

Vanik Shahnazaryan

Peer-Reviewed Publications and Preprints

Published articles

1. A. D. Belogur, D.A. Baghdasaryan, I.V. Iorsh, I. A. Shelykh, and V. Shahnazaryan, Theory of Nonlinear Excitonic Response of Hybrid Organic Perovskites in the Regime of Strong Light-Matter Coupling, *Phys. Rev. Applied* **17**, 044048 (2022).
2. D. A. Baghdasaryan, E. S. Hakobyan, D. B. Hayrapetyan, I. V. Iorsh, I. A. Shelykh, and V. Shahnazaryan, Tunable strongly interacting dipolar excitons in hybrid perovskites, *Physical Review Materials* **6**, 034003 (2022).
3. V. Shahnazaryan, and H. Rostami, Nonlinear exciton drift in piezoelectric two-dimensional materials, *Phys. Rev. B* **104**, 085405 (2021).
4. P. Comaron, V. Shahnazaryan, and M. Matuszewski, Coherent transfer of topological domain walls, *Optics Express* **28**, 38698-38709 (2020).
5. V. Shahnazaryan, V.K. Kozin, I.A. Shelykh, I.V. Iorsh, and O. Kyriienko, Tunable optical nonlinearity for transition metal dichalcogenide polaritons dressed by a Fermi sea, *Phys. Rev. B* **102**, 115310 (2020).
6. P. Comaron, V. Shahnazaryan, W. Brzezicki, T. Hyart and M. Matuszewski, Non-Hermitian Topological End-Mode Lasing in Polariton Systems, *Phys. Rev. Research* **2**, 022051 (2020).
7. R.P.A. Emmanuele, M. Sich, O. Kyriienko, V. Shahnazaryan, F. Withers, A. Catanzaro, P.M. Walker, F.A. Benimetskiy, M.S. Skolnick, A.I. Tartakovskii, I.A. Shelykh, and D.N. Krizhanovskii, Highly nonlinear trion-polaritons in a monolayer semiconductor, *Nature Communications* **11**, 1-7 (2020).
8. V. Shahnazaryan, O. Kyriienko, and H. Rostami, Exciton routing in the heterostructure of a transition metal dichalcogenide monolayer on a paraelectric substrate, *Phys. Rev. B* **100**, 165303 (2019).
9. V. Shahnazaryan, V. Mughnetsyan, I. Shelykh, and H. Sarkisyan, Exciton - Exciton Interactions in Coaxial Double Quantum Rings, *Nanomaterials* **9**, 1469 (2019).
10. V. Shahnazaryan, V.A. Saroka, I.A. Shelykh, W.L. Barnes, and M.E. Portnoi, Strong light-matter coupling in carbon nanotubes as a route to exciton brightening, *ACS Photonics* **6**, 904 (2019).
11. I.Y. Chestnov, V.A. Shahnazaryan, A.P. Alodjants, and I.A. Shelykh, Terahertz Lasing in Ensemble of Asymmetric Quantum Dots, *ACS Photonics* **4**, 2726-2737 (2017).
12. V. Shahnazaryan, I. Iorsh, I.A. Shelykh, and O. Kyriienko, Exciton-exciton interaction in transition-metal dichalcogenide monolayers, *Phys. Rev. B* **96**, 115409 (2017).
13. G.Yu. Kryuchkian, V. Shahnazaryan, O.V. Kibis, and I.A. Shelykh, Resonance fluorescence from an asymmetric quantum dot dressed by a bichromatic electromagnetic field, *Phys. Rev. A* **95**, 013834 (2017).
14. I.Y. Chestnov, V.A. Shahnazaryan, I.A. Shelykh, and A.P. Alodjants, Ensemble of asymmetric quantum dots in a cavity as a terahertz laser source, *JETP Letters* **104**, 169-174 (2016).
15. V. Shahnazaryan, I.A. Shelykh, and O. Kyriienko, Attractive Coulomb interaction of two-dimensional Rydberg excitons, *Phys. Rev. B* **93**, 245302 (2016).
16. V. Shahnazaryan, S. Morina, S. Tarasenko, and I.A. Shelykh, Spin currents of exciton polaritons in microcavities with (110)-oriented quantum wells, *Phys. Rev. B* **92**, 155305 (2015).
17. V. Shahnazaryan, O. Kyriienko, and I.A. Shelykh, Adiabatic preparation of a cold exciton condensate, *Phys. Rev. B* **91**, 085302 (2015).
18. EM Kazaryan, LS Petrosyan, VA Shahnazaryan, and HA Sarkisyan, Quasi-conical quantum dot: electron states and quantum transitions, *Communications in Theoretical Physics* **63**, 255 (2015).
19. E. Kazaryan, V. Shahnazaryan, and H. Sarkisyan, Two Electron States in a Quantum Ring on a Sphere, *Few Body Systems* **55**, 151-158 (2014).
20. E. Kazaryan, V. Shahnazaryan, and H. Sarkisyan, Optical interband absorption and Stark shift in a quantum ring on a sphere, *Optics Communications* **315**, 253-257 (2014).

21. E. Kazaryan, V. Shahnazaryan, H. Sarkisyan, and A Gusev, Quantum model of the Thomson helium atom, [Physics of Particles and Nuclei Letters](#) **11**, 109-113 (2014).
22. E. Kazaryan, V. Shahnazaryan, and H. Sarkisyan, Quantum ring on sphere: Electron states on spherical segment, [Physica E](#) **52**, 122-126 (2013).
23. V. Shahnazaryan, T. Ishkhanyan, T. Shahverdyan, and A. Ishkhanyan, New relations for the derivative of the confluent Heun function, [Armenian Journal of Physics](#) **5**, 146-155 (2012). [[arXiv:1402.1318 \(2014\)](#)].

Preprints

1. M. Kazemi, V. A. Shahnazaryan, Y. V. Zhumagulov, P. F. Bessarab, and I. A. Shelykh, Interaction of excitons with magnetic topological defects in 2D magnetic monolayers: localization and anomalous Hall effect, [arXiv 2205.15221 \(2022\)](#).
2. M. A. Masharin, V. A. Shahnazaryan, F. A. Benimetsky, D. N. Krizhanovskii, I. A. Shelykh, I. V. Iorsh, S. V. Makarov, and A. K. Samusev, Polaron-enhanced polariton nonlinearity in lead halide perovskites, [arXiv 2201.10265 \(2022\)](#).