

NYUTONNING UCHINCHI QONUNINI QURILISHDA QO'LLANILISHI

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Annotatsiya. Maqolada Nyutonning uchinchi qonunini binolar va ko'priklar kabi turli xil inshootlarni loyihalash va qurishda qanday qo'llanilishi haqida batafsil ma'lumotlar berilgan.

Kalit so'zlar. Nyutonning uchinchi qonuni, qurilish, loyihalash, mustahkamlik, poydevor, bino va inshootlar.

Jismlarning bir-biri bilan ta'sirlashuvi bir tamonlama bo'lmaydi. Bir jismning ikkinchi jismga ko'rsatgan ta'siri, ikkinchi jismning birinchi jismga aks ta'sirini yuzaga keltiradi. Nyutonning uchinchi qonuni ular orasidagi miqdoriy munosabatni ifodalaydi.

Inersial sanoq sistemasida o'zaro ta'sirlashayotgan ikki jismning ta'sir va aks ta'sir kuchlari miqdor jihatdan teng va ta'sirlashish nuqtalarini birlashtiruvchi to'g'ri chiziq bo'ylab qarama-qarshi yo'nalgan, ya'ni,

$$\vec{F}_{12} = -\vec{F}_{21}$$

yuqoridagi ifoda Nyutonning uchinchi qonunining matematik ko'rinishidir.

Ko'priklarni qurishda birinchi navbatda ko'prik tayanchlari ularga bosim o'tkazadigan yuklamaga (tashqi bosimga) qanchalik bardosh bera olishini oldindan hisoblash kerak. Hisoblashlar Nyutonning uchinchi qonunidan kelib chiqadigan xulosalar asosida amalga oshiriladi. Quruvchi-muhandislar ko'prik tayanchlarini ko'prikda paydo bo'lishi mumkin bo'lgan yuklamalarga bardosh bera oladigan qilib loyihalashtiradi hamda quradi (1-rasm).



1-rasm. Daryo ustiga qurilgan ko'priknig umumiy ko'rinishi.

Bino va inshootlar poydevorini qurishda loyihalashtiruvchi muhandislar oddiy tuproqning har santimetr kvadrati o'rtacha $2\div 3$ kg yukni ko'tarishga qodirligini hisobga oladilar. Bunday sharoitda, butun binoning og'irligi hisobiga tuproqni yuqoriga va pastga siqib chiqaradi. Poydevorga ikkita bir xil, lekin qarama-qarshi yo'nalgan kuchlar ta'sir qiladi, buni Nyutonning uchinchi qonuni tasdiqlaydi. Bunda kuchlar muvozanatlashgan bo'lib, poydevorni joyidan qimirlashiga yo'l qo'ymaydi. Ammo, poydevorning mustahkamligi yetarli bo'lmasa, u qulab tushadi (2-rasm).



2-rasm. Bino poydevorining umumiy ko'rinishi.

Binolarning tom qismlarini loyihalashda ham Nyutonning uchinchi qonuni keng ishlatiladi. Bunda, tashqi ta'sirlar natijasida tomning qulashini oldini olish uchun uning shakli va qiyaligi katta ahamiyatga ega.

Demak, Nyuton qonunlari qurilishda ko'plab muhandislik hisob-kitoblari uchun asos hisoblanadi. Ular xavfsiz va bardoshli binolar va inshootlarni yaratishga imkon yaratadi.

References:

1. Begmatova D.A., Nortojoyev A.M., Khudayberdiyev S.S., Mahmadiyorov A.Z., Nosirov N.B. The importance of physical exercises in the training of specialists in the field of architecture and construction // International Conference on Problems and Perspectives of Modern Science. AIP Conference Proceedings 2432, 030056 (2022); <https://doi.org/10.1063/5.0089959> Published Online: 16 June 2022.

2. Nortojoyev A.M., Mahmadiyorov A.Z. Qurilishda fizika. Innovatsiya-Ziyo. 2022 y.

3. Nortojoyev A.M. Teaching physics on the basis of integration of architecture and building sciences // International Conference on Developments in Education, Sciences and Humanities. – Hosted from Washington, DC USA, 2022. – P. 116-117.

4. Mukhamadalievich, N.A. (2022). The method of conducting practical classes in the subject of physics in technical higher educational institutions through the method of designing objects of professional activity. Asian Journal of Research in Social Sciences and Humanities, 12(5), 350-354.

5. Нортожиев, А. М. (2023). ФИЗИКАНИ АРХИТЕКТУРА ВА ҚУРИЛИШ ФАНЛАРИГА ИНТЕГРАЦИЯСИ ОРҚАЛИ ТАЛАБАЛАРНИНГ КАСБИЙ КОМПЕТЕНЦИЯСИНИ ШАКЛЛАНТИРИШ. *Ustozlar uchun*, 16(1), 189-194.

6. E. B. Saitov., Sh. Kodirov., Z. F. Beknazarova., B. M. Kamanov., A. Nortojoyev., N. Siddikov. Developing Renewable Sources of Energy in Uzbekistan Renewable Energy Short Overview: Programs and Prospects. // International Conference on Problems and Perspectives of Modern Science. AIP Conference Proceedings 2432, 020015 (2022); <https://doi.org/10.1063/5.0090438> Published Online: 16 June 2022.

7. Nortoijev, A. (2023, June). Methods of formation of professional competence of students in teaching physics on the basis of integration of architecture and building sciences. In AIP Conference Proceedings (Vol. 2789, No. 1). AIP Publishing.

8. Begmatova D.A., Nortoijev A.M. Integration of conducting physics classes in higher educational institutions in the field of construction// Scientific information of Tashkent State Pedagogical University. - Tashkent, 2020. - 12. - B. 40-45.

9. Khudaiberdiev, S.S., Nortoijev, A.M. (2022). The method of conducting practical training in physics in technical higher education institutions through the design method. Journal of Integrated Education and Research, 1(7), 104-109.

10. KS Salievich, NA Mukhammalievich, NN Baratovich. PEDAGOGICAL ASPECTS OF PREPARING FUTURE ENGINEERS FOR PROFESSIONAL ACTIVITY. Ustozlar uchun 19 (2), 315-318.

11. Muhammadaliyevich, N. A. (2022, January). Methods of ensuring integrative approach to teaching physics. In Archive of Conferences (pp. 19-21).

12. Nortoijev, A.M., Begmatova, D.A. (2021). Methods of conducting physics laboratory courses on the basis of interdisciplinary integration. Academic research in educational sciences, 2(CSPI conference 3), 105-107.

13. Begmatova, D. A., Nortoijev, A. M. (2020). Integrative approach in general physics, scientific-methodical journal "Physics. *Mathematics and Informatics*", Tashkent, (5), 28-33.

14. Mukhamadalievich, N.A. (2022). Formation of the professional competence of students through the interdisciplinary integration of physics into the sciences of architecture and construction. Conference, 170-172.

15. Nosirov N.B. Begmatova D.A., Nortoijev A.M., Khudayberdiyev S.S., Mahmadiyorov A.Z. INTEGRATION OF PHYSICS LESSONS IN HIGHER EDUCATION INSTITUTIONS IN CONSTRUCTION. EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal. Issue: 5. 520-523. 2021/5.

16. Nortoijev, A.M. (2023). Formation of professional competence of students through integration of physics in architecture and construction sciences. *For Teachers*, 16(1), 189-194.

17. Худайбердиев, С.С., Нортожиев, А.М. (2022). Техника олий таълим муассасаларида физикадан амалий машғулотларни лойиҳалаш методи орқали ўтказиш усули. *Journal of Integrated Education and Research*, 1(7), 104-109.

18. Baratovich, N.N. (2023). A model for implementing professional orientation by future engineers in the general physics course. *For Teachers*, 16(1), 178-183.

19. Baratovich, N.N. (2023). Modeling method of professional competence development of future engineers. *For Teachers*, 16(1), 184-188.

20. Baratovich, N. N. (2023). THE STAGES OF SOLVING ENGINEERING PROBLEMS FROM PHYSICS AND ITS EDUCATIONAL AND METHODOLOGICAL SUPPORT. *American Journal of Research in Humanities and Social Sciences*, 13, 52-57.

21. Nosirov, N.B. (2022). Educational-methodical support for solving engineering problems from physics and its stages. *Integration of science, education and practice. Scientific-methodical journal*, 3(10), 98-103.

22. DA Begmatova, AM Nortojiyev. Qurilish sohasidagi oliy ta'lim muassasalarida fizika mashg'ulotlarini o'tkazishning integratsiyasi. *Toshkent davlat pedagogika universiteti ilmiy axborotlari ilmiy-nazariy jurnali*. 40-45. 2020 y.

23. Jeffrey E. Froyd, Matthew W. Ohland. "Integrated Engineering Curricula". *Journal of Engineering Education*. P. 147-164.

24. Muxamadaliyevich, N. A. (2024, May). BINO VA INSHOOTLARNING AKUSTIK XUSUSIYATLARINI LOYIHALASH METODI ORQALI O'TKAZISH USULI. In *E Conference Zone* (pp. 12-16).

25. Nortojiyev Abror Muxamadaliyevich. THE ROLE OF PHYSICS COURSES IN THE TRAINING OF FUTURE CIVIL ENGINEERS. *American*

Journal of Research in Humanities and Social Sciences. Том.19. Страницы.23-29.

26. Nortojiyev A.M. Begmatova D.A. Integrative approach in general physics, scientific-methodical journal. Physics, Mathematics and Informatics. Pp 28-33. 2020 y.

27. Носиров Н. Нортожиев А., Худайбердиев С. Педагогическая интеграция учебного знания с привлечением понятийно-терминологического аппарата. Проблемы и решения современной физике и астрономии, методы обучения” сборник конференции. Ст. 451-453. 2022-г.

28. Nortojiyev A.M. FIZIKA MASHG‘ULOTLARINI INTEGRATIV VA PEDAGOGIK TEXNOLOGIYALAR ASOSIDA O‘QITISH USULLARI. O‘ZBEKISTON MILLIY UNIVERSITETI XABARLARI. 168-172 bet. 1/6/1. 2021-y.

29. Nigora Normurodova., Abror Nortojiyev. Methods of formation of professional competence of students in teaching physics on the basis of integration of architecture and building sciences. E3S Web of Conferences. 2023/11/30.