

FACULTY OF EXACT AND APPLIED SCIENCES



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EDUCATION:	2005- 2009: Urgench State University, Department of physics (BSci) 2009-2011: National University of Uzbekistan (MSci) 2017-2019: PhD, Urgench State University, Department of physics
CAREER / EMPLOYMENT:	2011 – 2014: Teaching assistant, Physics Department, Urgench State University 2014- 2020: Teacher, Physics Department, Urgench State University 2021-present: Associate professor, Physics Department, Urgench State University
SPECIALITY	Physics
TEACHING SUBJECTS:	General physics, optics, theoretical physics, atomic physics, physics of the atomic nucleus and elementary particles.
RESEARCH AREAS OF INTEREST:	Condensed matter physics Charge Transport in Conducting Polymers Charge Transport in Organic and Hybrid Photovoltaic Materials Modeling of semiconductor nanoscale devices, semiconductor multilayers, MOS structures Transport of quasiparticles (e.g., excitons, solitons and polarons) in quasi-one-dimensional molecules and low-dimensional nanostructures
PRESENT PROJECTS:	1. Grant of the Ministry of Innovative Development of Uzbekistan entitled “Quantum transport in branched carbon nanostructures” (No. BF2-022) 2. In the international Uzbek-German grant “Dynamics of charge carriers in thin-film solar cells based on polymers” (M / UZ-GER-06/2016 (UZB-007)).
LIST OF SELECTED PAPERS	1. Babajanov D.B., Matyokubov H.Sh., Matrasulov D.U. Charged solitons in branched conducting polymers. // The Journal of Chemical Physics 149, 164908 (2018) (№3, Scopus CiteScore 5,2). 2. Babajanov D.B., Matyokubov H.Sh. Soliton mechanism of charge transport in branched conducting polymers and verification of conservation laws. // Mintaqada zamonaviy fan, ta’lim va tarbiyaning dolzarb muammolari, 2018 №4. 7-18 b. (01.00.00; №10). 3. J.R. Yusupov, Kh.Sh. Matyokubov, K.K. Sabirov. Particle transport in a network of

- quantum harmonic oscillators. // *Nanosystems: physics, chemistry, mathematics*, 2020, 11 (2), p. 145–152. (01.00.00; №5).
4. J.R. Yusupov, Kh.Sh. Matyokubov, K.K. Sabirov. Dynamics of polarons in branched conducting polymers. // *Nanosystems: physics, chemistry, mathematics*, 2020, 11 (2), p. 183–188. (01.00.00; №5).
5. J.R. Yusupov, Kh.Sh. Matyokubov, K.K. Sabirov and D.U. Matrasulov. Exciton dynamics in branched conducting polymers: Quantum graphs based approach. // *Chemical Physics* 537 (2020) 110861 (№3, Scopus CiteScore 2,9).
6. Matyakubov H., Atamuratova Z. A., Abdikarimov A., Halillaev M., Atamuratov A.E. The method of estimation of single trapped charge position in nanometer MNOSFET oxide layer and Si-SiO₂ interface. Materials of International conference Fundamental and Applied Problems of Physics November 14-16, 2013, Tashkent.
7. A.E. Atamuratov, U.A. Aminov, Z.A. Atamuratova, M. Halillaev, A. Abdikarimov, H. Matyakubov. The lateral capacitance of nanometer MNOSFET with a single charge trapped in oxide layer or at SiO₂ - Si₃N₄ interface. *Nanosystems: physics, chemistry, mathematics*, 2015, 6 (6), p. 837–842
8. U. Kutliev X. Matyakubov M. Saidova. Peculiarities of trajectories of ions scattered from A3B5 Semiconductor surfaces. *Proceedings of the XXI International Conference, Yaroslavl, Russia, August 22–26, 2013*.
9. U. Kutliev, M. Kurbanov, X. Matyakubov. Investigation of ion scattering from the double component single crystal surfaces with atomic steps. *Proceedings of the XXI International Conference Yaroslavl, Russia, August 22–26, 2013*.
10. U. Kutliev, X. Matyakubov, X. Abdukarimov. Energy and Angular Distributions Scattered Ne⁺ Ions from the Gap (100) Surface. *Journal of Multidisciplinary Engineering Science and Technology (JMEST)*, Vol. 2, Issue 6, June – 2015.
11. D. Babajanov, H. Matyokubov. Kicked particle transport in armchair graphene nanoribbons. Actual problems of modern science, education and training in the region Actual problems of mathematics, physics and mechanics, 2018 volume 1, p. 5-14.
12. Matrasulov D.U., Matyokubov H.Sh., Yusupov J. Wave dynamics in driven quantum networks. // «Яримўтказгичлар физикасининг ва қайта тикланувчи энергия манбаларини ривожлантиришнинг замонавий муаммолари» Республика илмий-амалий анжумани материаллари. Андижон, 2018 йил 20-21 апрель, 35-36 б.
13. Matyokubov H.Sh., Babajanov D.B. O'tkazuvchan polimerlarda zaryad tashuvchilar dinamikasini modellashtirish. // «Яримўтказгичлар физикасининг ва қайта тикланувчи энергия манбаларини ривожлантиришнинг замонавий муаммолари» Республика илмий-амалий анжумани материаллари. Андижон, 2018 йил 20-21 апрель, 39-40 б.
14. Matyokubov H.Sh., Babajanov D.B. Acoustic waves propagation in branched polymers. // «Ёш олимлар тадқиқотларида инновацион ғоялар ва технологияларнинг ўрни» Олий ва ўрта махсус таълим вазирлиги миқёсида ўтказилган илмий-амалий анжуман материаллари. Тошкент 27 апрель 2018 йил, 15-16 б.

15. Yusupov J., Matrasulov D.U., Matyokubov H.Sh. Charge transport in branched conducting Polymers: Quantum graphs based approach. // «Седьмая Международная конференция по Физической Электронике» Сборник тезисов докладов. Ташкент – 2018, 18-19 мая, стр 127.
16. Babajanov D.B., Matyokubov H.Sh., Matrasulov D.U. Elastic waves propagation in branched polymers. // «Седьмая Международная конференция по Физической Электронике» Сборник тезисов докладов. Ташкент – 2018, 18-19 мая, стр 167.
17. Babajanov D.B., Matyokubov H.Sh., Matrasulov D.U. Modeling of charge dynamics in conducting polymers. // Материалы «IV Международной конференции по оптическим и фотоэлектрическим явлениям в полупроводниковых микро- и наноструктурах». Фергана – 2018, 25-26 мая, стр 297.
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19. Babajanov D.B., Matyokubov H.Sh. Charge transport in branched conducting polymers: quantum graphs based approach. // «5th International Conference on physics of optical materials and devices». Book of abstracts, Igalo, Montenegro 27-31 august 2018.
20. Babajanov D.B, Matrasulov D.U, Matyakubov H.Sh.. Modeling of acoustic waves propagation in branched polymers using metric graphs approach. // 8th Edition of Biopolymers and Bioplastics Polymer Science and Engineering. Las Vegas, USA, October 15-16, 2018, p 55.
21. Babajanov D.B., Matyokubov H.Sh. Dynamics of charged solitons in branched conducting polymers. // «Инновационные технологии в науке и образовании» Материалы республиканской научно-практической конференции, Нукус-2018 г, 20-21 ноябрь, стр 72.
22. Matyokubov H.Sh., Babajanov D.B, Matrasulov D.U. Polarons in branched conducting polymers. // Monografia pokonferencyjna «Science, Research, development #11 technics and technology», Rotterdam (The Netherlands), 29.11.2018 - 30.11.2018, p 26.
23. Yusupov J., Matyokubov H.Sh., Babajanov D.B, Matrasulov D.U. Particle and wave transport in driven quantum networks. // «3rd International Conference on quantum optics and quantum computing » September 10-11, 2018, London, UK, Volume 5, p 66.
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25. H.Sh. Matyokubov, J.R. Yusupov, K.S. Sabirov, D.M. Matrasulov. Modeling the dynamics an electron-hole pair in branched structures. // International conference “Actual problems of applied mathematics and information technology” Tashkent - Uzbekistan, november 14–15, 2019, p 49.
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- 30.** K.K. Sabirov, J.R. Yusupov, Kh.Sh. Matyokubov, H. Susanto, D.U. Matrasulov, Networks with point-like nonlinearities. // *Nanosystems: Phys. Chem. Math.*, 2022, 13 (1), 30–35. <https://doi.org/10.17586/2220-8054-2022-13-1-30-35>
- 31.** S.Z. Rakhmanov, I.B. Tursunov, Kh.Sh. Matyokubov, and D.U. Matrasulov. Optical high harmonic generation in a quantum graph. // *Nanosystems: Phys. Chem. Math.*, 2023, 14 (2), 164–171. <https://doi.org/10.17586/2220-8054-2023-14-2-164-171>
- 32.** J.R. Yusupov, Kh.Sh. Matyokubov, M. Ehrhardt, D.U. Matrasulov. Manakov system on metric graphs: Modeling the reflectionless propagation of vector solitons in networks. // *Physics Letters A* 479 (2023) 128928. <https://doi.org/10.1016/j.physleta.2023.128928>
- 33.** J.R. Yusupov, Kh.Sh. Matyokubov, M. Ehrhardt, D.U. Matrasulov. Driven transparent quantum graphs. // <https://arxiv.org/abs/2312.01448>