Physics Education 2.0

# Development of a New Teaching Model based on Particle Physics

CERN HST 2014 | jeff.wiener@cern.ch

A problem common to many CERN member states is how to introduce modern physics and especially particle physics to pupils. In most countries the chapter of modern physics is just placed on top of their curricula, if at all. But since those chapters and especially particle physics combined with fundamental interactions are the basics of fundamental understanding in physics, this might be way too late. The main goal of this cumulative doctoral thesis is to propose a new teaching model based on particle physics by starting at the basics.

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1 Matter is anything that you can touch practically or theoretically

2 We describe the reality through models

3 There are atoms (Demokrit - átomos)

4 Atoms can be divided into two areas: the nucleus-area and the orbital-area

5 In the nucleus-area protons and neutrons are located

6 Protons and neutrons can be divided

7 Quarks are indivisible (elementary particles)

8 In the orbital-area electrons can be found

9 Electrons are indivisible (elementary particles)

10 Everything else is empty space

11 There are (different) atoms, which may combine to form molecules

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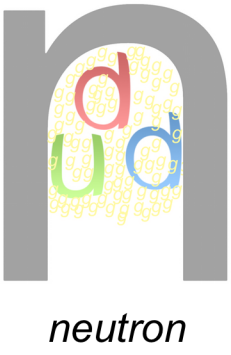
*proton*


*anti-proton*




*neutron*