THE PURPOSE AND IMPORTANCE STUDY OF A FOREIGN LANGUAGE WITH SPECIAL SUBJECTS.
FORCES AND MATTER. THE STANDARD MODEL OF PARTICLE (READ AND UNDERSTAND PHYSICS)

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Abstract. *This article presents texts and strengthening exercises in science in order to develop and qualifications of students, as well as an integrative approach to a foreign language and a special subject. What`s the Standard Model of particle physics, Neutrinos, matter and antimatter, Gluons and all the questions depends on Standard Model.*
Key words: *accelerator, charge,mutual, hydrogen, substance, validate, residue*

In modern conditions, there is no education special training of students to provide special educational various fields of foreign language science (for example: physics, chemistry, biology, geography, economics) in nophylological teachers. The educational area for this industry, professional foreign language for specialists is independently organized by everyone.

In connection with the expansion of international relations with the countries, it takes time for specialists working in the field of science, culture and, as well as in other fields, to know one foreign language, and communicate in a foreign language. The supply of personnel for adult specialists in each area is one of the priority directions of the policy of our state. In our country, in last years, the President and the Cabinet of Ministers also that the relevant decisions and decrees are aimed at training qualified personnel in our country. Because no matter which of the modern specialists owns the industry, he can provide information and receive information in a foreign language, this becomes a professional necessity.

Today, along with other subjects education a foreign language, the period when it is necessary to organize for specialists in various fields, dialogue in a foreign language remains one of the important components of their professional activities. Therefore, students are required not only to know a foreign language, but also to freely communicate with colleagues in a foreign language areas. This requires and updating the purpose and content of foreign languages.

The organization of educational for the coordination of a foreign language with special subjects in philological higher countries gives good results in achieving goal. It is necessary to develop coordinated work plans, programs with specialized departments.

In this article, in order to ensure the implementation of the Decree of the President of the Republic of Uzbekistan of May 19, 2021 No. 5117 "On measures to bring activities to popularize the education of foreign languages in the Republic of Uzbekistan to a qualitatively new level," the use of students directions physics and astronomy in English lessons, development of specialties and at the same time a foreign language created and developed in accordance with the requirements of the standards of the state education, and are also contained them.

This article presents texts and strengthening exercises in science in order to develop and qualifications of students, as well as an integrative approach to a foreign language and a special subject.

«Every particle of matter is attracted by or gravitates
to every other particle of matter with a force inversely
proportional to the squares of their distances»
Isaac Newton

Standard Model of particle physics, which was formulated in the 1970s, describes the universe in terms of Matter (fermions) and Force (bosons). The Standard Model consists of 17 particles. Twelve of the 17 fundamental matter-particles are fermions: 6 quarks and 6 leptons. The remaining five particles are bosons, four of which are physical manifestations of the forces through which particles interact. At high energies, the weak nuclear force merges with electromagnetic force.

The Higgs boson is associated with the Higgs field which gives mass to electrons, elementary quarks, Z and W bosons, and the Higgs boson itself. It would be wise to mention that the strong nuclear force associated with the gluon particle gives mass to atomic nuclei, by binding together the three quarks inside protons and neutrons, and all attempts to include gravitons or gravity into the Standard Model have failed. Gluons interact only with quarks and themselves, but all the other bosons interact with both leptons and quarks. Quarks carry both electrical and color charge, but leptons have no color charge, and only non-neutrino leptons have electrical charge. Neutrinos carry neither electrical nor color charge.

According to Big Bang theory, the existing universe emerged from an explosion in a vacuum that occurred 13.7 billion years ago. The four forces were unified until 10−43 seconds after the Big Bang, after which first gravity and then strong nuclear force separated from the other two forces. At 10−12 seconds after the Big Bang electromagnetism separated from the weak nuclear force, and the universe was filled with a hot quark-gluon plasma that included leptons and antiparticles. At 10−6 seconds hadrons began to form. Most hadrons and antihadrons were eliminated by annihilation, leaving a small residue of hadrons by one second post-Big Bang. Between one and three seconds after Big Bang the universe was dominated by leptons/antileptons until annihilation of these particles left only a small residue of leptons.

The universe was dominated by photons created by all of the matter/antimatter annihilations, and the predominance of matter over antimatter had been established. Between 3 and 20 minutes after the Big Bang protons and neutrons began to combine to form atomic nuclei.

A plasma of electrons and nuclei (ionized hydrogen and helium) existed for 300,000 years until the temperature dropped to 5,000ºC when hydrogen and helium atoms formed.

If matter and antimatter were perfectly symmetrical, the cooling of the universe would have resulted in particle/antiparticle annihilation that would have left the universe filled only with photons. However, for every billion mutual annihilations a particle of matter remained comprising the existing matter of the universe. The predominance matter over antimatter is a consequence of charge-parity violation (CP violation). About 99% of the photons in the universe (the cosmic microwave background) are the result of Big Bang annihilations. Photons from stars are a trivial contribution, by comparison.

The standard model used by cosmologists predicts that the universe is composed of 5% ordinary matter, 27% cold dark matter, and 68% dark energy. Dark matter reputedly caused hydrogen to coalesce into stars, and is a binding force in galaxies. Dark energy is accelerating the expansion of the universe. The cosmologists' standard model also predicts that within the first 10−32 of a second after the Big Bang, the universe doubled in size 60 times in a growth spurt known as inflation. Dark matter does not interact with the electromagnetic force, thus making it transparent and hard to detect, despite the fact that dark matter must permeate the galaxy. Unlike visible matter, dark matter is nonbaryonic 17 - its composition is outside of the (unextended) Standard Model. Neutrinos may be a low-mass example of dark matter. Invisible Weakly Interacting Massive Particles (WIMPs having thousands of times the mass of a proton) have been hypothesized as being the substance of dark matter. It is believed that the effect of Earth moving through a dark matter «wind» results in a 10% greater dark matter flux when it is summer in the Northern Hemisphere than when it is winter. Some physicists believe that dark matter does not exist, but that theories of gravitation need to be revised (as is proposed by modified Newtonian dynamics).

The most prosaic goal of the Large Hadron Collider (LHC, the enormous particle accelerator that first began operation in September 2008 at CERN, Europe's particle physics laboratory near Geneva, Switzerland) was to find the Higgs boson. The Higgs boson adheres to the W and Z bosons to give them mass, but does not adhere to photons (leaving photons massless). The more particles interact with the Higgs field, the more massive they become. The bosons that mediate electromagnetism (photons) and the strong force (gluons) are massless, but the bosons that mediate the weak force (Z and W bosons) have a mass about a hundred times greater than the mass of a proton. The Higgs field, not the Higgs boson, gives energy to particles. Because of Einstein's E = mc2, giving energy is equivalent to giving mass. Heavier particles interact with the Higgs field more than lighter particles, the heavy top quark more than any other particle. A Higgs field would fill the vacuum of space with Higgs bosons, just as the electromagnetic field fills the vacuum of space with photons.

Two detectors were created to search for the Higgs boson: (1) CMS (Compact Muon Solenoid) and (2) ATLAS (A Toroidal LHS ApparatuS). Neither detector could detect a Higgs boson directly, but the Higgs boson rapidly decays into photons, Z or W bosons, or fermions, which CMS and ATLAS can detect. Detection is most accurate for decay into two photons, but that mode of decay only happens 0.2-0.3% of the time. The probability of a Higgs boson being produced from a single high-energy proton collision is about one in ten trillion (1 X 1013) because the interaction between quarks and gluons with the strong nuclear force are far more powerful than their interaction with the Higgs field. A Higgs boson could be formed from gluons from the colliding protons fusing together, or by quarks from the protons emitting Z or W bosons that fuse. Following the discovery of the Higgs boson, the LHC can focus on learning more about that boson's 18 properties - and possibly explain why the Higgs boson is required to give particles a mass.

The LHC could validate or invalidate models of supersymmetry which double the number of particles in the standard model by pairing every boson with a fermion superparticle - and pairing every fermion with a boson superparticle (somewhat analogous to antimatter). However, most particle physicists are hoping to make discoveries with the LHC that gets beyond the Standard Model, including an understanding of dark matter. The Standard Model treats fundamental particles as point-like entities having no dimensions, adjusted for by a kludge called renormalization. String theory removes the need for renormalization and provides mathematically satisfying explanations for many other problems. But string theory has still not fulfilled its promise of unifying gravity and quantum mechanics. Nor has it produced testable hypotheses, because strings could only be measured at energies well beyond the capacities of existing particle accelerators. Some physicists worry that aesthetic elegance is displacing evidence as the basis of physical theory.

VOCABULARY

Word	Pronunciation	Translation
accelerator, n.	/əkˈseləreɪtər/	tezlatkich
annihilation, n.	/əˌnaɪɪˈleɪʃən/	yo'q qilish, syn. destruction, ravage
attempt, n.	/əˈtempt/	urinish, syn. effort, try
charge, n.	/tʃɑːdʒ/	quvvat
coalesce, v.	/kəʊəˈles/	коалесцировать
consequence, n.	/ˈkɒnsɪkwəns/	oqibat, natija; syn. outcome, result
dimension, n.	/ˌdaɪˈmenʃən/	o'lcham
explosion, n.	/ɪkˈspləʊʒən/	portlash, syn. burst
goal, n.	/gəʊl/	maqsad, syn. aim, purpose
helium, n.	/ˈhiːliəm/	geliy
hydrogen, n.	/ˈhaɪdrədʒən/	vodorod
hypothesis, n.	/haɪˈpɒθəsiːz/	gipoteza
interact, v.	/ˌɪntərˈækt/	o'zaro ta'sir qilish
merge, v.	/mɜːdʒ/	birlashtirish
mutual, adj.	/ˈmjuːtʃuəl/	o'zaro, syn. commutual
nucleus, n.	/ˈnjuːkliəs/	yadro
particle, n.	/ˈpɑːtɪkl/	zarracha
plasma, n.	/ˈplæzmə/	plazma
quark, n.	/kwɑːrk/	kvark
renormalization, n.	/ˌrɪnɔrmələˈzeɪʃən/	qayta normallashtirish

residue, n.	/ˈrezɪdjuː/	qoldiq
string theory	/strɪŋ ˈθɪəri/	torlar nazariyasi
substance, n.	/ˈsʌbstəns/	modda, syn. matter, stuff
validate, v.	/ˈvælɪdeɪt/	tasdiqlash, syn. affirm, confirm

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