

A.S.Mel'nikov

List of publications

1. A.S.Mel'nikov, A.A.Fraerman,
"On the theory of supermirrors for X-rays",
Zhurnal Technicheskoi Fiziki,**58**,N5, p.980-983 (1988).(Sov.J.Technical Physics)
2. F.V.Garin, A.V.Kochemasov, M.D.Strikovskiy, A.S.Mel'nikov, S.V.Sharov,
"Temperature dependence of the resistivity of the Y-Ba-Cu-O superconducting films",
Pis'ma Zh.Eksp.Teor.Fiz.,**47**, N8,p.413-414 (1988)
(JETP Lett.,**47**, N8, p.493-495(1988)).
3. V.M.Genkin, A.S.Mel'nikov,
"Resonant tunneling in a transversal magnetic field",
Fiz.Tv.Tela,**31**,N8,p.249-252 (1989)
(Sov.J.Solid State Physics)
4. V.M.Genkin, A.S.Mel'nikov,
"Motion of Abrikosov vortices in anisotropic superconductors",
Zh.Eksp.Teor.Fiz., **95**,p.2170-2174 (1989)
(Sov.Phys.JETP,**68**(6),p.1254-1256 (1989))
5. A.Yu.Simonov, A.S.Mel'nikov, S.V.Sharov,
"On the effect of defects on the critical field of superconducting phase nucleation",
Fiz.Nizk.Temp.,**15**,N11,p.1206-1209 (1989)
(Sov.J.Low Temp.Phys.)
6. A.Yu.Simonov, A.S.Mel'nikov, S.V.Sharov,
"Influence of defects on the critical field of the superconducting nucleation" ,
Modern Physics Letters B,**4**,N19,p.1211-1214 (1990).
7. A.S.Mel'nikov,
"On the motion of Abrikosov vortices in thin films",
Fiz.Nizk.Temp.,**16**,N2, p.191-194 (1990)
(Sov.J.Low Temp.Phys.)
8. Yu.S.Barash, A.S.Mel'nikov,
"Possible existence of nonsingular-vortex in UPt_3 " ,
Pis'ma Zh.Eksp.Teor.Fiz.,**51**, N10,p.511-513 (1990)
(JETP Lett.,**51**, N10, p.577-580(1990)).
9. Yu.S.Barash, A.S.Mel'nikov,
"Structure of vortex cores in exotic superconductors",
Fiz.Nizk.Temp.,**17**,p.1260-1263 (1991)
(Sov.J.Low Temp.Phys.,**17**(10),p.667-668(1991))

10. Yu.S.Barash, A.S.Mel'nikov,
"Internal structure of vortices in exotic superconductors near the lower critical field",
Zh.Eksp.Teor.Fiz.,**100**,p.307-322 (1991)
(Sov.Phys.JETP,**73(1)**,p.170-178(1991))
11. Yu.S.Barash, A.S.Mel'nikov, A.I.Yukhimets,
"Anisotropy of the fluctuation component of the penetration depth in exotic superconductors",
Pis'ma Zh.Eksp.Teor.Fiz.,**55**, N6,p.345-348 (1992)
(JETP Lett.,**55**, N6, p.348-352 (1992))
12. A.S.Mel'nikov,
"Phase transitions in vortex lattices in hexagonal exotic superconductors" ,
Zh.Eksp.Teor.Fiz.,**101**,p.1978-2000 (1992)
(Sov.Phys.JETP,**74(6)**,p.1059-1070 (1992))
13. A.S.Mel'nikov,
**"Distinctive properties of one-dimensional N-S contacts for superconductors with a broken
"particle-hole" symmetry"**,
Pis'ma Zh.Eksp.Teor.Fiz.,**60**, N5,p.357-360 (1994)
(JETP Lett.,v.60 p.365-369 (1994))
14. Yu.S.Barash, A.S.Mel'nikov,
"Vortex lattice distortions in hexagonal unconventional superconductors" ,
Physics Letters A, **186**, p.259-264 (1994).
15. Yu.S.Barash, A.S.Mel'nikov,
"Vortex lattice distortions in hexagonal unconventional superconductors" ,
Physica C 235-240, p.2449-2450 (1994).
16. A.S.Mel'nikov,
**"On the viscous motion of two-dimensional
vortices in layered superconducting structures"**,
Zh.Eksp.Teor.Fiz., v.108, N 3(9), p.960-969 (1995)
(Sov.Phys.JETP, 81(**3**),p.528-533 (1995))
17. A.S.Mel'nikov,
"Dynamics of two-dimensional pancake vortices in layered superconductors" ,
Phys.Rev.B 53, p.449 (1996).
18. A.S.Mel'nikov,
"Inertial mass and viscosity of tilted vortex lines in layered superconductors"
Phys.Rev.Lett. 77, p.2786 (1996).
19. A.S.Mel'nikov,
"Dynamics of tilted vortex lines in Josephson-coupled layered superconductors" ,
Czechoslovak Journal of Physics 46, Suppl.S3, p.1793 (1996).
20. A.S.Mel'nikov, I.M.Nefedov, A.A.Fraerman, I.A.Shereshevskii,
"Nonlinear stage of spinodal decay in multilayered structures" ,

Zh.Eksp.Teor.Fiz., v.109, p.683-688 (1996)
[JETP, v.82(2), p.366-369 (1996)].

21. A.S.Mel'nikov, A.A.Fraerman, I.A.Shereshevskii,
"Dynamics of the one-dimensional nucleus in a decomposing solid solution",
Zh.Eksp.Teor.Fiz., v.110, N3(9), pp.1095-1104 (1996)
[JETP, v.83 (3), pp.605-609, 1996]

22. A.A.Fraerman, A.S.Mel'nikov, I.M.Nefedov, I.A.Shereshevskii, A.V.Shiro,
"Nonlinear relaxation dynamics in decomposing alloys: One-dimensional Cahn-Hilliard model",
Phys.Rev.B 55, N10, pp.6316-6323, 1997.

23. A.S.Mel'nikov,
"Magnetic field dependence of the density of states for thin films of d-wave superconductors",
Physica C 282-287, pp.1835-1836, 1997.

24. A.S.Mel'nikov, Yu.N.Nozdin, I.D.Tokman, P.P.Vysheslavitsev,
"Experimental Investigation of a Local Mixed State Induced by a Small Ferromagnetic Particle in YBaCuO Films: Extremely Low Energy Barrier for Formation of Vortex-Antivortex Pairs",
Phys.Rev.B 58, 11672-11675, N17 (1998).

25. A.S.Mel'nikov, **"Quantization of the quasiparticle spectrum in the mixed state of d-wave superconductors"**,
J.Phys.:Condens.Matter 11, pp. 4219-4229 (1999).

26. Yu.N.Nozdin, A.S.Mel'nikov, I.D.Tokman, P.P.Vysheslavitsev, A.Yu.Aladyshkin,
E.B.Kluenkov, A.K.Vorobiev,
"Experimental Investigation of a Local Mixed State Induced by a Small Ferroparticle in YBaCuO Films",
IEEE Transactions on applied superconductivity 9, No.2, pp. 1602-1605 (1999).

27. A.S.Mel'nikov, **"Quasiparticle spectrum near the gap node directions in the mixed state of d-wave superconductors"**,
Physica B 284-8, pp.781-782 (2000)

28. A.Yu.Aladyshkin, A.K.Vorobiev, P.P.Vysheslavitsev, E.B.Kluenkov, A.S.Mel'nikov,
Yu.N.Nozdin, I.D.Tokman,
"Structure of the mixed state induced by the field of a small ferromagnetic particle in thin superconducting YBaCuO films",
Zh.Eksp.Teor.Fiz., v.116, N5(11), pp.1735-1749 (1999)
[JETP, v.89, pp.940-947, 1999]

29. A.S.Mel'nikov,
"Theory of vortex lattice effects on STM spectra in d-wave superconductors",
Pis'ma Zh.Eksp.Teor.Fiz.71, pp.472-476 (2000)
[JETP Lett. 71, 327-330 (2000)]

30. A.S.Mel'nikov, D.A.Ryzhov, I.M.Nefedov, I.A.Shereshevskii, P.P.Vysheslavtsev, **"Nonsingular vortices in (d+s) - wave superconductors"**, Phys.Rev.B 62, 11820-11825, N17 (2000).
31. A.S.Mel'nikov, **"Aharonov-Bohm Effect for Quasiparticles around a Vortex Line in a D-wave Superconductor"**, Phys.Rev.Lett. 86, 4108-4111 (2001).
32. A.Yu.Aladyshkin, A.S.Mel'nikov, I.A.Shereshevsky, and I.D.Tokman, **"What is the Best Gate for Vortex Entry into Type-II Superconductor?"** Physica C 361, 67-72 (2001).
33. A S Bystrov, A S Mel'nikov, and D A Ryzhov, **"Structure of tilted vortices and angular dependence of lower critical field in anisotropic (d+s)-wave superconductors"**, J.Phys.:Condensed Matter 13, 6005-6013(2001) .
34. A.S.Mel'nikov, **"Band theory of quasiparticle excitations in the mixed state of d-wave superconductors"**, in "Vortices in Unconventional Superconductors and Superfluids", edited by R.P.Huebener, N.Schopohl, and G.E.Volovik, Springer-Verlag Heidelberg, Springer Series in Solid State Sciences, Vol.132 (2002).
35. A.S.Mel'nikov, V.M.Vinokur, **"Mesoscopic superconductor as a ballistic quantum switch"**, Nature, 415, 60-62 (2002).
36. A.S.Mel'nikov, I.M.Nefedov, D.A.Ryzhov, I.A.Shereshevskii, V.M.Vinokur, P.P.Vysheslavtsev, **"Vortex states and magnetization curve of square mesoscopic superconductors"** , Phys.Rev. B 65, 140503(R) (2002).
37. A.S.Mel'nikov, V.M.Vinokur, **"Quasiparticle excitations and ballistic transport in the mixed state of mesoscopic superconductors"**, Phys.Rev. B 65, 224514 (2002).
38. A.I.Buzdin, A.S.Mel'nikov, **"Domain wall superconductivity in ferromagnetic superconductors"**, Phys. Rev. B 67, 020503 (2003)
39. A.S.Bystrov, A.S.Mel'nikov, D.A.Ryzhov, I.M.Nefedov, I.A.Shereshevskii, P.P.Vysheslavtsev, **"Singular and nonsingular vortices in high-temperature superconductors"**, Physica C 388-389, 657-658 (2003).
40. N.B.Kopnin, A.S.Mel'nikov, V.M.Vinokur, **"Single-electron transport through the vortex core levels in clean superconductors"**, Phys. Rev. B 68, 054528 (2003)

41. A.Yu.Aladyshkin, A.S.Mel'nikov, D.A.Ryzhov,
"Little-Parks effect in a hybrid superconductor--ferromagnet system",
J.Phys.:Condensed Matter 15, 6591-6597 (2003).
42. A.S.Bystrov, A.S.Mel'nikov, D.A.Ryzhov, I.M.Nefedov, I.A.Shereshevskii, P.P.Vysheslavtsev,
"Singular and nonsingular vortex structures in high-temperature superconductors",
Modern Phys.Lett.B 17, 621-626 (2003).
43. A.Yu.Aladyshkin, A.I.Buzdin, A.A.Fraerman, A.S.Mel'nikov, D.A.Ryzhov, A.V.Sokolov,
"Domain wall superconductivity in hybrid superconductor - ferromagnetic structures",
Phys. Rev. B 68, 184508 (2003).
44. N.B.Kopnin, A.S.Mel'nikov, V.M.Vinokur,
"Re-entrant localization of single particle transport in disordered Andreev wires",
Phys. Rev. B 70, 075310 (2004).
45. N.B.Kopnin, A.S.Mel'nikov, V.M.Vinokur,
"Loss of Andreev Backscattering in Superconducting Quantum Point Contacts",
Phys. Rev. B 71, 052505 (2005).
46. N.B.Kopnin, A.S.Mel'nikov, V.I.Pozdnyakova, D.A.Ryzhov, I.A.Shereshevskii, and
V.M.Vinokur,
"Giant oscillations of energy levels in mesoscopic superconductors",
Phys.Rev.Lett. 95, 197002 (2005).
47. N.B.Kopnin, A.S.Mel'nikov, V.M.Vinokur,
"Resonance energy and charge pumping through quantum SINIS contacts",
Phys.Rev.Lett. 96, 146802 (2006).
48. A.S.Mel'nikov, M.A.Silaev,
**"Intervortex quasiparticle tunneling and electronic structure of multi-vortex configurations in
type-II superconductors"**,
Pis'ma Zh.Eksp.Teor.Fiz. 83, 675-680 (2006)
[JETP Lett. 83, 578-583, (2006)]
49. N.B.Kopnin, A.S.Mel'nikov, V.I.Pozdnyakova, D.A.Ryzhov, I.A.Shereshevskii, and
V.M.Vinokur,
"Enhanced vortex heat conductance in mesoscopic superconductors",
Phys. Rev. B 75, 024514 (2007)
50. V.M.Vinokur, N.B.Kopnin, A.S.Mel'nikov, I.M.Nefedov, V.I.Pozdnyakova,
D.A.Ryzhov, M.A.Silaev, and I.A.Shereshevskii,
"Vortex States in Mesoscopic Superconductors",
Izvestiya RAN: ser. Fiz., v.71, N1, pp.12-15 (2007)
[Bulletin of the Russian Academy of Sciences: Physics, v.71, N1, pp.6-9 (2007)].
51. A. Yu. Aladyshkin, D. A. Ryzhov, A. V. Samokhvalov, D. A. Savinov, A. S. Mel'nikov, and V.
V. Moshechalkov,
"Localized superconductivity and Little-Parks effect in superconductor/ferromagnet

hybrids",

Phys. Rev. B 75, 184519 (2007)

52. A. V. Samokhvalov, A. S. Mel'nikov, and A. I. Buzdin,

"Vortex states induced by proximity effect in hybrid ferromagnet-superconductor systems",

Phys. Rev. B 76, 184519 (2007)

53. A. S. Mel'nikov, D. A. Ryzhov, and M.A.Silaev,

"Electronic structure and heat transport of multivortex configurations in mesoscopic superconductors",

Phys. Rev. B 78, 064513 (2008)

54. A. Yu. Aladyshkin, A.S.Mel'nikov, D.A.Ryzhov, A. V. Samokhvalov, A.A.Fraerman, W.Gillijns, A.V.Silhanek, and V. V. Moshchalkov,

"Localized superconductivity in hybrid structures superconductor-ferromagnet",

Izvestiya RAN: ser. Fiz., v.73, N1, pp.8-12 (2009)

[Bulletin of the Russian Academy of Sciences: Physics].

55. A. I. Buzdin, A. S. Mel'nikov, A. V. Samokhvalov, T. Akashi, T. Masui, T. Matsuda, S. Tajima, H. Tadatomo, and A. Tonomura,

"Crossover between magnetic vortex attraction and repulsion in thin films of layered superconductors"

Phys. Rev. B 79, 094510 (2009).

56. A.S.Mel'nikov, D.A.Ryzhov, M.A.Silaev,

"Local density of states around single vortices and vortex pairs:

Effect of boundaries and hybridization of vortex core states",

Phys. Rev. B 79, 134521 (2009).

57. A. S. Mel'nikov, A. V. Samokhvalov, M.N.Zubarev,

"Electronic structure of vortices pinned by columnar defects",

Phys. Rev. B 79, 134529 (2009).

58. . A. V. Samokhvalov, A. S. Mel'nikov, J.-P.Ader and A. I. Buzdin,

"Little-Parks oscillations in hybrid ferromagnet—superconductor systems",

Phys. Rev. B 79, 174502 (2009).

59. I.M.Khaymovich, N.B.Kopnin, A.S.Mel'nikov, I.A.Shereshevskii,

"Vortex core states in superconducting graphene",

Phys. Rev. B 79, 224506 (2009).

60. A. S. Mel'nikov, S. V. Mironov, and S. V. Sharov,

"Dephasing time and magnetoresistance of two-dimensional electron gas in spatially modulated magnetic fields",

Phys. Rev. B 81, 115308 (2010).

61. I. M. Khaymovich, N. M. Chtchelkatchev, I. A. Shereshevskii and A. S. Mel'nikov, **"Andreev transport in two-dimensional**

normal-superconducting systems in strong magnetic fields",

Europhys. Lett. 91, 17005 (2010).

62. A.V.Samokhvalov, D.A. Savinov, A.S. Mel'nikov, A.I. Buzdin, **“Vortex clusters and multiquanta flux lattices in thin films of anisotropic superconductors”**, Phys. Rev. B 82, 104511 (2010).

63. V. Vlasko-Vlasov, U. Welp, W. Kwok, D. Rosenmann, H. Claus, A. A. Buzdin, and A. Melnikov, **“Coupled domain structures in superconductor/ferromagnet Nb-Fe/garnet bilayers”**, Phys. Rev. B 82, 100502(R) (2010).

64. A.S. Mel'nikov, D.A. Ryzhov, M.A. Silaev, I.A. Shereshevskii, **“Mathematical modeling of vortex states in mesoscopic superconductors”**, Nanostructures: mathematical physics and modeling, v. 2, № 2, 57–117 (2010).

65. A. V. Samokhvalov, A. S. Mel'nikov, and A. I. Buzdin, **“Fulde-Ferrell-Larkin-Ovchinnikov states and quantum oscillations in mesoscopic superconductors and superfluid ultracold Fermi gases”**, Phys. Rev. B 82, 174514 (2010).

66. A. I. Buzdin, A. S. Mel'nikov, and N. G. Pugach, **“Domain walls and long-range triplet correlations in SFS Josephson Junctions”**, Phys. Rev. B 83, 144515 (2011).

67. N. B. Kopnin and A. S. Melnikov, **“Proximity-induced superconductivity in two-dimensional electronic systems”**, Phys. Rev. B 84, 064524 (2011).

68. A.S. Mel'nikov, A.V. Samokhvalov, **“Abrikosov vortex escape from a columnar defect as a topological electronic transition in vortex core”**, Pis'ma v Zh.Eksp.Teor.Phys. 94, 823-827 (2011).

69. V. Vlasko-Vlasov, A. Buzdin, A. Melnikov, U. Welp, D. Rosenmann, L. Uspenskaya, V. Fratello, and W. Kwok, **“Domain structure and magnetic pinning in ferromagnetic/superconducting hybrids”**, Phys. Rev. B 85, 064505 (2012).

70. A. A. Bespalov and A. S. Mel'nikov, **“Mismatch of conductivity anisotropy in the mixed and normal states of type-II superconductors”**, Phys. Rev. B 85, 174502 (2012).

71. A. V. Samokhvalov, A. S. Mel'nikov, and A. I. Buzdin, **“Attraction between pancake vortices and vortex molecule formation in the crossing lattices in thin films of layered superconductors”**, Phys. Rev. B 85, 184509 (2012).

72. A. Yu. Aladyshkin, A. S. Mel'nikov, I. M. Nefedov, D. A. Savinov, M. A. Silaev, and I. A. Shereshevskii, **“Hybridization and interference effects for localized superconducting states in strong magnetic field”**, Phys. Rev. B 85, 184528 (2012).

73. S. Mironov, A. Mel'nikov, and A. Buzdin, **Vanishing Meissner effect as a Hallmark of in-Plane Fulde-Ferrell-Larkin-Ovchinnikov Instability in Superconductor–Ferromagnet Layered Systems**,

Phys. Rev. Lett. **109**, 237002 (2012).

74. A. S. Mel'nikov, A. V. Samokhvalov, S. M. Kuznetsova, and A. I. Buzdin, **Interference Phenomena and Long-Range Proximity Effect in Clean Superconductor-Ferromagnet Systems**,

Phys. Rev. Lett. **109**, 237006 (2012).

75. S. V. Mironov and A. S. Mel'nikov, **Anisotropy and effective dimensionality crossover of the fluctuation conductivity of hybrid superconductor/ferromagnet structures**, Phys. Rev. B **86**, 134505 (2012).

76. N. B. Kopnin, I. M. Khaymovich, and A. S. Mel'nikov, **Predicted Multiple Cores of a Magnetic Vortex Threading a Two-Dimensional Metal Proximity Coupled to a Superconductor**, Phys. Rev. Lett. **110**, 027003 (2013).

77. A.I. Buzdin, A.S. Mel'nikov, A.V. Samokhvalov, **Vortex Molecules in Thin Films of Layered Superconductors**, J. Supercond. Nov. Magn. (2013) **26**:2853–2857

78. A.S. Mel'nikov, A.V. Samokhvalov, M.A. Silaev, **Topological Electronic Transitions in Vortex Cores in Type-II Superconductors**, J Supercond Nov Magn (2013) **26**:2847–2850.

79. A.V. Samokhvalov, A.S. Mel'nikov, A.I. Buzdin, **Quantum Oscillations and π -States in Multiply Connected Ferromagnet-Superconductor Hybrids**, J Supercond Nov Magn (2013) **26**:2851–2852.

80. N. B. Kopnin, I. M. Khaymovich, and A. S. Mel'nikov, **Vortex matter in low dimensional systems with proximity induced superconductivity**, Zh.Eksp.Teor.Fiz. v.144, pp.486-507 (2013).

81. A. A. Bespalov and A. S. Mel'nikov, **“Abrikosov vortex pinning on a cylindrical cavity inside the vortex core: formation of a bound state and depinning”**, Supercond. Sci. Technol. **26**, 085014 (2013).

82. N. B. Kopnin, A. S. Mel'nikov, I. A. Sadovskyy, and V. M. Vinokur, **“Weak links in proximity-superconducting two-dimensional electron systems”**, Phys. Rev. B **89**, 081402(R) (2014).

83. A. A. Bespalov, A. S. Mel'nikov, and A. I. Buzdin, **“Magnon radiation by moving Abrikosov vortices in ferromagnetic superconductors and superconductor-ferromagnet multilayers”**, Phys. Rev. B **89**, 054516 (2014).

84. I. M. Khaymovich, A. S. Mel'nikov, and A. I. Buzdin, **“Phase transitions in the domain structure of ferromagnetic superconductors”**, Phys. Rev. B **89**, 094524 (2014).

85. A.A. Bespalov, A.S. Mel'nikov, A.I. Buzdin, **Microwave and dc response of an Abrikosov vortex lattice in ferromagnetic superconductors**, Physica C: Superconductivity **503**, 98 (2014).

86. Alexey Galda, A. S. Mel'nikov V. M. Vinokur, **Resonant tunneling of fluctuation Cooper pairs**, SCIENTIFIC REPORTS **5**, 8315 (2015) (DOI: 10.1038/srep08315).

87. A.A. Bespalov, A.S. Mel'nikov, A.I. Buzdin, **Clustering of vortex matter in superconductor-ferromagnet superlattices**, Europhys. Lett., 110 37003 (2015).
88. S. Mironov, A. Mel'nikov, and A. Buzdin, **Double Path Interference and Magnetic Oscillations in Cooper Pair Transport through a Single Nanowire**, Phys. Rev. Lett. 114, 227001 (2015).
89. I. M. Khaymovich, V. F. Maisi, J. P. Pekola, and A. S. Mel'nikov, **Charge-vortex interplay in a superconducting Coulomb-blockaded island**, Phys. Rev. B 92, 020501 (2015).
90. A. S. Mel'nikov, A. V. Samokhvalov, V. L. Vadimov, **Microscopic theory of vortex pinning on columnar defects in conventional and chiral superconductors**, Pis'ma v ZhETF, vol. 102, iss. 11, pp. 886 – 895 [JETP Letters, 2015, Vol. 102, No. 11, pp. 775–783].
91. M. Taupin, I.M. Khaymovich, M. Meschke, A.S. Mel'nikov, J.P. Pekola, **Tunable quasiparticle trapping in Meissner and vortex states of mesoscopic superconductors**, Nature Communications 7, Article number: 10977, 2016, doi:10.1038/ncomms10977
92. A. V. Samokhvalov, A. S. Mel'nikov, A. I. Buzdin, **Long-range ballistic transport mechanisms in superconducting spintronics**, Physics - Uspekhi 59 (6) pp. 571 - 576 (2016)
93. V. L. Vadimov, A. S. Mel'nikov, **Electronic Structure of Vortices Pinned by Columnar Defects in $px \pm i py$ Superconductors**, J. Low Temp Phys (2016) 183:342–358 (2016) DOI 10.1007/s10909-016-1519-7
94. A.S. Mel'nikov, A.I. Buzdin, **Giant Mesoscopic Fluctuations and Long-Range Superconducting Correlations in Superconductor-Ferromagnet Structures**, Phys. Rev. Lett. 117, 077001 (2016).
95. **A. A. Kopasov, *D. A. Savinov, and A. S. Mel'nikov, LOCALIZED SUPERCONDUCTIVITY IN SYSTEMS WITH INHOMOGENEOUS MASS OF COOPER PAIRS**, Radiophysics and Quantum Electronics, Vol. 59, No. 11, 911 (2017)
96. A. A. Kopasov, D. A. Savinov and A. S. Mel'nikov, **Crossover between Abrikosov vortex lattice and superconducting droplet state in superconductors with modulated disorder**, Phys. Rev. B 95, 104520 (2017).
97. Shuji Nakamura, Yuri A. Pashkin, Mathieu Taupin, Ville F. Maisi, Ivan M. Khaymovich, Alexander S. Mel'nikov, Joonas T. Peltonen, Jukka P. Pekola, Yuma Okazaki, Satoshi Kashiwaya, Shiro Kawabata, Andrey S. Vasenko, Jaw-Shen Tsai, and Nobu-Hisa Kaneko, **Interplay of the Inverse Proximity Effect and Magnetic Field in Out-of-Equilibrium Single-Electron Devices**, PHYSICAL REVIEW APPLIED 7, 054021 (2017).
98. I.M. Khaymovich, J. P. Pekola and A.S. Mel'nikov, **Nonlocality and dynamic response of Majorana states in fermionic superfluids**, New J. Phys. 19, 123026 (2017)
99. V. L. Vadimov and A. S. Mel'nikov, **Laser pulse probe of the chirality of Cooper pairs**, Phys. Rev. B 96, 184523 (2017).

100. A.V. Samokhvalov, A. S.Mel'nikov, **Microscopic theory of the multiquantum vortex pinning in cylindrical cavity**, Zh.Eksp.Teor.Fiz. v.153, 268-282, (2018); [JETP, (2018)]
101. V. L. Vadimov, D. Yu. Vodolazov, S. V. Mironov, and A. S. Mel'nikov, **Photoinduced Local Nonequilibrium States in Superconductors: Hot Spot Model**, JETP Letters, 2018, Vol. 108, No. 4, pp. 270–278 (2018)
102. A.V. Samokhvalov, A.S. Mel'nikov, A.I. Buzdin, “**Vortex molecules in thin films of layered superconductors**”, Low Temperature Physics/Fizika Nizkikh Temperatur, v. 44, No. 6, pp. 691–700 (2018)
103. S. V. Mironov, D. Yu. Vodolazov, Y. Yerin, A. V. Samokhvalov, A. S. Mel'nikov, and A. Buzdin, «**Temperature Controlled Fulde-Ferrell-Larkin-Ovchinnikov Instability in Superconductor-Ferromagnet Hybrids**», Phys. Rev. Lett. 121, 077002 (2018)
104. V.L. Vadimov, M.V. Sapozhnikov and A.S. Mel'nikov, «**Magnetic skyrmions in ferromagnet-superconductor (F/S)heterostructures**», Appl. Phys. Lett. 113, 032402 (2018)
105. S. Mironov, A.S. Mel'nikov, and A. Buzdin, «**Electromagnetic proximity effect in planar superconductor-ferromagnet structures**», Appl. Phys. Lett. 113, 022601 (2018); doi: 10.1063/1.5037074
106. A.A. Kopasov, I.M. Khaymovich, and A.S. Mel'nikov, «**Inverse proximity effect in semiconductor Majorana nanowires**», Beilstein J. Nanotechnol. 2018, 9, 1184–1193; doi:10.3762/bjnano.9.109
107. A.A. Bespalov and A.S. Mel'nikov, «**Impurity states in mesoscopic SNS junctions with a point defect**», J. Phys.: Conf. Ser. **969** (2018) 012022; doi :10.1088/1742-6596/969/1/012022
108. Zh. Devizorova, S. V. Mironov, A. S. Mel'nikov, and A. Buzdin, **Electromagnetic proximity effect controlled by spin-triplet correlations in superconducting spin-valve structures**, Phys. Rev. B **99**, 104519 (2019).
109. A. V. Samokhvalov, I. A. Shereshevskii, N. K. Vdovicheva, M. Taupin, I. M. Khaymovich, J. P. Pekola, and A. S. Mel'nikov, **Electronic structure of a mesoscopic superconducting disk: Quasiparticle tunneling between the giant vortex core and the disk edge**, Phys. Rev. B **99**, 134512 (2019).
110. A. V. Putilov, C. Di Giorgio, V. L. Vadimov, D. J. Trainer, E. M. Lechner, J. L. Curtis, M. Abdel-Hafiez, O. S. Volkova, A. N. Vasiliev, D. A. Chareev, G. Karapetrov, A. E. Koshelev, A. Yu. Aladyshkin, A. S. Mel'nikov, and M. Iavarone, **Vortex-core properties and vortex-lattice transformation in FeSe**, Phys. Rev. B **99**, 144514 (2019).

111. V. L. Vadimov, I. M. Khaymovich, and A. S. Mel'nikov, **Higgs modes in proximized superconducting systems**, Phys. Rev. B, vol. **100**, p. 104515 (2019).
112. G. Kutlin, A. S. Mel'nikov, **Geometry-dependent effects in Majorana nanowires**, Phys.Rev.B, vol. **101**, p. 045418 (2020).
113. A. Kopasov and A. S. Mel'nikov, **Multiple topological transitions driven by the interplay of normal scattering and Andreev scattering**, Phys.Rev.B, vol. **101**, p. 054515 (2020).
114. A. Kopasov and A. S. Mel'nikov, **Influence of the Accumulation Layer on the Spectral Properties of Full-Shell Majorana Nanowires**, Physics of the Solid State, 2020, Vol. 62, No. 9, pp. 1592–1597
115. Antonine Rochet, Vasily Vadimov, William Magrini, Siddharatha Thakur, Jean-Baptiste Trebbia, Alexander Melnikov, Alexander Buzdin, Philippe Tamarat, and Brahim LOUNIS, **On-demand optical generation of single flux quanta**, DOI: 10.1021/acs.nanolett.0c02166, Nano Lett. 2020, 20, 9, 6488–6493
116. A. V. Samokhvalov, V. D. Plastovets and A. S. Mel'nikov, **Topological transitions in electronic spectra: Crossover between Abrikosov and Josephson vortices**, PHYSICAL REVIEW B **102**, 174501 (2020)
117. A. A. Kopasov, A. G. Kutlin, and A. S. Mel'nikov, **Geometry controlled superconducting diode and anomalous Josephson effect triggered by the topological phase transition in curved proximitized nanowires**, PHYSICAL REVIEW B **103**, 144520 (2021)
118. A. V. Samokhvalov, A. A. Kopasov, A. G. Kutlin, S. V. Mironov, A. I. Buzdin, and A. S. Mel'nikov, **Spontaneous Currents and Topologically Protected States in Superconducting Hybrid Structures with the Spin–Orbit Coupling**, JETP Letters, Vol. 113, No. 1, pp. 34–46, (2021).
119. S. V. Mironov, A. V. Samokhvalov, A. I. Buzdin, and A. S. Mel'nikov, **Electromagnetic Proximity Effect and the Fulde–Ferrell–Larkin–Ovchinnikov Instability in Hybrid Superconductor–Ferromagnet Structures**, JETP Letters, Vol. 113, No. 2, pp. 92–101 (2021).
120. S. V. Mironov, A. S. Mel'nikov, I. D. Tokman, V. Vadimov, B. Lounis, and A. I. Buzdin, **Inverse Faraday Effect for Superconducting Condensates**, PHYSICAL REVIEW LETTERS **126**, 137002 (2021)
121. A. V. Samokhvalov, I. A. Shereshevskii, N. K. Vdovicheva, M. Taupin, I. M. Khaymovich, and A. S. Mel'nikov, **Electron–phonon heat transfer in giant vortex states**, PHYSICAL REVIEW B **105**, 024522 (2022)
122. A. V. Putilov, S. V. Mironov, A. S. Mel'nikov, and A. I. Buzdin, **Giant electromagnetic proximity effect in superconductor/ferromagnet superlattices**, PHYSICAL REVIEW B **105**, 064510 (2022)

123. Vadim Plastovets and A. S. Mel'nikov, **Electronic structure of a Josephson vortex in a SIS junction**, PHYSICAL REVIEW B **105**, 094516 (2022)

124. A. A. Kopasov and A. S. Mel'nikov, **Nucleation of superconductivity in clean superconductor-ferromagnet hybrid structures with Rashba spin-orbit interaction**, PHYSICAL REVIEW B **105**, 214508 (2022)