Calculate Universe 1

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Abstract. This paper is about relations between the mass of universe and mass of some elementary particles. Important is only the diagram in Figure 1, which you can understand in any language if you know the language of mathematics and physics.

Srpski

Uvod

Ovaj rad je pokušaj da se u sažetom obliku prezentuju odnosi između ključnih masa koje su značajne za formiranje dela materijalog sveta koga najčešće izražavamo u kilogramima. Birajući između opsežnog obrazlaganja relacija koje se prezentuju i sažetog prikaza izabrao sam ovo drugo iz sledećih razloga:

- Sve što bih rekao, već je bezbroj puta rečeno, te ću samo navesti ključne stavove i ličnosti koje su me inspirisale (vidi dodatak 1);
- Obilje teksta, naročito sa pojavom interneta, deluje obeshrabrujuće na mnoge potencijalne čitaoce;
- Jezička barijera takođe nije bez značaja, kako za onoga ko piše na stranom jeziku tako i za onoga ko čita.
- Držeći se principa, da jedna slika više govori od hiljadu reči, na dijagramu sam umetnuo dve vrlo poznate slike sa Wikipedije koje reprezentuju filozofska stanovišta koja sam i ja u celini prihvatio.

Potrudio sam se da rezultate prikažem dijagramom iz koga je, poznavaocu matematike, fizike i računara jasno šta je rečeno.

Mase

Mase prikazane u okviru sa isprekidanim linijama su virtualne mase koje su značajne za proračune. Plankova masa je dobro poznata. Ostale virtuelne mase, označene sa CZ, TC, EM i TL,

English

Introduction

This paper is an attempt to briefly present relationships between masses which are important for the formation of the material world that we generally describe in kilograms. Choosing between extensive reasoning and a summary presentation of the relations I chose the latter for the following reasons:

• All I would say has already been told countless times, therefore, I will only mention crucial opinions and scientists that have inspired me (see Appendix 1);
• Too much text, especially with the appearance of the Internet, discourages potential readers;
• The language barrier is also an important factor, both for those who write in a foreign language and for those who read.
• Adhering to the principle that a picture is worth a thousand words, in the diagram I inserted two images from Wikipedia that represent a philosophical point of view which I fully accept.

I tried to show the results with the diagram, from which, experts in mathematics, physic and computers understand what is being said.

Masses

The masses shown within the dashed boxes are virtual masses which are relevant for the calculations. Planck mass is well known. Other virtual masses, marked with CZ, TC, EM and TL, are much less well

mnogo su manje poznate. EM i TL sam viđao u literaturi a ostale dve nisam, te se unapred izvinjavam onima koji su prvi pomenuli te mase, a ja njih nisam. Zato sam tim masama dao radna imena sa po dva velika slova, da ne bih uneo konfuziju sa već postojećim imenima.

Šta fizički predstavljaju te mase, bolje će odgovoriti eksperimentalni fizičari. Ja, kao meteorolog, nemam iskustva u laboratoriji. Za dobijanje ovih rezultata korišćeno je obimno saznanje iz mnogih oblasti, ali samo do mere da se ne dogodi da se „od drveća ne vidi šuma“. U radu nije prikazan metodski pristup, ali su nabrojani principi (vidi dodatak 1) koji su bili od koristi da se dobije dijagram.

Samo dve fizičke veličine, (***ά*, μ**) zadate su, a zatim su svi odnosi računati pomoću njih i matematičkih konstanti, koje su takođe date na dijagramu. Proton ima ključnu ulogu u materijalnom svetu, te se u ovom radu po značaju ističe odnos njegove mase prema virtuelnoj masi CZ, koja se dobija kao količnik mase univerzuma sa $\mathbf{2^{exp(\pi')/2}}$. Pošto je **exp(π')/2** polovina ciklusa, to je od bitnog značaja poznavanje odnosa prema ovoj masi. Zato ćemo u ovom radu definisati sledeću veličinu:

known. EM and TL I have seen in the literature and the other two I did not, and I apologize in advance to those who first mentioned the masses. That is why I gave temporary names to masses, in order not to bring confusion with the existing names.

What these masses represent in physics would be better explained by experimental physicists. I, as a meteorologist, have no experience in the laboratory. Extensive knowledge from many areas was used to obtain these results, but only to the extent that it does not happen to "not see the wood from the trees". This paper does not show methodical approach, but in Appendix 1 it does mention the principles which were useful for making the diagram.

Only two physical values (***ά*, μ**) are given, and then all the relations are calculated using them and mathematical constants, which are also given in the diagram. Proton has a key role in the material world, therefore, this article emphasizes the importance of the relation of the proton mass to the virtual mass CZ, which is calculated as the quotient of the mass of the universe with $\mathbf{2^{exp(\pi')/2}}$. Since **exp(π')/2** is half a cycle, it is of great importance to know the relation towards this mass. Therefore, in this article we will define the following value:

$$\mathbf{zp=\ln(m_p/m(c/2))/\ln 2=1.935061} \quad (1)$$

/π'= 2π=6.2831853 , c/2=exp(π')/2= 267.7458278, masses of: half cycle - $m(c/2)=M_u*2^{c/2}$= 4.374076e-28, universe - M_u=1.739449e+53 kg, proton mass - m_p=1.67262178E-27 kg/

i nazvati je otklon protona. Važe još i relacije:

and call it the shift of protons. The following relations are also valid:

$$\mathbf{\varsigma=2^{2zp/3}=2.4453494} \quad (2)$$

$$\mathbf{\beta=r_e/\lambda_c=2.132525585} \quad (3)$$

$$\mathbf{\beta=\mu/\pi'\acute{\alpha}=2.132525585} \quad (4)$$

$$\mathbf{\zeta=\varsigma/\beta=1.146691715} \quad (5)$$

gde su: $\mathbf{r_e}$−klasični radius elektrona,

where $\mathbf{r_e}$ is classical electron radius, **λc** is

λ_c−Komptonova talasna dužina, **μ**−odnos masa protona i elektrona a **ς, β** i **ζ** koeficijenti koji se koriste u dijagramu.

Dobijeni rezultati prezentovani su na dva dijagrama u "spread sheet" fajlu. Na prvom dijagramu je masa Univerzuma jednaka 1. Tako su sve ostale mase deo mase univerzuma, odnosno jedinice. Na drugom dijagramu je sve isto prezentovano u kilogramima, jer će mnogima tako vrednosti biti prepoznatljive.

Iznosi nisu važni jer zavise od upotrebljenog sistema jedinica mera. Važne su samo relacije između pojedinih masa. Smer strelice pokazuje gde treba da bude rezultat množenja početnog polja i relacije prikazane istom bojom kao polje sa rezultatom. Smer i izabrane relacije ne moraju imati neko konkretno fizičko značenje.

Rezultati su onoliko tačni koliko su tačne dve ulazne bezdimenzionalne veličine ***ά,* μ** preuzete iz [1]. Naročito je važna vrednost mase up kvarka i vrednosti koeficijenata koji se uz njega javljaju, što je prvi put objavljeno u [2]. Indikativna je redovnost pojavljivanja u eksponentu razlomaka **1/3, 2/3, ½, ¾, 3/8, 1/8,** što još treba podrobno objasniti.

Posebno je izračunat kvadratni koren proizvoda masa up i TC (9), iz razloga koji su podrobnije objašnjeni u [2]. Relacija za odnos masa proton/neutron već je prikazana u drugom obliku u [3].

Ruđer Bošković [4,5] je još u 18. veku govorio o privlačnim i odbojnim silama, za koje smatram da su ključ za rešavanje svih odnosa u Univerzumu. Nažalost, njegovi stavovi su gurnuti u stranu, a stavovi koji rešavaju dobro neki poseban problem ekstrapolisani su na celinu. Smatram da je ponovo vreme da se vratimo Boškovićevom učenju, ali sada naoružani novim saznanjima, kompjuterima i drugim u međuvremenu stvorenim aparatima. I sam Rudjer Bošković je ukazao da je proračun veoma komplikovan i sve komplikovaniji kada se prelazi na više nivoe organizacije materije.

Compton wavelength, **μ** is ratio of proton and electron mass and **ς, β** and **ζ** are coefficients used in the diagram.

The obtained results are presented in two diagrams in a spread sheet file. In the first diagram, the mass of the universe equals 1. Therefore, all the other masses are parts of the mass of the universe, i.e. of 1. The second diagram presents the same things, but in kilograms, because many of you may find the values more recognizable that way.

The amounts are not important because they depend on the system of measurement units being used. Only relations between certain masses are important. Direction of the arrow shows where the result of the multiplication of the primary field and the relation denoted in the same color should be as the score field. The direction and the selected relations do not have to have specific physical meaning.

The results are as accurate as the two input dimensionless values ***ά,* μ** taken from [1]. Especially important is the value of the mass of the up quark and coefficients that occur with him, which was published in [2]. Regular appearance in the fraction exponent is indicative **1/3, 2/3, ½, ¾, 3/8, 1/8,** which is yet to be explained in detail.

Square root of the product of up and TC mass was calculated separately (9), for reasons thoroughly explained in [2]. Relation for the proton−neutron mass ratio has already been presented in a different form in [3].

As early as in the 18th century Ruđer Bošković [4,5] talked about the attractive and repulsive forces which I consider the key to solving all the relations in the universe. Unfortunately, his views have been pushed aside and views good for solving a specific problem have been extrapolated on the whole. I believe it is time to get back to Bošković's learning, but now armed with new knowledge, computers and other devices created in the meantime. Ruđer Bošković himself said that the calculation is very complicated and gets even more complicated on the higher levels of organization of matter.

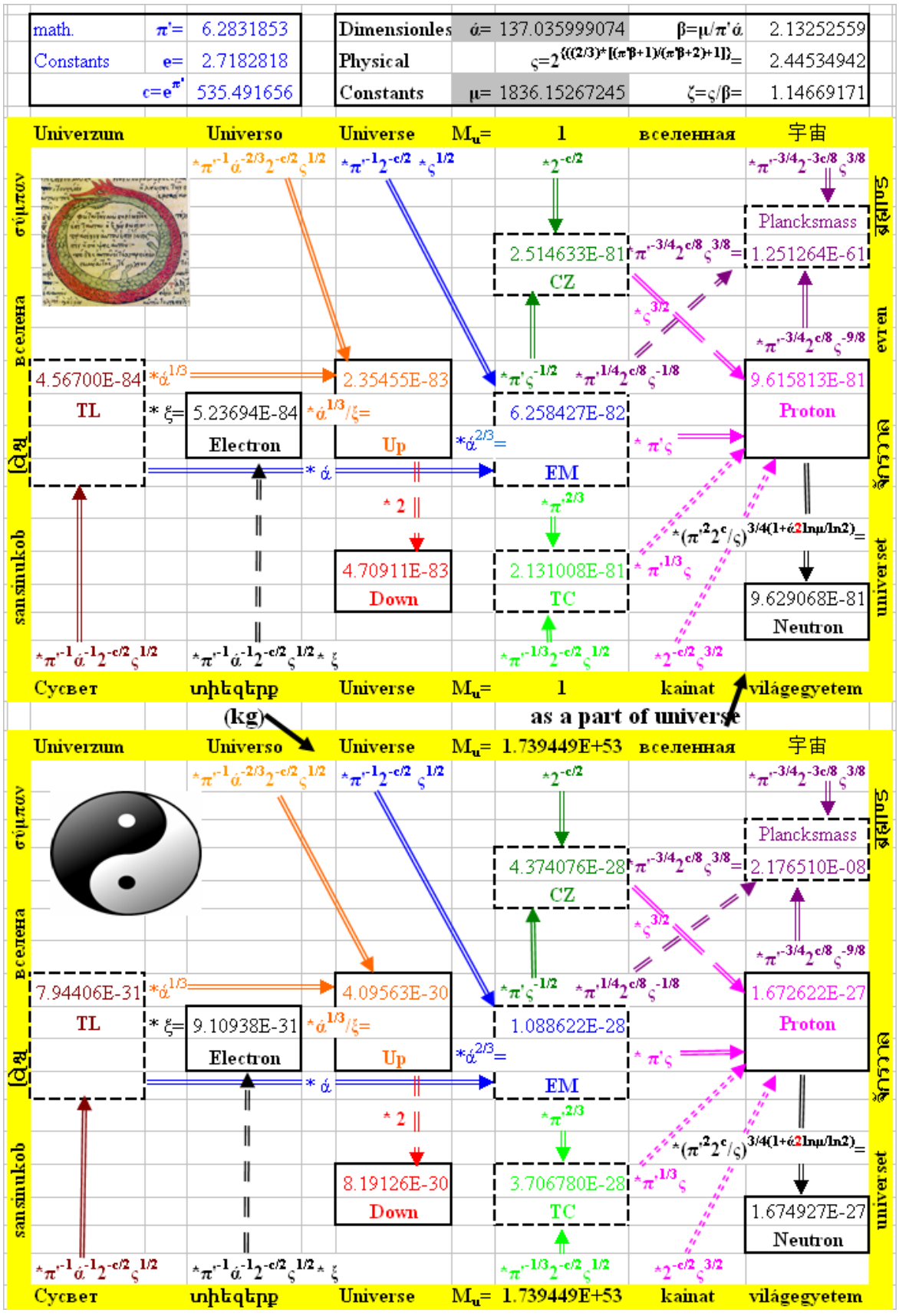


Figure 1. Relations between masses

Relacije

Istaknimo ovde jednu relaciju između up kvarka i mase Univerzuma:

$$m_{up} = M_u \pi'^{-1} \alpha'^{-2/3} 2^{-c/2} \varsigma^{1/2} \qquad \textbf{(6)}$$

koja je jedna od četri relacije vezane za up kvark na dijagramima 1 i 2, i drugim relacijama koje ovde nisu prikazane. Ako ne stoji relacija (6), sa svim svojim koeficijentima i eksponentima, onda mora da postoji neka druga, koja? Najbolji metod za proveru neke relacije je provera kroz primenu. Takvu proveru kroz bezbroj slučajeva sa dobrim rezultatima imala je Njutnova gravitaciona formula.

Postoji jedna suštinska razlika između Njutnove gravitacione formule i relacija na dijagramima. Njutnova gravitaciona formula jeste opšta i povezuje tela sa značajnom masom na makro rastojanjima. Relacija (6) i ostale u dijagramima su posebne jer povezuju tačno određene korpuskule, odnosno važe za tačno određeni slučaj. Za relacije koje povezuju masu neutrona sa ostalim masama važi isto objašnjenje kao za up kvark. Sve relacije koje se mogu izvesti u suštini idu preko odnosa masa neutrona i protona, te ćemo taj odnos istaći u (7).

Relations

Let us point out here the relation between the mass of the up quark and the mass of the universe:

which is one of four relations connected to the up quark in diagrams 1 and 2, and other relations not shown here. If relation (6) is not true, with all its coefficients and exponents, then there must be another one, which one? The best method for verifying a relation is by applying it. Such verification, through countless cases with good results, had Newton's gravitational formula.

There is one crucial difference between Newton's gravitational formula and the relations in the diagrams. Newton's gravitational formula is general and links objects of significant mass on macro distances. Relation (6) and others in the diagrams are special because they connect specific corpuscles, i.e. they are true for specific cases. For relations connecting the mass of neutron with other masses applies the same explanation as for the up quark. All the relations that can be derived essentially go via the ratio of masses of neutron and proton; therefore, we will present that relation in (7).

$$\gamma = (\pi'^2 2^c / \varsigma)^{3*(1+\alpha'^2 \ln\mu/\ln 2)/4} = 1.0013784192 \qquad \textbf{(7)}$$

Sasvim je drugi slučaj sa relacijom za down kvark. Odnos između masa down i up kvarka je **m(d)/m(up)≈2,** ali je ta vrednost ili tačno dva, ili toliko blizu dva da ja raspoloživim softverom nisam mogao vrednost egzaktno da odredim.

The relation for the down quark is a completely different story. The relation between the masses of the up and down quarks is **m(d)/m(up) ≈2,** but the value is either precisely two, or so close to two that I could not determine the exact value with the available software.

m(d)/m(up)≈2 **(8)**

Iz podataka na dijagramu dobija se i relacija (9), koja je bliže objašnjena u [2].

From the data in the diagram we also get the relation (9), which is described in more detail in [2].

$$m_{TC} * m_{up} = (h^2 / \pi' \alpha' \mathrm{GR_u})^{2/3} \quad \textbf{(9)}$$

u kojoj su povezane četiri fundamentalne fizičke konstante sa proizvodom dve mase sa dijagrama. Takođe važi relacija koja povezuje mase Univerzuma, Plankovu masu i masu protona (10), ili ako umesto protona uzmemo elektron (11).

which connects four fundamental physical constants with the product of two masses from the diagram. Also, there is a relation connecting the mass of the universe, Planck mass and the mass of proton (10), or if we take electron instead of proton (11).

$$\varsigma = \pi'^{-1} M_u^{1/3} m_{pl}^{-4/3} m_p = 2.445349 \quad \textbf{(10)}$$

$$\varsigma = \alpha' \beta * M_u^{1/3} m_{pl}^{-4/3} m_e = 2.445349 \quad \textbf{(11)}$$

Mnoge druge relacije sa masama mogu se postaviti sa konstantama **π', ά, ς, β, ξ** i to uvek sa predhodno pomenutim razlomcima u eksponentu, **1/3, 2/3, ½, ¾, 3/8, 1/8**. Iz ovoga sledi zaključak koji je Ajnštajn najbolje izrekao sa "bog se ne igra kockicama".

Many other relations with masses can be set up with constants **π ', ά, ς, β, ξ,** always with the previously mentioned fractions in the exponent, **1/3, 2/3, ½, ¾, 3/8, 1/8** . This leads to a conclusion that was best expressed by Einstein: "God does not play dice."

Zaključak

Prikazane su relacije koje pokazuju odnose među bitnim masama u Univerzumu. Masa up kvarka i neutrona iskazane su preciznim relacijama koje ih povezuju sa masom celine (masom Univerzuma) i ostalim masama koje se u radu pojavljuju. Neko može reći: „prikazuje precizno masu up kvarka i masu Univerzuma jer zna da se njihova tačna vrednost, a time i njegov rezultat, ne mogu eksperimentalno proveriti". Vrednost masa ovde nije bitna, bitne su relacije koje pokazuju odnose među masama.

Rad pred vama bavi se proračunom na najjednostavnijem nivou, vezanim za elementarne čestice prve generacije, pa ako samo deo ovih relacija bude potvrđen dobro je za početak. Ne može se očekivati da se odrede matematički i suštinski tačni odnosi na višem nivou organizacije materije, pre nego na prvom. Međutim, takođe je činjenica da je na višem nivou organizacije lakše eksperimentalno određivanje relacija.

Zato je neophodno paralelno usaglašavanje filozofskog, teoretskog i eksperimentalnog prilaza objašnjavanju

Conclusion

Relations presented demonstrate relationships between important masses in the universe. The masses of the up quark and neutron are presented in precise relations that connect them to the mass of the whole (mass of the universe) and other masses mentioned in the article. Someone may say: "he is showing the precise mass of the up quark and the mass of the universe because he knows that their exact value, and therefore the result, cannot be tested experimentally." The value of the masses is not important here, what is important are the relations showing the relationships between masses.

This article is dealing with the calculation at the simplest level, related to the elementary particles of the first generation, so if only some of these relations get confirmed, it is good for a start. We cannot expect to determine mathematically and essentially accurate relations on a higher level of organization before doing so on the first level. However, it is also the fact that at higher levels of organization it is easier to experimentally

fizičkih pojava. Određivanje analitičkog izraza Boškovićeve krive sila u [2,4,5] vodilo bi ka jedinstvu sila, sada razdvojenih na četiri.

Novi Sad, mart 2013.

determine relations.

Therefore, it is necessary to synchronize philosophical, theoretical and experimental approach to the explanation of natural phenomena. Determination of the analytical expression of the Bošković force curve [2,4,5] would lead to the unity of forces, now split into four.

Novi Sad, March 2013

Reference: **References:**

1. CODATA internationally recommended values of the Fundamental Physical Constants, (2010) values of the constants.

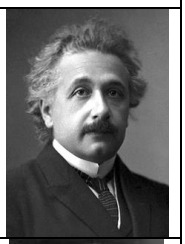
2. Branko Zivlak, On the Söllinger, Weizsäcker Relations and Bošković's Curve of Force, viXra: 1303.0008

3. Branko Zivlak, *Neutron, proton and electron mass ratios*, viXra: 1211.0090

4. Bošković, R.: Philosophiae naturalis theoria redacta ad unicam legem virium in natura existentium, Beč, 1758. (prvo izdanje), Venecija, 1763. (drugo izdanje); A Theory of natural philosophy. Cambridge, M.I.T. Press, Cambridge, 1922. i 1966.;

5. Dragoslav Stoiljković, Ruđer Bošković utemeljivač savremene nauke, Univerzitet Novi Sad Tehnološki fakultet, Novi Sad, Srbija

Dodatak 1. Appendix 1.

Ouroboros http://en.wikipedia.org/wiki/Ouroborus Antički simbol koji prikazuje zmaja koji grize vlastiti rep. Simbol predstavlja ostvarenje punog ciklusa, ciklus života i večnost. Ancient symbol of eternity, depicting a serpent or dragon eating its own tail. The symbol represents completion of a full cycle, life cycle and eternity.	
Yin and yang http://en.wikipedia.org/wiki/Yin-yang Simbolizuje cikličnost, beskonačnost, dvojnost i dinamičnost u prirodi. Sadrži dve ravnopravne polovine odeljene sinusoidom/kosinusoidom, sa tačkama suprotne boje. Polovine su neraskidivo vezane i prožimaju se. Symbolizes cyclicality, infinity, duality and dynamism. Comprises of two equal halves separated by a sinusoid/cosine and each half has a circle of the opposite color. The halves are intrinsic and interdependent.	
Max Planck (1858−1947) http://en.wikipedia.org/wiki/Max_Planck Većina preračunavanja vezana su za vrednosti koje nam je on dao. Od suštinskog značenja za ovaj rad je Plankova konstanta h. Most calculations are related to the values that he has given us. Of fundamental importance for this work is Planck's constant h.	
Ruđer Bošković(1711−1787)http://en.wikipedia.org/wiki/Rudjer_Boscovich U zavisnosti od rastojanja tačaka, privlačna ili odbojna sila se pojavljuje, što se grafički predstavlja Boškovićevim krivama sila. Boškovićeva teorija je prva kvantna teorija. Depending on the distance between points, attractive or repulsive force appears, which is graphically represented by Bošković's force curve. His theory is the very first quantum theory.	
Albert Einstein (1879−1955) http://en.wikipedia.org/wiki/Albert_einstein Ovde je najznačajnija ekvivalencija mase i energije $E=mc^2$ i njegova težnja za objedinjavanjem zakona fizike pod jednim modelom (Grand Unification Theory). Most important in this article is the mass-energy equivalence $E=mc^2$ and his aim to unify the laws of physics under a single model (Grand Unification Theory).	
Milutin Milanković (1879−1958) http://en.wikipedia.org/wiki/Milutin_Milankovich Za ovaj rad nisu značajni klimatski ciklusi po kojima je poznat, već stavovi po pitanju dimenzija u Ajnštajnovoj teoriji relativiteta, još 1926. godine. Climate cycles that he is known for are not important for this work, but rather his views dating back to year 1926 about the dimensions in Einstein's theory of relativity.	
Marijan Čadež (1912−2009) http://sl.wikipedia.org/wiki/Marijan_%C4%8Cade%C5%BE_%28meteorolog%29 Moj profesor meteorologije sa neautorizovanim predavanjem o važnosti brojeva 2^n i briljantnim osvrtima na veze između prirode i matematike. My professor of meteorology with his unauthorized lecture on the importance of numbers 2^n and brilliant observations about the links between nature and mathematics.	
Stevan Bošnjak http://www.scribd.com/doc/42998373/Stevan-Bo%C5%A1njak-OPUS Filozofska rasprava – "Poslanice Pitagori", sa korisnim postulatima. Philosophical discussion – "Poslanice Pitagori" with useful postulates.	**?**
Occam's razor http://en.wikipedia.org/wiki/Occam%27s_razor Okamova britva govori da količina pretpostavki treba da bude što je moguće manja, što je često primenjivano. Occam's razor states that the amount of assumptions should be as small as possible, which I often apply.