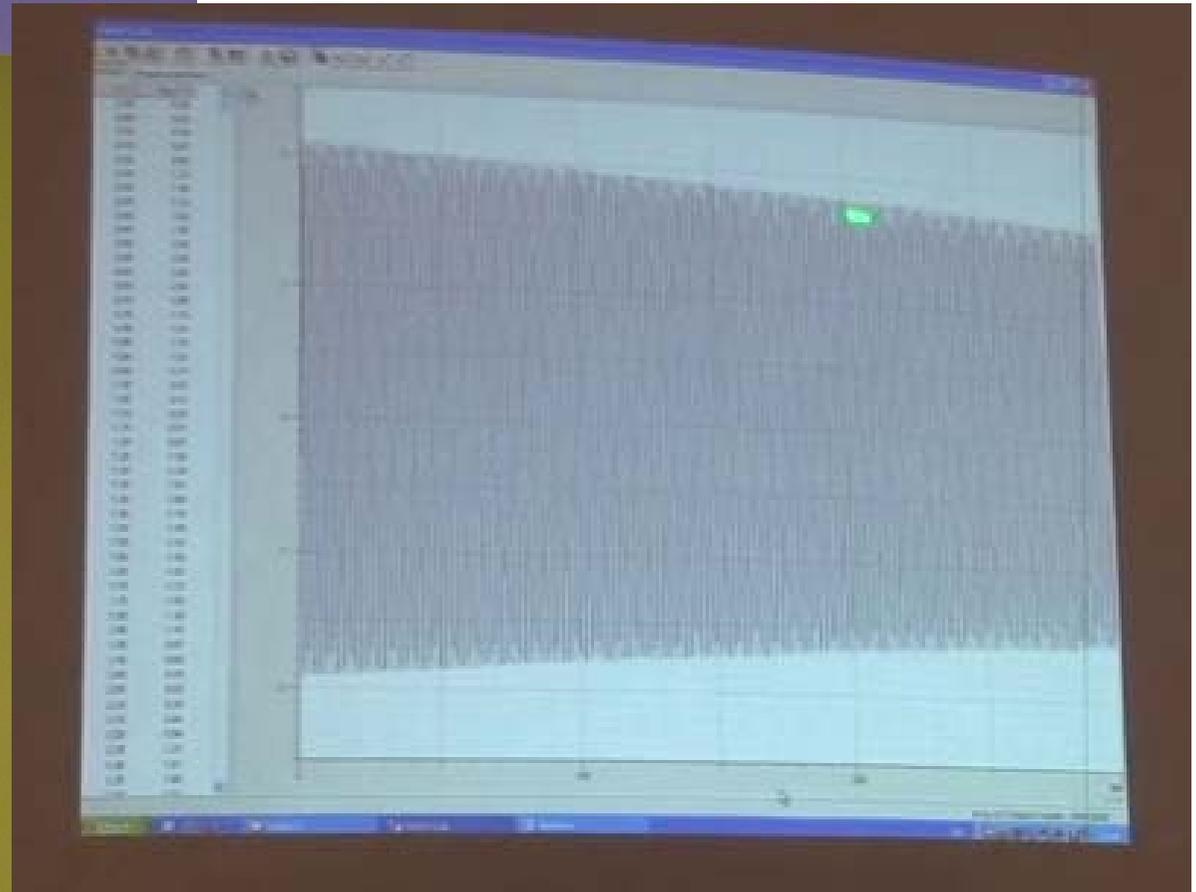
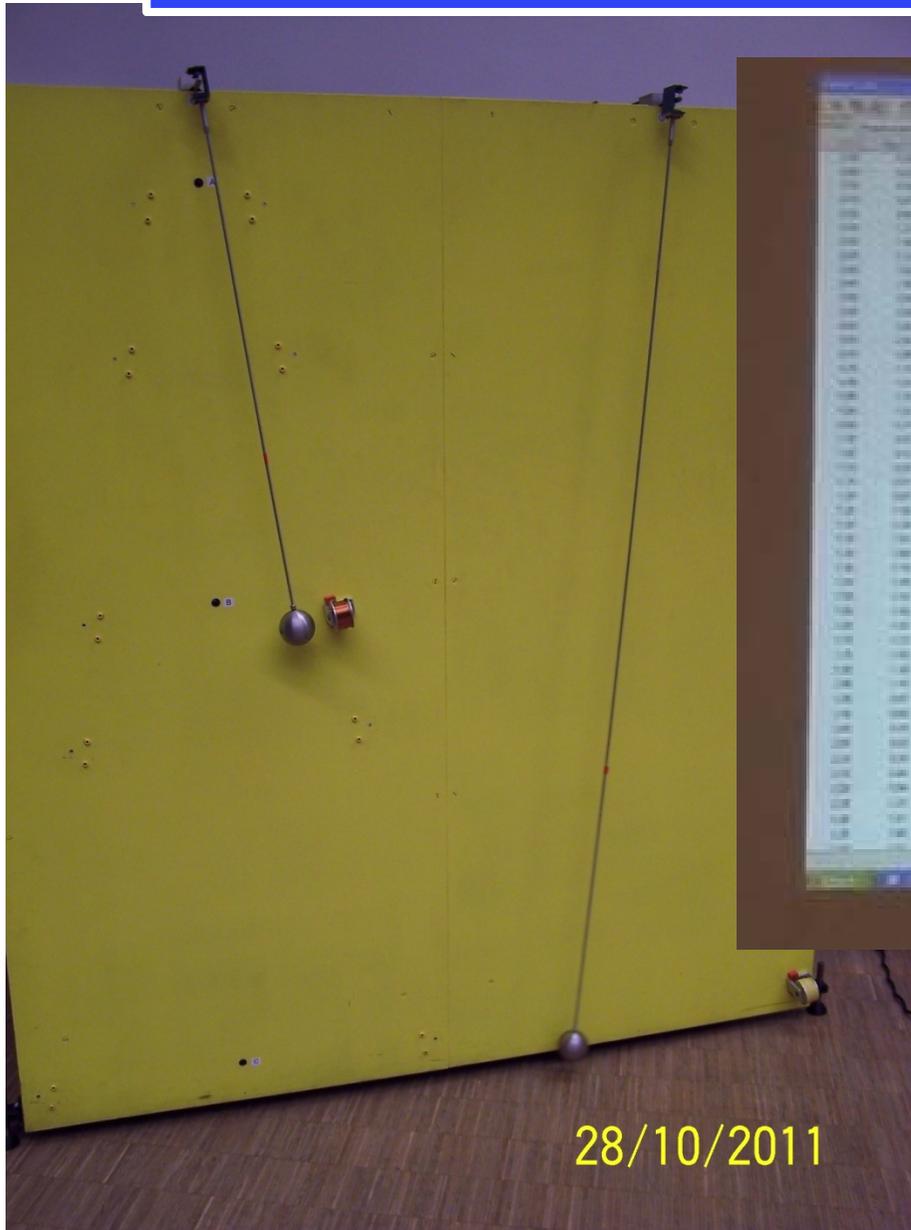


Cassy-File: Pendel_gelbe_Wand_v2.lab

Schwingungen: Chaotisches Pendel

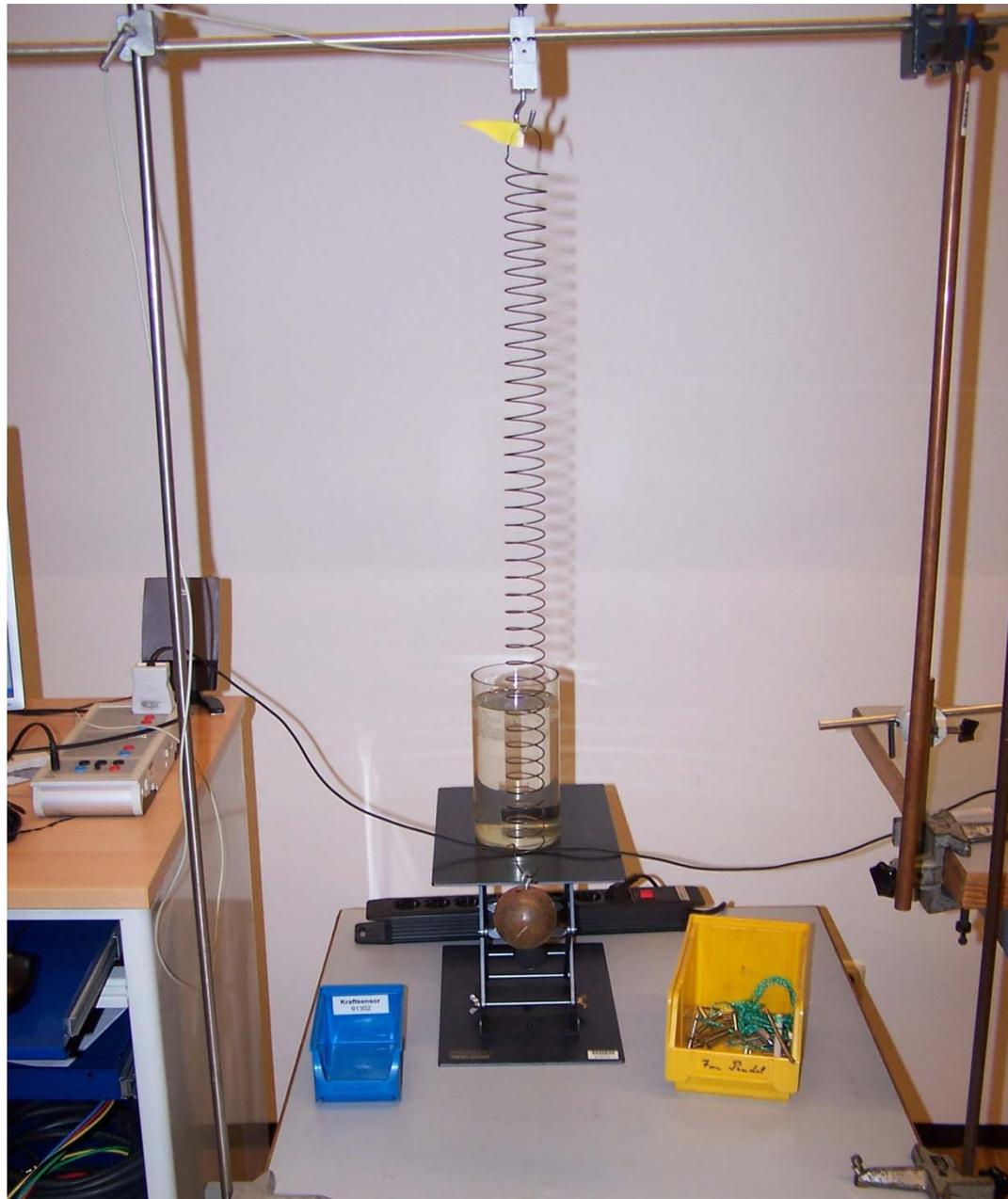


Gedämpfte Schwingungen: gelbe Wand

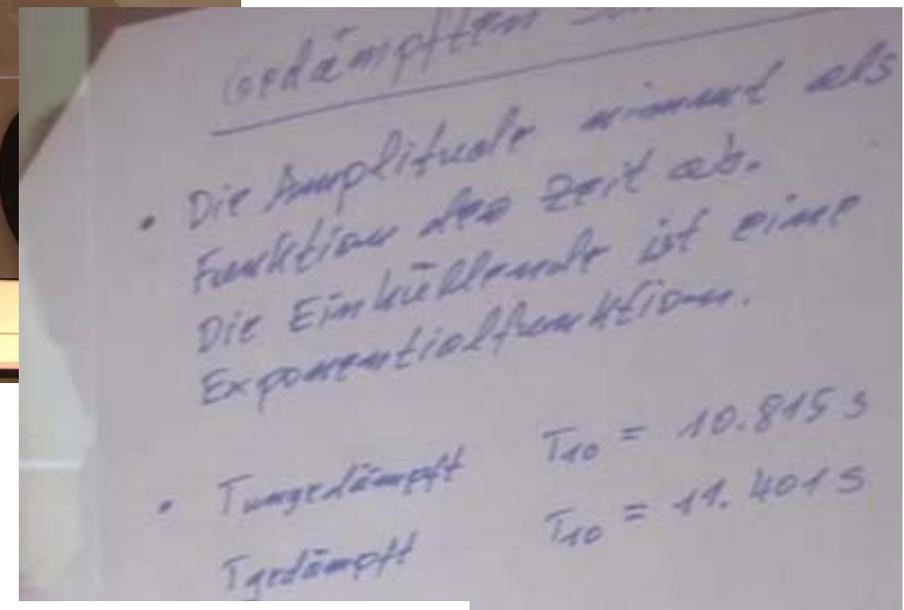
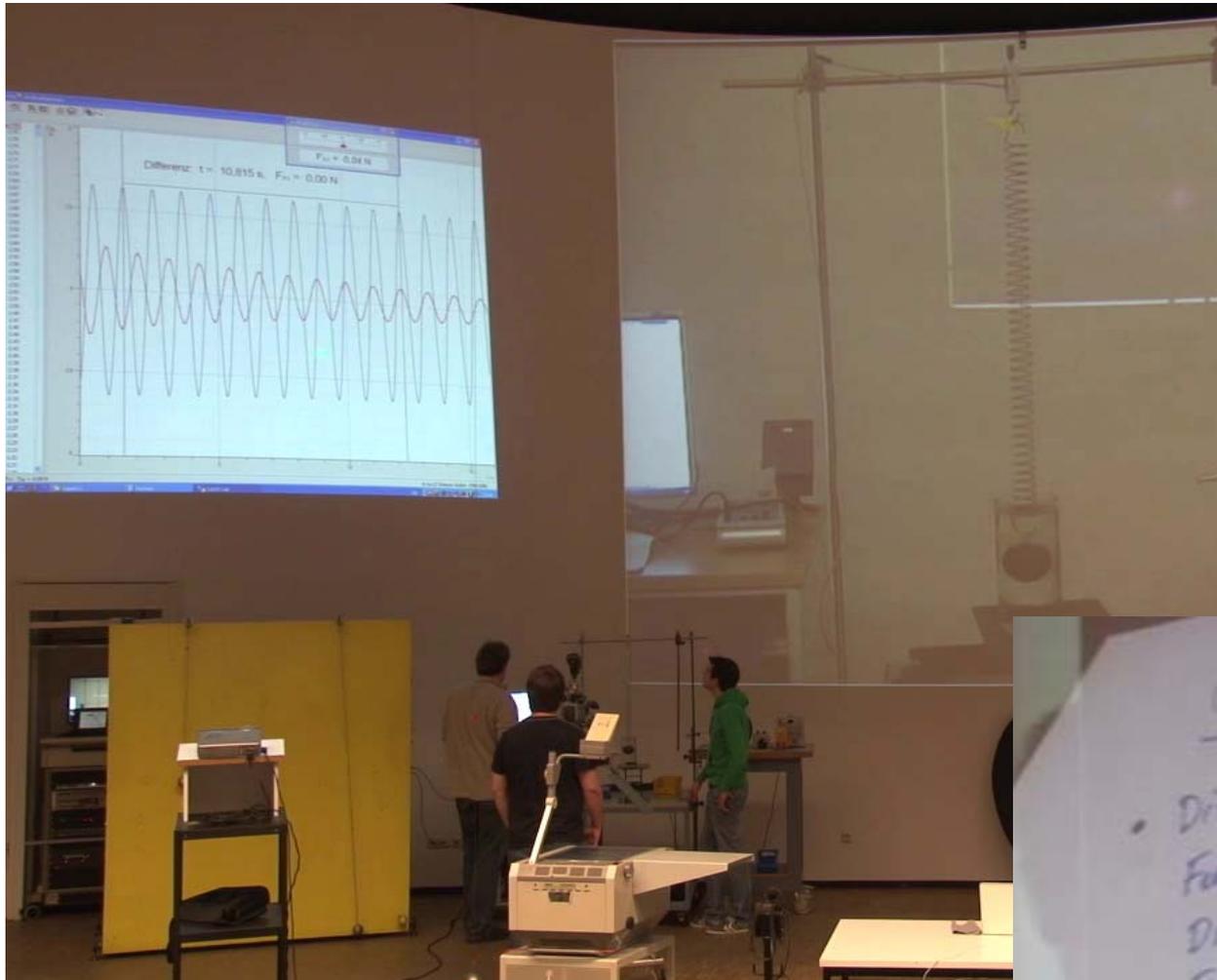


Cassy-File: [Pendel_gelbe_Wand_v2.lab](#)

Gedämpfte Schwingungen: Feder und Wasserbad



Gedämpfte Schwingungen: Kugel mit/ohne Wasserbad



Cassy-File: Gedaempfte_Schwingung_Feder_Wasser.lab