

From Newton to Einstein, Dirac and Schwinger

SCIENCEeMOTION

PRESENTS 150 YEARS OF PHYSICS ON THE DVD

“QED – Matter, Light and the Void”

The puppet duo Prof. Etheral and his assistant Nick are asking questions about nature:

What is light? What is matter? Which part does the void – the quantum vacuum – play in this setting?



Their strategies for finding answers: Creativity, playfulness, intuitive ideas combined with the universal language of nature: MATHEMATICS

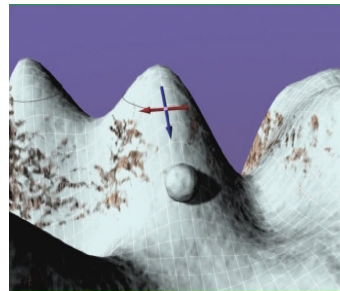
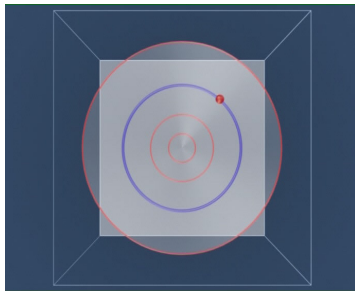
A DVD with two parts:
The ARTISTIC PART – presenting physics without formulas
The TECHNICAL PART - formulas coming alive with illustrative models

Asking Nature: The Classical Beginnings of Physics

Classical Mechanics

or

Why Bohr's atomic model based on Newton's concepts is like a fossil



Classical Field Theory

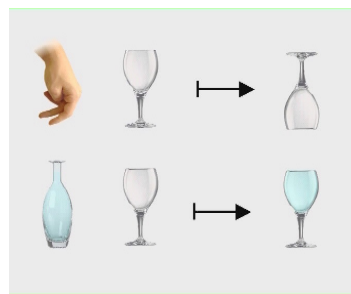
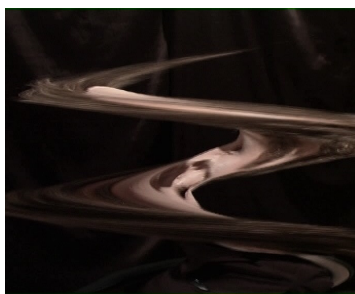
or

Why does a mountain landscape explain the nature of electromagnetic waves so well?

Finding Answers: Constants of Nature are the secret rulers Developments in the 20th century

Relativistic Mechanics

New finding: The speed of light is always the same:
Constant of nature **c**



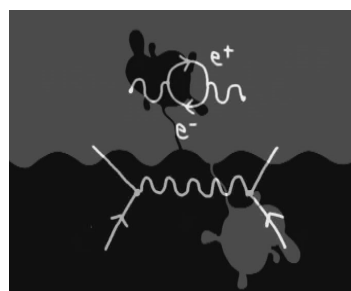
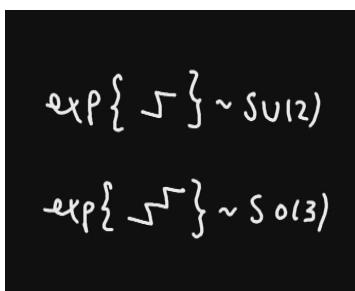
Quantum Mechanics

Understanding new experimental facts with another constant of nature:
Planck's constant **h**

The Ultimate Challenge

Relativistic Quantum Mechanics

The effects of c and h combined, mathematically expressed with the angular momentum algebra using a “staircase model”



Quantum Electrodynamics (QED)

The photon in permanent interaction with the void – a small but essential correction to relativistic quantum mechanics