Elasticity: Hooke's Law

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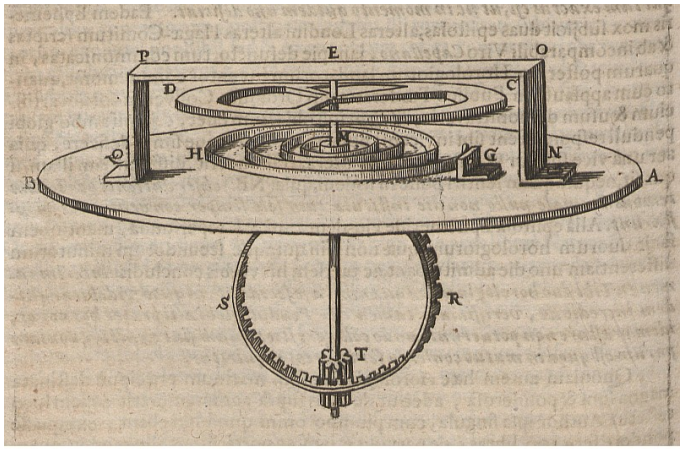
Hooke's law



Quelle: Deutsche Fotothek

eciiionsssttuv

Robert Hooke

eciiionsssttuv (1660) = ut tensio, sic vis (1678)

Robert Hooke was born 1635. He is most famous for Hooke's Law, though he also worked on gravity, astronomy, vibrations, microscopy, memory and architecture.

No known likeness of him exists. He had many heated disputes towards the end of his life, especially with Isaac Newton, who became President of the Royal Society after Hooke, and caused his portrait to go missing!

Lesson Objectives

1. To understand the notes on Hooke's law.
2. To confirm Hooke's law experimentally and practice calculations.
3. To see how springs are a bit like resistors.

Textbook pp. 164–166

REMINDER: Office hours are week 2 Tuesdays 3.45–5.0 p.m. in room 19.
Next office hours: Tuesday 22 January 2013

Specification Requirement

Bulk properties of solids

Hooke's law, elastic limit, experimental investigations

$F = k\Delta L$

[AQA GCE AS and A Level Specification Physics A, 2009/10 onwards]

Density Calculations II

Adapted from *General physics*, A.E.E. McKenzie, Cambridge University Press, 1965

5. A thread of mercury 12 cm long has a mass of 8.16 g. If the density of mercury if 13 600 $\mathrm{kg\,m^{-3}}$, find the cross sectional area of the thread.
6. A full-size wooden model of an iron object has a mass of 100 kg. What is the mass of the iron object? Densities of wood and iron are 0.70 and 7.7 $\mathrm{g\,cm^{-3}}$ respectively.
7. 25 $\mathrm{cm^3}$ of salt solution of density 1200 $\mathrm{kg\,m^3}$ are mixed with 35 $\mathrm{cm^3}$ of pure water. What is the density of the mixture?

Reading memos

Questions arising from reading memos. . .

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Force / N	extensions		
	$\Delta L_1/\text{mm}$	$\Delta L_2/\text{mm}$	$\overline{\Delta L}/\text{mm}$

Practical: verifying Hooke's law

Discussion of results