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Information Technology for Monitoring Young Patients with Diabetes Mellitus

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Abstract: The article is devoted to the technical means of monitoring the sugar level in patients. Many similar systems are known for measuring and monitoring blood sugar levels. The list of tasks they solve includes actively monitoring blood glucose levels and monitoring physical activity, diet and insulin consumption. Recent advances in diabetes technology and self-management applications have made it easier for patients to access relevant data. The capabilities of the Internet of Things (IoT), information and communication technologies and machine learning help optimize costs in healthcare and the organization of online medical services. Techniques such as predicting blood glucose (personalized profile modeling) and modeling blood glucose dynamics are key in developing technologies for monitoring patients with diabetes. Increasing the availability of sufficient historical patient data has paved the way for the introduction of machine learning and its use in diabetes management. Machine learning's ability to solve complex problems in a dynamic environment and knowledge has contributed to its success in diabetes research. Globally, the number of cases of diabetes among children is increasing, so monitoring of young patients is a hot topic. Therefore, this review is mainly aimed at finding the optimal structure for monitoring the condition of young patients with diabetes; such a system should have a number of distinctive features, about which practically no information has been found in the literature, which determines the novelty of this article.

Key words: glucose monitoring, diabetes mellitus, Internet of Things, sensor, machine learning, neural networks, big data, glucose prediction.

References

[1] Rghioui, A.; Lloret, J.; Parra, L.; Sendra, S.; Oumnad, A. Glucose Data Classification for Diabetic Patient Monitoring. Appl. Sci. 2019, 9, 4459.

[2] M. v. d. W. H.N. Mhaskar, S.V. Pereverzyev, “A deep learning approach to diabetic blood glucose prediction,” https://arxiv.org/abs/1707.05828, 2017.

[3] C. Marling and R. Bunescu, “The OhioT1DM dataset for blood glucose level prediction,” in The 3rd International Workshop on Knowledge Discovery in Healthcare Data, Stockholm, Sweden, July 2018, CEUR proceedings in press, available at http://smarthealth.cs.ohio.edu/bglp/OhioT1DM-dataset-paper.pdf.

[4] Corriere, M., Rooparinesingh, N., & Kalyani, R. R. (2013). Epidemiology of diabetes and diabetes complications in the elderly: an emerging public health burden. Current diabetes reports, 13(6), 805–813. https://doi.org/10.1007/s11892-013-0425-5

[5] International Diabetes Federation. Managing Older People with Type 2 Diabetes; Global Guideline; IDF: Brussels, Belgium, 2013.

[6] Salam, N.A.B.A.; bin Mohd Saad, W.H.; Manap, Z.B.; Salehuddin, F. The evolution of non-invasive blood glucose monitoring system for personal application. JTEC 2016, 8, 59–65.

[7] Frontino, G., Meschi, F., Bonfanti, R., Rigamonti, A., Battaglino, R., Favalli, V., Bonura, C., Ferro, G., & Chiumello, G. (2013). Future perspectives in glucose monitoring sensors. European Endocrinology, 9(1), 6-11.

[8] Villena Gonzales, W., Mobashsher, A. T., & Abbosh, A. (2019). The Progress of Glucose Monitoring-A Review of Invasive to Minimally and Non-Invasive Techniques, Devices and Sensors. Sensors (Basel, Switzerland), 19(4), 800. https://doi.org/10.3390/s19040800

[9] Facchinetti A. (2016). Continuous Glucose Monitoring Sensors: Past, Present and Future Algorithmic Challenges. Sensors (Basel, Switzerland), 16(12), 2093. https://doi.org/10.3390/s16122093

[10] Bruen D, Delaney C, Florea L, Diamond D. Glucose Sensing for Diabetes Monitoring: Recent Developments. Sensors (Basel). 2017;17(8):1866. Published 2017 Aug 12. doi:10.3390/s17081866.

[11] Goodfellow, Y. Bengio, and A. Courville, Deep Learning. The MIT Press, 2016.

[12] M. Abadi, A. Agarwal, P. Barham, E. Brevdo, Z. Chen, C. Citro, G. S. Corrado, A. Davis, J. Dean, M. Devin, S. Ghemawat, I. Goodfellow, A. Harp, G. Irving, M. Isard, Y. Jia, R. Jozefowicz, L. Kaiser, M. Kudlur, J. Levenberg, D. Man´e, R. Monga, S. Moore, D. Murray, C. Olah, M. Schuster, J. Shlens, B. Steiner, I. Sutskever, K. Talwar, P. Tucker, V. Vanhoucke, V. Vasudevan, F. Vi´egas, O. Vinyals, P. Warden, M. Wattenberg, M. Wicke, Y. Yu, and X. Zheng, “TensorFlow: Large-scale machine learning on heterogeneous systems,” 2015, software available from tensorflow.org.

[13] American Diabetes Association Introduction: Standards of medical care in diabetes—2018. Diabetes Care. 2018;41(Suppl. 1):S1–S2. doi: 10.2337/dc18-Sint01.

[14] Colberg S.R., Sigal R.J., Yardley J.E., Riddell M.C., Dunstan D.W., Dempsey P.C., Horton E.S., Castorino K., Tate D.F. Physical Activity/exercise and diabetes: A position statement of the American Diabetes Association. Diabetes Care. 2016;39:2065–2079. doi: 10.2337/dc16-1728.

[15] Klein, S., Sheard, N. F., Pi-Sunyer, X., Daly, A., Wylie-Rosett, J., Kulkarni, K., Clark, N. G., American Diabetes Association, North American Association for the Study of Obesity, & American Society for Clinical Nutrition (2004). Weight management through lifestyle modification for the prevention and management of type 2 diabetes: rationale and strategies. A statement of the American Diabetes Association, the North American Association for the Study of Obesity, and the American Society for Clinical Nutrition. The American journal of clinical

nutrition, 80(2), 257–263. https://doi.org/10.1093/ajcn/80.2.257
[16] Alfian G, Syafrudin M, Ijaz MF, Syaekhoni MA, Fitriyani NL, Rhee J. A Personalized Healthcare Monitoring System for Diabetic Patients by Utilizing BLE-Based Sensors and Real-Time Data Processing. Sensors (Basel). 2018;18(7):2183. Published 2018 Jul 6. doi:10.3390/s18072183
[17] K. Li, J. Daniels, C. Liu, P. Herrero and P. Georgiou, "Convolutional Recurrent Neural Networks for Glucose Prediction," in IEEE Journal of Biomedical and Health Informatics, vol. 24, no. 2, pp. 603-613, Feb. 2020, doi: 10.1109/JBHI.2019.2908488
[18] J. Lucisano et al. Glucose monitoring in individuals with diabetes using a long-term implanted sensor/telemetry system and model. IEEE Transactions on Biomedical Engineering, 2016.
[19] MUH. Al Rasyid et al. Implementation of blood glucose levels monitoring system based on wireless body area network. In Consumer Electronics-Taiwan (ICCE-TW), 2016 IEEE International Conference on, pages 1–2. IEEE, 2016.
[20] Salam, N. A., W. H. M. Saad, Z. Manap and F. Salehuddin. “The Evolution of Non-invasive Blood Glucose Monitoring System for Personal Application.” Journal of Telecommunication, Electronic and Computer Engineering 8 (2016): 59-65.
[21] Rghioui, A.; Lloret, J.; Harane, M.; Oumnad, A. A Smart Glucose Monitoring System for Diabetic Patient. Electronics 2020, 9, 678.
[22] Yannian Wang, Shanshan Liu, Ruoxi Chen, Zhongning Chen, Jinlei Yuan, and Quanzhong Li(2017): A Novel Classification Indicator of Type 1 and Type 2 Diabetes in China Sci Rep. Vol 7 no 2 doi: 10.1038/s41598-017-17433-8
[23] Sharma, M., Singh, G., & Singh, R.(2019). AnAdvanced Conceptual Diagnostic Healthcare Framework for Diabetes and Cardiovascular Disorders. arXiv preprint arXiv:1901.10530
[24] Kumar, P. M., Lokesh, S., Varatharajan, R., Babu, G. C., & Parthasarathy, P. (2018). Cloud and IoT based disease prediction and diagnosis system for healthcare using Fuzzy neural classifier. FutureGeneration Computer Systems, 86, 527-534
[25] Narkhede, P., Dhalwar, S. and Karthikeyan, B. (2016). NIR Based Non-Invasive Blood Glucose Measurement. Indian Journal of Science and Technology, 9(41). DOI:10.17485/ijst/2016/v9i41/98996]
[26] Vasanthakumar, R., K. D. Darsini, S. Subbaiah and K. Lakshmi. “IoT for monitoring diabetic patients.” International Journal of Advance Research, Ideas and Innovations in Technology 4 (2018): 2149-2157

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Modification of the Method for Calculating the PID Controller for a Second-Order Oscillatory Plant with Delay

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Abstract: This paper solves the problem of controlling an object prone to vibrations. The object model is a sequential inclusion of a second-order filter (oscillatory link) and a pure retardation link. Such objects are especially difficult to control, since oscillations of large amplitude arise in the transient process, which do not damp for a long time, this leads to multiple overshoots. The article solves the problem of overshoot elimination. The results are confirmed by modeling.

Key words: automation, control, regulator, optimization, dynamic error, static error, modeling

REFERENCES

[1] Zhmud V.A. Modelirovaniye, issledovaniye i optimizatsiya zamknutykh sistem. Monografiya / Novosibibirskiy gosudarstvennyy tekhnicheskiy universitet. Novosibirsk, 2012.

[2] Zhmud V.A., Yadryshnikov O. Chislennaya optimizatsiya PID-regulyatorov s ispol'zovaniyem detektora pravil'nosti dvizheniya v tselevoy funktsii. Avtomatika i programmnaya inzheneriya. 2013. № 1 (3). S. 24-29.

[3] Zhmud V.A., Frantsuzova G.A., Vostrikov A.S. dinamika mekhatronnykh sistem. Uchebnoye posobiye / Novosibirsk, 2014.

[4] Zhmud V.A., Zavorin A.N. metod proyektirovaniya energosberegayushchikh regulyatorov dlya slozhnykh ob"yektov s chastichno neizvestnoy model'yu. V sbornike: Problemy upravleniya i modelirovaniya v slozhnykh sistemakh. Trudy XVI Mezhdunarodnoy konferentsii. Institut problem upravleniya slozhnymi sistemami, Samarskiy nauchnyy tsentr Rossiyskoy akademii nauk; Pod red.: Ye.A. Fedosova, N.A. Kuznetsova, V.A. Vittikha. 2014. S. 557-567

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Introduction to Unified Field Theory

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Abstract. This paper continues an attempt to understand the advantages and disadvantages of modern concepts of physics, astrophysics, and philosophy of natural science. The author cannot come to terms with the fact that clearly identified contradictions and clearly anti-scientific statements are firmly rooted in modern worldviews. One should exclude, at least, those ideas, the error of which is obvious and proved many times, despite the ignorance of these facts by the bulk of relativists.

Key words: electromagnetic radiation, field interaction, field theory, light, corpuscular theory, wave theory, dual nature of light, relativity, relativism

REFERENCES

[1] Einstein A. Sobr. soch., v 4-kh t., M., Nauka. 1965. – t.1.
[2] https://en.wikipedia.org/wiki/Eristic
[3] Shopengauer A. Eristicheskaya dialektika, v kn. Logika i ritorika. Khrestomatiya. Minsk. TetraSistems. 1997. s. 410–439.
[4] https://en.wikisource.org/wiki/The_Art_of_Being_Right
[5] Bol'shaya kniga aforizmov. Sostavitel': K Dushenko. M..: Eksmo-Press. 2001. – 1056 s.
[6] Brillyuen L. Novyy vzglyad na teoriyu otnositel'nosti. M.: Mir. 1972. – 142 s.
[7] V.A. Zhmud. O prirode relyativistskoy kontseptsii popravki k dannym ot global'nykh sistem GPS i GLONASS: vzglyad s pozitsii teorii zamknutykh sistem (avtomatiki). Avtomatika i programmnaya inzheneriya. 2014. №4. S. 87–141. http://jurnal.nips.ru/sites/default/files/%D0%90%D0%98%D0%9F%D0%98-4-2014-11_1.pdf
[8] Semat G., Uayt G. Fizika atomnogo veka. M., Gos. Izd-vo v oblasti atomnoy nauki i tekhniki, 1961. – 202 s.
[9] Rumer YU.B., Ryvkin M.S. Teoriya otnositel'nosti. M., Uchpedgiz, 1960. – 212 s.
[10] Devid Bom. Spetsial'naya teoriya otnositel'nosti. M.: Mir, 1967.
[11] http://www.vokrugsveta.ru/quiz/272393/
[12] http://phys.bspu.by/static/lib/phys/bmstu/tom5/ch5/formulas/fml5.6_more.htm
[13] Vadim Zhmud. Eynshteynovskiye printsipy nauchnogo issledovaniya. https://proza.ru/2004/08/13-39
[14] V.A. Zhmud. Znacheniye printsipa britvy Okkama dlya formirovaniya i selektsii nauchnykh gipotez. Avtomatik a i programm naya inzheneriya. 2013, №2(4) s. 95–104. http://jurnal.nips.ru/sites/default/files/%D0%90%D0%98%D0%9F%D0%98-2-2013-11.pdf
[15] Zhmud V.A. Obosnovaniye nerelyativistskogo nekvantovogo podkhoda k modelirovaniyu dvizheniya elektrona v atome vodoroda // Sbornik nauchnykh trudov NGTU. Novosibirsk. 2009. 3(57). S. 141–156.
[16] Zhmud V. A. Otnositel'nost' v svete teorii zamknutykh dinamicheskikh sistem i kritika yeye kritiki. Avtomatika i programmnaya inzheneriya. – 2018. – № 2 (24). – S. 91–116.
[17] L.D. Landau, YU.B. Rumer. Chto takoye teoriya otnositel'nosti. Novosibirsk: Izd-vo SO RAN, 2003. – 122 s. (predisloviye chl.-kor. RAN A.M. Shalagina).
[18] https://en.wikipedia.org/wiki/Lorentz_ether_theory
[19] Physics. The entire course of the school curriculum in diagrams and tables. https://may.alleng.org/d/phys/phys251.htm

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Development of Ideas of a Unified Field Theory and Field Interaction

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Abstract. The main ideas of the proposed field theory are presented in a number of publications by the author. These publications could cause a heated discussion, or complete disregard on the part of representatives of official physics and astrophysics, since the proposed view ignores the generally accepted theory of relativity (its two parts, special and general), quantum physics, the dual nature of light and particles, as well as the statement about the absence luminiferous medium - ether. Some articles from this series have been republished by other sites, some articles have been published in conference proceedings included in the Scopus databases, but in general, representatives of official physics either do not know about such publications or ignore them. All the responses met, both positive and negative, were received mainly from non-specialists in this area, therefore, most of the comments and responses do not provide such information or such comments that should be answered in detail, or as a result of which it would be necessary to radically revise the proposed theory. A number of questions required clarification, which was the basis for writing this article.

Key words: methods of science, logic, experiment, proof, physics, systems theory, automation

References

[1] Eynshteyn A. Sobr. soch., v 4-kh t., M., Nauka. - 1965. - t.1.

[2] V.A. Zhmud. Osnovy yedinoy teorii polya. https://proza.ru/2004/08/10-36

[3] V. Boyarintsev. AntiEynshteyn. Glavnyy mif XX veka. M.: Yauza. 2005.

[4] S.N. Artekha. Kritika osnov teorii otnositel'nosti. M.: Yeditorial URSS, 2004.

[5] Brillyuen L. Novyy vzglyad na teoriyu otnositel'nosti. M.: Mir. - 1972. – 142 s.

[6] Devid Bom. Spetsial'naya teoriya otnositel'nosti. M.: Mir, 1967.

[7] https://ru.qwe.wiki/wiki/Doppler_effect

[8] http://jurnal.nips.ru/sites/default/files/%D0%90%D0%98%D0%9F%D0%98-4-2014-11_1.pdf

[9] https://en.wikipedia.org/wiki/Fizeau_experiment

[10] V.I. Sekerin. Teoriya otnositel'nosti – mistifikatsiya veka. Novosibirsk. RPO SO VASKHNIIL. 1990. – 56 s. ISBN 5-08-007486-8.

[11] Shopengauer A. Eristicheskaya dialektika, v kn. Logika i ritorika. Khrestomatiya. Minsk. TetraSistems. - 1997. – s. 410 - 439.

[12] V.A. Zhmud. Teorema Kotel'nikova-Naykvista-Shennona, Printsip neopredelennosti i skorost' sveta. Avtomatika i programmnaya inzheneriya. 2014. № 1(7). S. 127–136. http://www.jurnal.nips.ru/sites/default/files/%D0%90%D0%98%D0%9F%D0%98-1-2014-16.pdf

[13] A. Eynshteyn. Fizika i real'nost'. http://www.philsci.univ.kiev.ua/biblio/Ejnchtejn-f-r.html

[14] Izbrannyye dialogi. Priklyucheniya Sherloka Kholmsa i doktora Vatsona. http://www.221b.ru/archive/dialogues/2-1.htm

[15]Istoriya elektrotekhniki. Glava 2.9. Istoriya otkrytiya zakona sokhraneniya i prevrashcheniya energii https://tech.wikireading.ru/15671#:~:text=%D0%98%D0%BC%D0%B5%D0%BD%D0%BD%D0%BE%20%D0%9C.-,%D0%92.,%D0%92%201744%20%D0%B3.&text=%D0%9B%D0%BE%D0%BC%D0%BE%D0%BD%D0%BE%D1%81%D0%BE%D0%B2%D1%8B%D0%BC%20%D0%B1%D1%8B%D0%BB%20%D1%87%D0%B5%D1%82%D0%BA%D0%BE%20%D1%81%D1%84%D0%BE%D1%80%D0%BC%D1%83%D0%BB%D0%B8%D1%80%D0%BE%D0%B2%D0%B0%D0%BD%20%D0%B7%D0%B0%D0%BA%D0%BE%D0%BD,%D0%B2%D1%81%D0%B5%D0%BE%D0%B1%D1%89%D0%B8%D0%B9%20%D0%B7%D0%B0%D0%BA%D0%BE%D0%BD%20%D0%BF%D1%80%D0%B8%D1%80%D0%BE%D0%B4%D1%8B%20%5B1.10%5D

[16] V.P. Okhlopkov. Osnovnyye periodichnosti dvizheniya Solntsa otnositel'no tsentra mass Solnechnoy sistemy i solnechnaya aktivnost'. VMU. Seriya 3. Fizika. Astronomiya. 2011. №6. S.138 – 142. https://cyberleninka.ru/article/n/osnovnye-periodichnosti-dvizheniya-solntsa-otnositelno-tsentra-mass-solnechnoy-sistemy-i-solnechnaya-aktivnost/viewer

[17] V.A. Zhmud. O prirode relyativistskoy kontseptsii popravki k dannym ot global'nykh sistem GPS i GLONASS: vzglyad s pozitsii teorii zamknutykh sistem (avtomatiki). Avtomatika i programmnaya inzheneriya. 2014. № 4(10). S.87-141. http://jurnal.nips.ru/sites/default/files/%D0%90%D0%98%D0%9F%D0%98-4-2014-11_0.pdf

[18] B.M. Bolotkovskiy, S.N. Stolyarov. Sovremennoye sostoyaniye elektrodinamiki dvizhushchikhsya sred (bezgranichnyye sredy). Eynshteynovskiy sbornik 1974. M.: Nauka. 1976. S. 179 – 275.

[19] V.A. Zhmud. O vliyanii sidericheskikh sutok na nablyudeniye prilivno-otlichnykh kolebaniy zemnoy kory. Avtomatika i programmnaya inzheneriya. 2020. №4 (34). S. 86–91. Izdatel' PAO «NIPS». ISSN 2312-4997. http://journal.nips.ru/sites/default/files/AaSI-4-2020-6.pdf

[20] V.A. Zhmud. Yeshche raz pro Eynshteyna dlya MOI. Diarium Externum Veteris. Vypusk № 12. Str. 2 – 20. ISBN 9984-688-56-9. https://mega.nz/folder/RRtG2apR#qmIYvdTQ6pxQ-RMCyGoEMA

[21] V.A. Zhmud. Religiya Eynshteyna. Diarium Externum Veteris. Vypusk № 12. Str. 34 – 52. ISBN

9984-688-56-9.
https://mega.nz/folder/RRtG2apR#qmIYvdTQ6pxQ-RMCyGoEMA

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Relativism in the View of its Use of Criteria for the Truth of Scientific Hypotheses

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Abstract. The question of the criteria for the validity of scientific hypotheses remains one of the most important for the further development of science. If these criteria were indisputable and equally understood by all researchers, scientific discussions would be extremely simple, concise and effective. Lenin's definition that the criterion of truth is socio-historical practice, apparently, no longer enjoys such authority as in the Soviet period, however, science has not yet proposed another, more reliable criterion of truth. In publications of relativistic literature, the role of such a criterion is played by genius and the intuition of a truly brilliant scientist, unfortunately, no clearer criteria have been found in this literature. It is impossible to agree with this state of affairs in any way, since the concept of "genius", like the concept of "authority", has nothing to do with science, the concept of "intuition" has no formal differences from the concepts of "fantasy", insight can be both genius and erroneous, science should not be based on such shaky arguments. This article continues the topic of finding reliable criteria for truth and exposing unreliable speculative statements that are refuted by experimental information and logic.

Key words: methods of science, logic, experiment, thought experiment, proof, physics, systems theory, automation

References

[1] D.Yu. Manin. Nauka v krivom zerkale: Lakatos, Feyyerabend, Kun. V zashchitu nauki. 2008. Vypusk № 3. Str. 45 – 61. ISBN 978-5-02-036767-8. https://mega.nz/folder/RRtG2apR#qmIYvdTQ6pxQ-RMCyGoEMA (faylovyy arkhiv VZN-2021-01-01.zip)

[2] L. Brillyuen. Novyy vzglyad na teoriyu otnositel'nosti. http://nuclphys.sinp.msu.ru/books/astro/%D0%91%D1%80%D0%B8%D0%BB%D0%BB%D1%8E%D1%8D%D0%BD.pdf

[3] S.S. Savchenko. Istoriya opredeleniya postoyannoy Khabbla. https://vo.astro.spbu.ru/downloads/HubbleConst_Savchenko.pdf

[4] Vozrast Vselennoy. http://galspace.spb.ru/indvop.file/68.html

[5] Mafusail – starshaya vo Vselennoy zvezda ili yeyo predshestvennitsa? https://nat-geo.ru/science/mafusail-starejshaya-vo-vselennoj-zvezda-ili-eyo-predshestvennica/

[6] Vozrast Marsa sostavlyayet priblizitel'no 4,65 milliarda let. https://ria.ru/20061003/54484068.html

[7] https://ru.wikipedia.org/Solntse

[8] Duglas Lin. Proiskhozhdeniye planet. V mire nauki, 2008, №8. https://elementy.ru/nauchno-populyarnaya_biblioteka/430678/Proiskhozhdenie_planet

[9] V.A. Zhmud. Religiya Eynshteyna. Diarium Externum Veteris. Vypusk № 12. S. 34–52. ISBN 9984-688-56-9. https://mega.nz/folder/RRtG2apR#qmIYvdTQ6pxQ-RMCyGoEMA

[10] V zashchitu nauki. 2008. Vypusk № 3. ISBN 9984-688-56-9. https://mega.nz/folder/RRtG2apR#qmIYvdTQ6pxQ-RMCyGoEMA (faylovyy arkhiv VZN-2021-01-01.zip)

[11] Yu.N. Yefremov. Obskurantizm i nauka XXI veka. V zashchitu nauki. 2008. Vypusk № 3. s. 108 – 118. ISBN 9984-688-56-9. https://mega.nz/folder/RRtG2apR#qmIYvdTQ6pxQ-RMCyGoEMA (faylovyy arkhiv VZN-2021-01-01.zip).

[12] V.A. Zhmud. Yeshche raz pro Eynshteyna dlya MOI. Diarium Externum Veteris. Vypusk № 12. S. 2–20. ISBN 9984-688-56-9. https://mega.nz/folder/RRtG2apR#qmIYvdTQ6pxQ-RMCyGoEMA

[13] V.A.Zhmud. O prirode relyativistskoy kontseptsii popravki k dannym ot global'nykh sistem GPS i GLONASS: vzglyad s pozitsii teorii zamknutykh sistem (avtomatiki). Avtomatika i programmnaya inzheneriya. 2014. № 4(10). S.87–141. http://jurnal.nips.ru/sites/default/files/%D0%90%D0%98%D0%9F%D0%98-4-2014-11_0.pdf

[14] https://ru.wikipedia.org/wiki/Teoriya_efira_Lorentsa

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Systems Approach to the interpretation of Hubble's Law

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Abstract. The article argues views about the stationarity of the Universe. The big bang theory leads to religiosity in science. Modern authors, developing the theory of the structure of the Universe in this direction, resort to more and more unsubstantiated hypotheses in order to create at least the appearance of logical connections between the theses put forward, but still the resulting theory includes less and less reliable physical and astronomical information and more and more conjectures and mathematical models taken at random and by dubious analogies, which are further calculated for different initial conditions and are used as analogies of realities that do not actually exist and have never existed. Thus, the whole picture of the modern concept of the Universe gradually became completely fantastic. The problem of this situation lies not in the fact that the creators of new theories suffer from an excess of fantasy, since fantasy in itself cannot harm science, the problem is in the absence of reliable criteria for the scientific nature of these fantasies, as well as in the absence of a general vision of the situation. Most of the objections to the alternative theory of a stationary, non-expanding Universe are aimed at exposing the assumption that light quanta can lose their energy, while the supporters of the Big Bang theory do not even admit the idea that it is possible to abandon the quantum theory of light as an insufficiently substantiated hypothesis , and return to the purely wave nature of light, from which the redshift, which is the essence of the Hubble effect, is explained most simply by the scattering of the energy of the light wave. In this approach, the picture of the Universe is the most reliable, harmonious and rational, it does not require fantastic hypotheses to justify its development, since the development of such a Universe does not include its expansion, and all other processes have real physical reasons.

Key words: methods of science, logic, experiment, thought experiment, proof, physics, systems theory, automation

References

[1] V.A. Zhmud. Religiya Eynshteyna. Diarium Externum Veteris. Vypusk № 12. S. 34–52. ISBN 9984-688-56-9. https://mega.nz/folder/RRtG2apR#qmIYvdTQ6pxQ-RMCyGoEMA

[2] Ye.B. Aleksandrov. Iz pochty komissii. V zashchitu nauki. 2019. Vypusk № 22. s. 117–122. ISBN 978-5-98604-606-8. https://mega.nz/folder/RRtG2apR#qmIYvdTQ6pxQ-RMCyGoEMA (faylovyy arkhiv VZN-2021-01-01.zip).

[3] V. Boyarintsev. «AntiEynshteyn. Glavnyy mif XX veka». Moskva. 2006. Izd-vo «Yauza» - 320 s. Sm. S. 75–85.

[4] https://ru.wikipedia.org/wiki/Spinoza,_Benedikt

[5] Religiya, yeye sushchnost' i proiskhozhdeniye: (Obzor filos. gipotez): V 2 kn. Kn. 1-2 / Prot. T.I. Butkevich, prof. Khar'k. un-ta. Khar'kov: tip. Gub. pravl., 1902. 1 t. / 561 s.; 1904. 2 t. / 451 s. https://azbyka.ru/otechnik/Timofej_Butkevich/religija-ee-sushnost-i-proishozhdenie-kniga-1/7

[6] https://ru.wikipedia.org/wiki/Bol'shoy_vzryv

[7] https://pravlife.org/ru/content/most-mezhdu-naukoy-i-religiey-ili-teoriya-bolshogo-vzryva

[8] https://www.canertaslaman.com/wp-content/uploads/2020/06/bigbang-rusca.pdf

[9] http://theology.mephi.ru/content/publications/37-kniga-rodni-kholdera-bolshoj-vzryv-bolshoj-bog-sotvorena-li-vselennaya-dlya-zhizni

[10] Bol'shoy Vzryv – Bol'shaya Lozh'! https://zen.yandex.ru/media/vselennaya/bolshoi-vzryv--bolshaia-loj-5dbaed432fda8600b05cf769

[11] A.P. Chekhov. Pis'mo k uchenomu sosedu. https://ilibrary.ru/text/32/p.1/index.html

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Overview of Current Trends in the Field of Virtual Reality

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Abstract. The virtual reality industry has been booming in recent years. The proliferation of affordable personal VR headsets has enabled the use of this technology in many different areas of human activity. Due to the relative "youth" of this direction, it would not be entirely correct to talk about the information technology sector formed to the end. The market of relevant applications is still quite small in comparison with "classic" applications. Nevertheless, there is already a fairly large amount of research work devoted to the practical implementation and application of virtual reality, as well as the difficulties that arise in the process. This article is devoted to an overview of the current state of the VR segment of information technology – the directions of technology development that have been formed to date, as well as the difficulties faced by developers who have chosen VR as their main platform. This article discusses examples of the use of virtual reality in various fields of activity: in the educational process, medical practice, tourism, geology, three-dimensional editors, various simulators that simulate vehicles. It also describes specific applications of this technology, such as the development of a virtual office environment designed for remote work. In addition, the article mentions specific problems that users face when using VR applications. So, in particular, the phenomenon of the so-called "cyber device", which is a form of motion sickness and occurs when using a VR headset. The issue of security of using VR-devices connected to the Internet, in particular, information security related to the possibility of personal data leakage, was raised.

Key words: virtual reality, immersiveness, learning process, cyber device, VR headset.

References

[1] Ivanova A.V. The technology of virtual and augmented reality: opportunities and constraints of the application. Strategic decisions and risk management. 2018;(3):88-107.

[2] Shahova A.A. Virtual reality: Distribution trends and significance for modern society. Matrix of scientific knowledge. 2020. № 2. C. 83-89.

[3] Barashko E.N., Kuksa V.D., Shishova L.V. Virtual reality techniques. World Science. 2019. № 5 (26). C. 192-196.

[4] Zhmud V.A., Lyapidevsky A.V., Avramchuk V.S., Rot G. End-to-end Subtechnologies in a Cluster of Virtual and Augmented Reality. Automatics & Software Enginery. 2019. № 2 (28). C. 86-97.

[5] Tomashin E.D, Arsentev D.A. Features of Virtual Reality game development. Bulletin of Science. 2020. T. 1. № 1 (22). C. 215-219.

[6] C. D. Porter, J. R. H. Smith, E. M. Stagar, A. Simmons, M. Nieberding, C. M. Orban, J. Brown, A. Ayers. Using Virtual Reality in Electrostatics Instruction: The Impact of Training. Phys. Rev. Phys. Educ. Res. 16, 020119 – Published 3 September 2020

[7] Elesin S.S., Moiseev A.N. Selection of virtual reality technologies for use in training courses. В сборнике: Information Technologies and Mathematical Modeling (ITMM-2018). Materials of the XVII International Conference named after A. F. Terpugov. 2018. C. 236-241.

[8] Uvarov A. Yu. Virtual reality technologies in education // Science and School. 2018. № 4. C. 108-117.

[9] Aguayo C., Cochrane T., Narayan V. Key themes in mobile learning: Prospects for learner-generated learning through AR and VR. // Australasian Journal of Educational Technology 33(6):27-40

[10] Klimovich R. R., Shkvarkova Yu. O., Chernova S. V. Introduction of virtual reality technology in education. Questions of student science.2019. № 8 (36). C. 30-33.

[11] Male S.A, Kenworthy P., Hassan Gh.M., Guzzomi A., Van der Veen T., French T. Teaching Safety in Design in Large Classes using VR. Paper presented at the 29th Australasian Association for Engineering Education Conference. Hamilton, New Zealand, 2020.

[12] Kataev M. Yu., Korikov A.M., Mkrtchyan V. S. Technological aspects of designing a virtual integrated educational environment. Reports of the Tomsk State University of Control Systems and Radioelectronics.2013. № 4 (30). C. 125-129.

[13] Shevchenko G. I., Rybakova A. A., Kochkin D. A. Features of the organization of the educational process in the university with the use of virtual reality tools. Problems of modern pedagogical education.2018. № 60-1. C. 398-402.

[14] Nabokova L. S., Zagidullina F. R. Prospects of introduction of technologies of augmented and virtual reality in the sphere of educational process of higher school. Professional education in the modern world.2019. T. 9, № 2. C. 2710–2719

[15] Ijaz K., Tomas J., Ahmadpour N. Immersive VR Learning Experiences: Do Expectations Meet Reality. Paper presented at the 30th Australian Computer-Human Interaction Conference (OzCHI), Melbourne, 2018.

[16] Donina I. A., Vinogradova Yu. A. Virtual reality as a factor of increasing the motivation of schoolchildren to learn // Pedagogical Bulletin. 2020. № 12. C. 19-21.

[17] Aivazova Yu.A., Kozlova N. Sh. Virtual reality in education is reality? // Student and Science.2019. № 4 (11). C. 39-43.

[18] Petrov V. V. Virtual reality: distance education in the information society. Professional education in the modern world.2019. T. 9. № 2. C. 2702-2709.

[19] Saidov Zh. A. U., Ulibekova F. A. K. Reasons for using virtual reality in educational and training courses, and the model determining when to use virtual reality / В сборнике: STUDENT SCIENTIFIC ACHIEVEMENTS. collection of articles of the VI International Research Competition. 2019. C. 30-35.

[20] Zinchenko Yu. P., Menshikova G. Ya., Bayakovsky Yu. M., Chernorizov A.M., Voiskunsky A. E. Virtual reality technologies: methodological aspects, achievements and prospects. // National Psychological Journal — 2010. — №2(4) — c.64-71

[21] Saalfeld P., Schmeier A., D'Hanis W., Rothkötter H., Preim B. Student and teacher meet in a shared

virtual reality: a one-on-one tutoring system for anatomy education. Paper presented at the Eurographics Workshop on Visual Computing for Biology and Medicine, 2020.
[22] Virtual and augmented reality-2016: state and prospects: collection of scientific and methodological materials, abstracts and articles of the conference / under general ed D. I. Popov. M.: publishing house of the STATE MMPP, 2016. 386 c.
[23] Golohvast K. S., Good P. P., Smirnov A. S., Sergievich A. A. The use of virtual reality in modern domestic medical practice. Modern problems of science and education. 2018. № 4. C. 247.
[24] Ustinova K. I., Chernikova L. A. Virtual reality in neurorehabilitation. Annals of clinical and experimental neurology.2008. T. 2. № 4. C. 34-39.
[25] Hizhnyakova A. E., Klochkov A. S., Kotov-Smolensky A.M., Suponeva N. A., Chernikova L. A. Virtual reality as a method of restoring the motor function of the hand. Annals of clinical and experimental neurology.2016. T. 10. № 3. C. 5-12.
[26] Roshchupkin S. M. virtual reality as a method of restoring motor functions. Reshetnev readings.2018. T. 2. C. 204-206.
[27] Selivanov V. V., Pobokin P. A., Babieva N. S. Interaction of personality with educational and training programs in virtual reality. Human capital 2018. № 11-2 (119). C. 263-270.
[28] Constantyan V. N., Nakhushev R. S., Shavaev A. A. Interaction of a virtual reality helmet and a flight simulation complex. Electrical and information systems and systems.2018. T. 14. № 4. C. 17-23.
[29] Larin M. P., Rakhmanov A. S., Gunko A.V. Application and research of modern visualization technologies in the educational process. Student: electronic scientific journal. 2019. № 40(84). URL: https://sibac.info/journal/student/84/161788 (дата обращения: 02.12.2020).
[30] Larin M. P., Rakhmanov A. S., Gunko A.V. Application and research of modern visualization technologies in the educational process: results. Student: electronic scientific journal. 2020. № 18(104). URL: https://sibac.info/journal/student/104/178513 (дата обращения: 26.11.2020).
[31] Kruglov R. M. Application of virtual reality and machine learning technologies in the organization of technical training of electrical personnel. Science Alley. 2018.
[32] Akimov A. A. Development of a simulator for underground electricians using virtual reality. B сборнике: Collection of materials of the X All-Russian scientific and practical conference of young scientists with international participation "Young Russia". 2018. C. 31503.1-31503.5.
[33] Averbukh V. L., Averbukh N. V., Vasev P. A., Gvozdarev I. L., Levchuk G. I., Melkozerov L. O. Visualization of software based on virtual reality tools of geospatial data. Overview and prospects of development // Bulletin of the Tomsk Polytechnic University. Engineering of geo-resources.2020. T. 331. № 1. C. 195-210.
[34] Dobrova V. V., Labzina P. G. Virtual reality in teaching foreign languages / / Bulletin of the Samara State Technical University. Series: Psychological and pedagogical sciences. 2016. № 4 (32). C. 13-20.
[35] Timofeeva V. A., Galiullina A. Sh. Influence of AR / VR technologies on the food industry. Questions of student science. 2020. № 1 (41). C. 390-394.
[36] Vezhenkova I. V., Kovalevskaya A. S., Arestov V. V. Methods and systems of virtual reality in training specialists in the direction of "technosphere safety" // Modern education: content, technologies, quality.2019. T. 1. C. 432-433.
[37] Gumonan, K., & Fabregas, A. (2021). ASIAVR: Asian Studies Virtual Reality Game a Learning Tool. International Journal of Computing Sciences Research, 5(1), 475-488. doi: 10.25147/ijcsr.2017.001.1.53
[38] Friedrich M., Langer S., Frey F. Combining Gesture and Voice Control for Mid-Air Manipulation of CAD Models in VR Environments [Электронный ресурс] // arXiv.org. Дата обновления: 18.11.2020. URL: https://arxiv.org/abs/2011.09138 (дата обращения: 28.11.2020).
[39] Chistyakov A.V. Virtual reality systems in architectural modeling / B сборнике: Science, education and experimental design. Materials of the international scientific and practical conference. Collection of articles.2017. C. 279-282.
[40] Martinazzo A.A, Ficheman I.K., Venancio V., Corrêa A.G., Lopes R., Mantovani M.S. The Mário Schenberg Spaceship: Experiencing Science in a Collaborative Learning VR Environment. Paper presented at The 9th IEEE International Conference on Advanced Learning Technologies, ICALT 2009, July 15-17, 2009, Riga, Latvia.
[41] Fokicheva A. A. The concept of a virtual reality simulator "The influence of meteorological conditions on automobile transport" / / Uchenye zapiski Rossiyskogo gosudarstvennogo gidrometeorologicheskogo universiteta.2018. № 52. C. 28-39.
[42] Sviridov S. G., Penkov N. A., Mitrofanov D. V. Introduction of virtual reality technologies in the process of training military specialists. Theory and practice. 2017. № 4 (4). C. 171-178.
[43] Kirgintsev M. V., Penkov N. A., Sviridov S. G., Dyakov D. E. Application of virtual reality technology in training complexes for engineering and technical personnel // Modern high-tech technologies.2019. № 7. C. 181-184.
[44] K. S. Kurochka, Oniskiv V. Software system for robot control of a virtual reality // Actual directions of scientific researches of the XXI century: theory and practice. 2018. T. 6. № 6 (42). C. 210-212.
[45] Inamura T., Mizuchi Y. Sigverse: a cloud-based vr platform for research on social and embodied human-robot interaction [Электронный ресурс] // arXiv.org. Дата обновления: 02.05.2020. URL: https://arxiv.org/abs/2005.00825 (дата обращения: 22.11.2020).
[46] Glushkova A. S. The use of VR-and AR-technologies in tourism. Questions of student science.2020. № 1 (41). C. 77-81.
[47] Buturlakin A. A. Examples of using virtual reality for employee training // Razvitie i aktualnye voprosy sovremennoy nauki.2019. № 1 (20). C. 5-8.
[48] Grubert J., Witzani L., Ofek E., Pahud M., Kranz M., Kristensson P.O. Paper presented at the 2018 IEEE Conference on Virtual Reality and 3D User Interfaces (VR), 2018.
[49] Ofek E., Grubert J., Pahud M., Phillips M., Kristensson P.O. Towards a Practical Virtual Office for Mobile Knowledge Workers [Электронный ресурс] // Researchgate. URL: https://www.researchgate.net/publication/344159636

_Towards_a_Practical_Virtual_Office_for_Mobile_Knowledge_Workers (дата обращения: 22.11.2020).
[50] Biener V., Schneider D., Gesslein T., Otte A., Kuth B., Kristensson P.O., Ofek E,m Pahud M., Grubert J. Breaking the Screen: Interaction Across Touchscreen Boundaries in Virtual Reality for Mobile Knowledge Workers // In IEEE transactions on visualization and computer graphics, 2020
[51] Sukhodolov A. P., Timofeev S. V. Mass media and virtual reality: new opportunities and prospects // Questions of theory and practice of journalism. 2018. T. 7. № 4. C. 567-580.
[52] Zavyalov M. G. Virtual reality as a new way of visualization for a designer in advertising / B сборнике: Creativity of young people: design, advertising, information technology. Materials of the XVII All-Russian Scientific and practical Conference of students and postgraduates. Scientific editor A. V. Golunov. 2018. C. 122-125.
[53] Kovalev A. I., Klimenko V. A. Interrelation of the illusion of movement of one's own body and cyberspace in virtual reality systems // Synergy of Sciences. 2018. № 28. C. 509-525.
[54] Smyslova O. V., Voiskunsky A. E. Cyber-disease in virtual reality systems: phenomenology and measurement methods. Psychological journal. 2019. T. 40. № 4. C. 85-94.
[55] Porcino T.M., Rodrigues E.O., Silva A., Trevisan D., Clua E. Automatic recommendation of strategies for minimizing discomfort in virtual environments [Электронный ресурс] // arXiv.org. Дата обновления: 27.06.2020. URL: https://arxiv.org/abs/2006.15432 (дата обращения: 22.11.2020).
[56] Reyes V.F., Wenner A, Moyano J., Sbert M. From NPR to VR: tracking ocular behavior in immersive virtual reality // Communication Papers 8(17)
[57] Jin W., Fan J., Gromala D., Pasquier P. Automatic Prediction of Cybersickness for Virtual Reality Games. Paper presented at the IEEE Games, Entertainment, Media Conference (GEM), Ireland, 2018.
[58] Dremliuga R.I., Mamychev A.Yu., Dremliuga O.A., Matyuk Yu.S., Crimes in virtual reality // Contemporary Dilemmas: Education, Politics and Values. 2019. T. 7. № 1. C. 129.
[59] Dremlyuga R. I., Kripakova A.V. Crimes in virtual reality: myth or reality? // Actual Problems of Russian Law. 2019. № 3 (100). C. 161-169.
[60] Dremlyuga R. I., Mamychev A. Yu., Kripakova A.V., Yakovenko A. A. Moral and legal risks of using virtual reality in educational activities // Azimut of scientific research: economics and management. 2020. T. 9. № 1 (30). C. 22-25.

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To the authors of the scientific international journal AiPI: ethics of scientific publications and discussions in the journal (editorial)

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Abstract: Starting from this issue, the editorial board of the AiPI journal ceases to publish regularly at the end of each issue of the section for authors. This is due to the fact that the requirements for publications have finally crystallized, and in the last few years the journal has published requirements for submitted articles almost unchanged with only minor editorial changes. Nevertheless, the situation in the world scientific space is constantly changing, ethical and other principles are updated more often than once a year. Placing such requirements on the journal's website is not enough, changes in this section do not always attract the attention of authors. The editors draw attention to the systematic failure of the authors to comply with the formatting requirements and other rules of our journal, which we put forward for authors who send their articles to our journal. This editorial provides information for authors that the editorial board sees as important, and which the editorial board asks to keep in mind only the authors, but also the readers of our journal. We draw the readers' attention to the information about publications in the discussion rank.

Keyords: scientific publication, science criteria, ethics of scientific publications

References

[1] Trebovaniya k publikatsiyam v nauchnom elektronnom zhurnale «AiPI». Avtomatika i programmnaya inzheneriya. 2020. 4(34). S. 108–112.
[2] Avtomatika i programmnaya inzheneriya. 2013. 4(6). Trebovaniya k publikatsiyam v nauchnom elektronnom zhurnale «Avtomatika i programmnaya inzheneriya». S. 96–97.
[3] https://ru.wikipedia.org/wiki/Инерциоиды
[4] https://tech.wikireading.ru/13060
[5] https://ru.wikipedia.org/wiki/Общество_плоской_Земли
[6] https://ru.wikipedia.org/wiki/Вечный_двигатель
[7] https://ru.wikipedia.org/wiki/Нерешённые_проблемы_современной_физики
[8] https://lenta.ru/news/2018/03/05/black_hole/
[9] https://lenta.ru/news/2020/04/28/constant/
[10] http://ve-poti.narod.ru/A001.PDF
[11] http://vekordija.narod.ru/R-POTI-4.PDF
[12] In defense of science. 2008. Issue No. 3. ISBN 9984-688-56-9. https://mega.nz/folder/RRtG2apR#qmIYvdTQ6pxQ-RMCyGoEMA (VZN-2021-01-01.zip)

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