

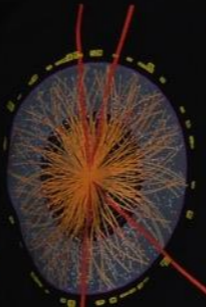








"Nothing is too
wonderful
to be true"
- Faraday







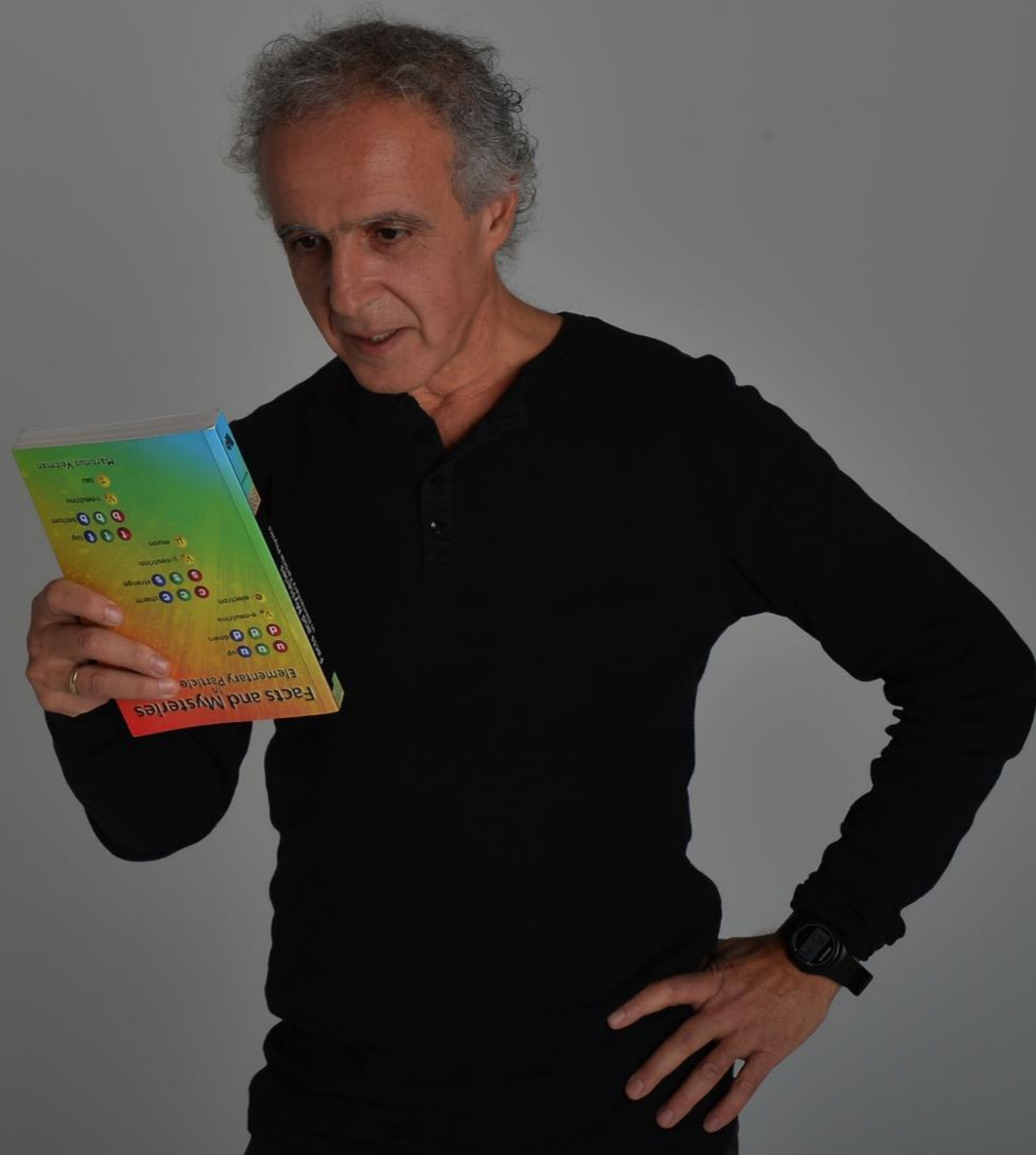












Facts and Mysteries
of Elementary Particle
Physics
Martinus Veltman





















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Name: ...

LAGER ALE





ATLAS

Mapping the secrets of the universe

ATLAS in numbers

- 1000+ member institutions
- 27,000+ scientists
- 3000km² detector
- 1 billion+ data points
- 10 billion+ particles
- 14TeV collision energy
- 46m x 25m detector
- 2808+ sensors
- 160 billion+ data points
- 11,245+ laptops

The Experiment

ATLAS is one of the four major experiments at the Large Hadron Collider (LHC), a general purpose particle physics experiment that will operate with two 7-TeV proton and lead ion beams to discover new particles and the high energy regime of the Standard Model.

ATLAS consists of a central barrel and two endcap calorimeters, a central barrel and two endcap calorimeters, a central barrel and two endcap calorimeters, a central barrel and two endcap calorimeters.

The Collaboration

ATLAS consists of 3600 scientists from 378 institutions around the world, representing 38 countries. It is one of the largest collaborations in particle physics, with more than 1200 doctoral students, 1000 postdoctoral fellows, and 1000+ technicians and administrative staff.

ATLAS is a unique collaboration of scientists from many different countries and disciplines, working together to understand the universe.

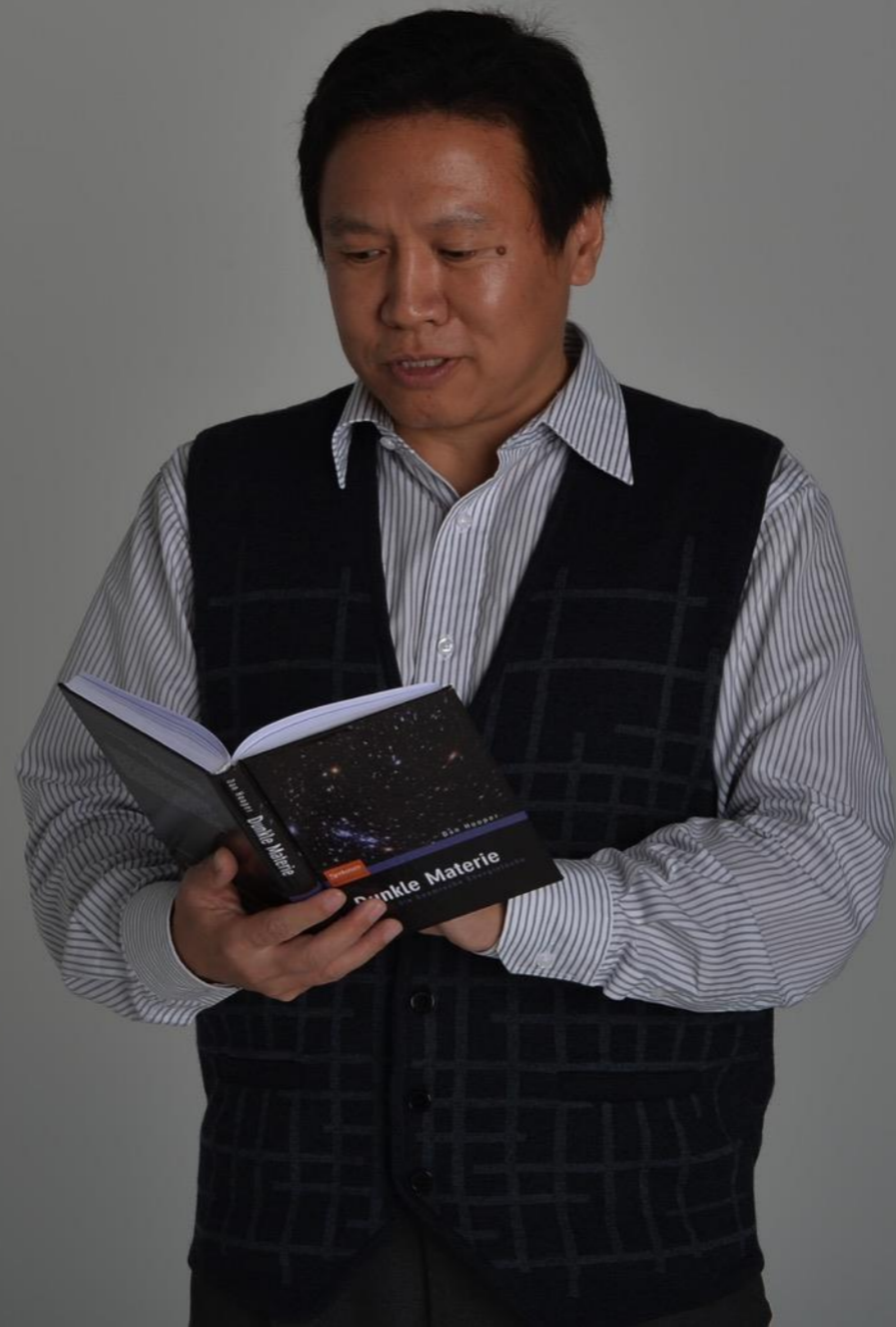
The Higgs boson

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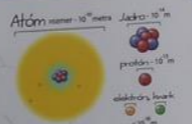
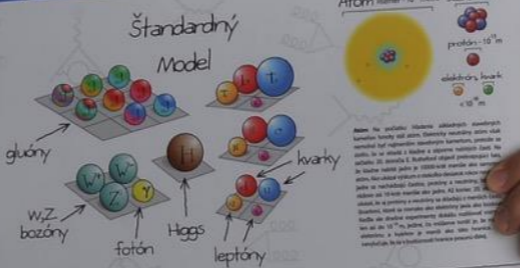






častice a sily - čo o nich vieme

Elementárne častice sú najmenšie zložky hmoty, ktoré nemajú štruktúru. Sú to najmenšie zložky hmoty, ktoré nemajú štruktúru. Sú to najmenšie zložky hmoty, ktoré nemajú štruktúru. Sú to najmenšie zložky hmoty, ktoré nemajú štruktúru.



Drufy častíc	rodinné	antiprod.	up-častice	down-častice	antidown-častice
číslo	0	-1	+2/3	-1/3	0
elektrický náboj	0	0	0	0	0
hmotnosť	0	0	0	0	0























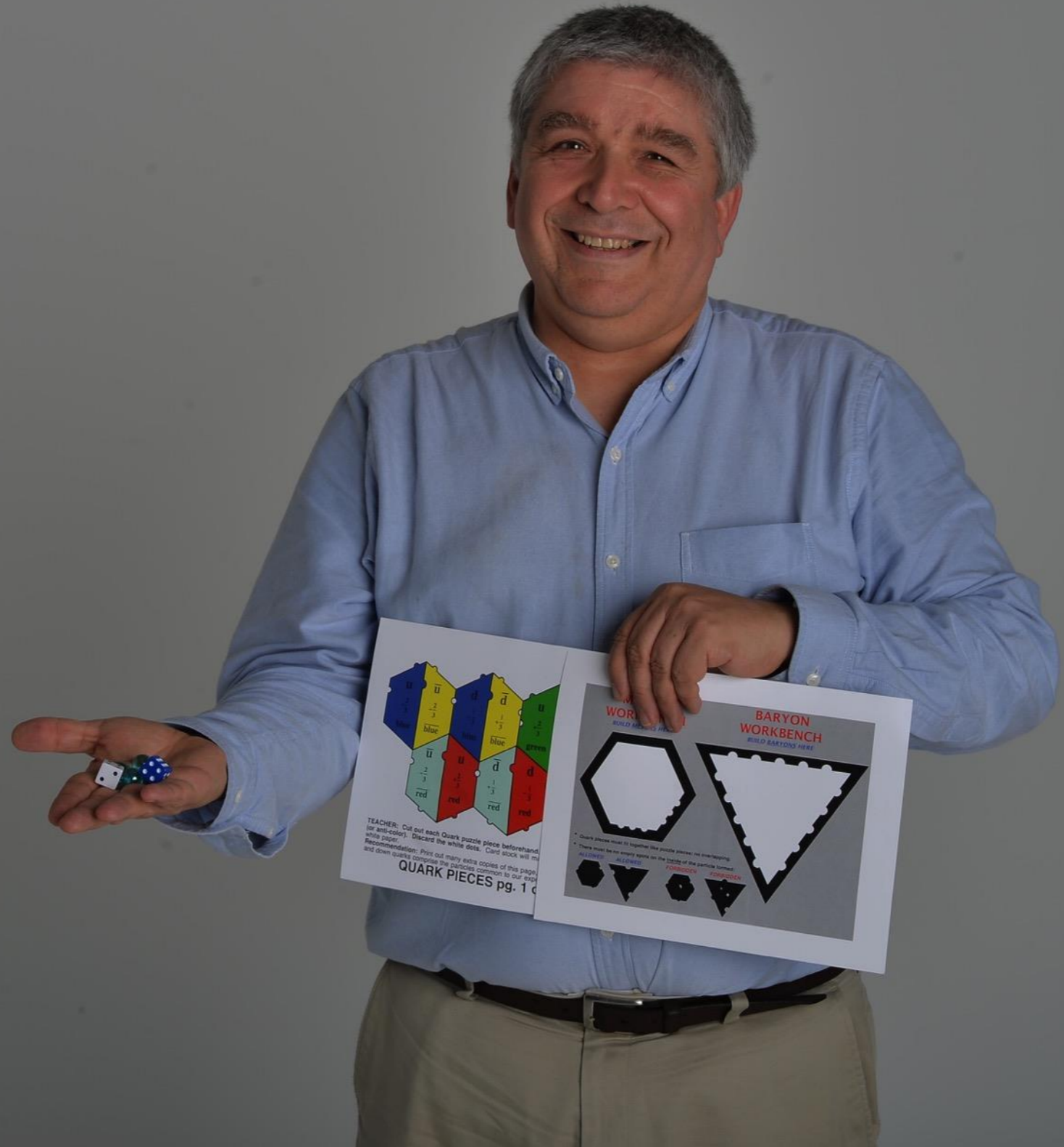


Diagram showing the quark composition of a baryon. The quarks are arranged in a triangle with a central hole. The top row consists of a blue quark (u) with quantum number $\frac{2}{3}$ and a yellow quark (d) with quantum number $\frac{1}{3}$. The bottom row consists of a red quark (u) with quantum number $\frac{2}{3}$ and a red quark (d) with quantum number $\frac{1}{3}$. The colors are labeled as blue, yellow, and red.

TEACHER: Cut out each Quark puzzle piece beforehand (or anticlockwise). Discard the white dots. Card stock will make the puzzle pieces more durable.
Recommendation: Print out many extra copies of this page, and down quarks compose the particles common to our topic.

QUARK PIECES pg. 1

BARYON WORKBENCH
BUILD BARYONS HERE

Diagram showing a baryon structure with a central hole. The baryon is composed of three quarks (u, d, u) arranged in a triangle. The central hole is a white triangle with a black border. The baryon is labeled "BARYON WORKBENCH" and "BUILD BARYONS HERE".

* Quark pieces must fit together like puzzle pieces; no overlapping.
* There must be no empty space on the inside of the particle formed.

ALLOWED: BARYONS FORBIDDEN: BARYONS

