ENERGY

Unit. 10 & 11 Dr. John P. Cise, Professor of Physics, Austin Co. College, 1212 Rio Grande St. Austin Tx. 78701 & New York Times, Tuesday August 2, 2011 by Dennis Overbye

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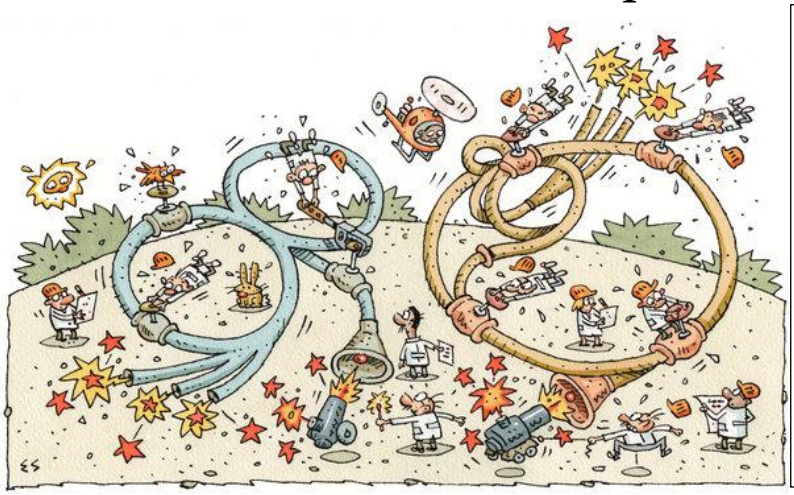
Particle Accelerators Full of Spin and Fury, Signifying Something



INTRODUCTION: The actual mass of proton and electron in kg. are: m_p= 1.67 X 10^{-27} kg., m_e = 9.1 X 10^{-31} kg.. But, nuclear physicists like to use ev = electron volts as mass. 1 ev = 1.602 X 10^{-19} J This can be seen in article below. The actual ev mass of proton and electron(more accurate than #s below) in ev are: m_p = 0.938 X 10^9 ev, m_e = 0.511 X 10^6 ev. E = mc^2 thus m =E/c^2 , where E is mass in J, m = mass in kg., c = 3 X 10^8 m/s

QUESTION: (a) Using E = mc^2 convert proton and electron mass in ev to their mass in kg. (b) If Higgs Particle mass is 125 Billion ev , show it's mass in kg. is 2.22 X 10^{-27} kg.

The Higgs boson is the keystone and last undiscovered piece of the so-called Standard Model, a suite of equations that agrees with all the experiments physicists have been able to do so far in the laboratory. If the Higgs boson does not exist, theorists will have to go back to their blackboards. Until now, the only news about the **Higgs has been where it does not exist in a sort of cosmic haystack ranging (((from 115 billion electron volts to 200 billion electron volts of mass)))(in the units favored by physicists for both mass and energy))).** For comparison, (((a proton is about one billion electron volts and an electron is half a million electron volts.))) In Grenoble, CERN physicists reported that they had excluded the entire upper half of that range, above 150 billion electron volts, as the habitat of the Higgs. Perhaps more significantly, both CERN and Fermilab said that their detectors had both recorded a slight excess of data counts in the lower part of that range, between 120 billion and 150 billion electron volts. Is this a hint, perhaps, that the Higgs is showing its head at last?