

Publications of Mikhail Katsnelson

Monographs and textbooks

Monographs and textbooks

1. S. V. Vonsovsky and M. I. Katsnelson, *Quantum Solid State Physics*, Moscow, Nauka, 1983 (in Russian)
2. S. V. Vonsovsky and M. I. Katsnelson, *Quantum Solid State Physics*, Berlin etc, Springer, 1989 (extended and rewritten version, in English)
3. S. V. Vonsovsky and M. I. Katsnelson (Editors), *S. P. Shubin (1908-1938): Selected Works on Theoretical Physics, Reminiscences and Thoughts*, Sverdlovsk, Nauka, 1991 (collection of papers, in Russian)
4. Yu. A. Izyumov, M. I. Katsnelson, and Yu. N. Skryabin, *Itinerant Electron Magnetism*, Moscow, Nauka, 1994 (in Russian)
5. M. I. Katsnelson and B. Kh. Ishmukhametov, *Introduction to the Theory of Relativity*, Ekaterinburg, Ural State Univ. Publ., 1996 (textbook, in Russian)
6. B. Kh. Ishmukhametov and M. I. Katsnelson, *Mechanics*, Ekaterinburg, Ural State Univ. Publ., 1999 (textbook, in Russian)
7. M. I. Katsnelson and A. V. Trefilov, *Crystal Lattice Dynamics and Thermodynamics*, Moscow, Energoatomizdat, 2002 (in Russian)
8. B. Kh. Ishmukhametov and M. I. Katsnelson, *Introduction to the Theory of Elementary Particles and Atomic Nuclei*, Ekaterinburg, Ural State Univ. Publ., 2011 (textbook, in Russian)
9. M. I. Katsnelson, *Graphene: Carbon in Two Dimensions*, Cambridge, Cambridge Univ. Press, 2012
10. B. Kh. Ishmukhametov, M. I. Katsnelson, and A. F. Polikarpov, *Introduction to Atomic Physics*, Ekaterinburg, Ural Federal Univ. Publ., 2017 (textbook, in Russian)
11. B. Kh. Ishmukhametov, M. I. Katsnelson, and A. F. Polikarpov, *One-Electron Problems of Quantum Mechanics in Semiclassical Consideration: A Short VCourse of WKB*, Ekaterinburg, Ural Federal Univ. Publ., 2019 (textbook, in Russian)
12. M. I. Katsnelson, *The Physics of Graphene* (second edition, extended and rewritten), Cambridge, Cambridge Univ. Press, 2020

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1. Yu. N. Gornostyrev, M. I. Katsnelson, and A. V. Trefilov, *The role of precipitates of close packed phases in the rhenium effect*, in: *Rhenium and Rhenium Alloys* (TMS,

Warrandale PA, 1997), ed. by B. D. Bryskin, p. 681

2. A. I. Lichtenstein and M. I. Katsnelson, *Magnetism of correlated systems: beyond LDA*, Chapter in the book: *Band Ferromagnetism. Ground State and Finite-Temperature Phenomena* (Springer, Berlin etc, 2001), ed. by K. Barbeschke, M. Donath, and W. Nolting

3. A. I. Lichtenstein, M. I. Katsnelson, and G. Kotliar, *Spectral density functional approach to electronic correlations and magnetism in crystals*, Chapter in the book: *Electron Correlations and Materials Properties 2* (Kluwer Academic/Plenum Publishers, 2002), ed. by A. Gonis, N. Kioussis, and M. Ciftan

4. A. I. Lichtenstein, V. I. Anisimov, and M. I. Katsnelson, *Electronic structure and magnetism of correlated systems: beyond LDA*, Chapter in the book: *Electronic Structure and Magnetism of Complex Materials* (Springer, Berlin etc, 2003), ed. by D. J. Singh and D. A. Papaconstantopoulos

5. M. I. Katsnelson and A. I. Lichtenstein, *The problem of iron*, in: *Phase and Structural Transformations in Steels*, vol. 3 (Magnitogorsk, 2003), ed. by V. N. Urtsev, p. 8

6. M. I. Katsnelson and A. V. Trefilov, *Nonperturbative anharmonic phenomena in crystal lattice dynamics*, in: *Slow Dynamics in Complex Systems*, ed. by M. Tokuyama and I. Oppenheim (AIP Conference Proceedings 708, 727 (2004))

7. A. Perlov, S. Chadov, H. Ebert, L. Chioncel, A. Lichtenstein, and M. Katsnelson, *Ab initio calculations of the optical and magnetooptical properties of moderately correlated systems: accounting for correlation effects*, in: *Physics of Spin in Solids: Materials, Methods and Applications* (Kluwer, Dordrecht etc., 2004), ed. by S. Halilov, p. 161

8. M. I. Katsnelson, *Lattice dynamics: anharmonic effects*, in: *Encyclopedia of Condensed Matter Physics* (Elsevier, Amsterdam etc., 2005), ed. by G. F. Bassani, G. L. Liedl, and P. Wyder, p. 77

9. V. Yu. Irkhin, M. I. Katsnelson, and A. I. Lichtenstein, *Nonquasiparticle states in half-metallic ferromagnets*, in: *Local-Moment Ferromagnets. Unique Properties for Modern Applications* (Springer, Berlin etc., 2005), ed. by M. Donath and W. Nolting, p. 217.

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11. A. I. Lichtenstein and M. I. Katsnelson, *Dynamical mean-field theory of itinerant-electron magnetism*, in: *Handbook of Magnetism and Advanced Magnetic Materials*, vol. 1: *Fundamentals and Theory* (John Wiley, New York, 2007), ed. by H. Kronmüller and S. Parkin

12. T. O. Wehling, M. I. Katsnelson, and A. I. Lichtenstein, *Gas molecules on graphene*, in: *Handbook of Nanophysics, vol.5: Functional Nanomaterials* (Taylor & Francis, 2011), ed. by K. D. Sattler, chapter 24
13. O. V. Yazyev and M. I. Katsnelson, *Theory of magnetism in graphene*, in: *Advanced Functional Materials: A Perspective from Theory and Experiment* (Springer, 2012), ed. by B. Sanyal and O. Eriksson, p. 471
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15. H. De Raedt, M. I. Katsnelson, and K. Michielsen, *Quantum theory as the most robust description of reproducible experiments: Application to a rigid linear rotator*, in: *Proc. SPIE 8832, The Nature of Light: What are Photons? V*, 883212 (2013), doi: 10.1117/12.2026998
16. H. De Raedt, M. I. Katsnelson, H. C. Donker, and K. Michielsen, *Quantum theory as a description of robust experiments: Application to Stern-Gerlach and Einstein-Podolsky-Rosen-Bohm experiments*, in: *Proc. SPIE 9570, The Nature of Light: What are Photons? VI*, 957002 (2015), doi: 10.1117/12.2185704
17. B. Amorim, R. Roldan, E. Cappelluti, A. Fasolino, F. Guinea, and M. I. Katsnelson, *Thermodynamical properties and stability of crystalline membranes in the quantum regime*, in: *Mater. Res. Soc. Symp. Proc. Vol. 1727* (2015), doi: 10.1557/opl.2015.67
18. M. I. Katsnelson, *Spin dynamics and exchange interactions from the first- and second-principle calculations*, in: *Ultrafast Magnetism I: Proceedings of the International Conference UMC 2013 Strasbourg, France, October 28th - November 1st, 2013* (Springer, 2015), ed. by J.-Y. Bigot, W. Huebner, T. Rasing, and R. Chantrell, p. 126
19. F. J. Buijnsters, A. Fasolino, and M. I. Katsnelson, *Localization of magnetic normal modes on topological defects*, in: *Ultrafast Magnetism I: Proceedings of the International Conference UMC 2013 Strasbourg, France, October 28th - November 1st, 2013* (Springer, 2015), ed. by J.-Y. Bigot, W. Huebner, T. Rasing, and R. Chantrell, p. 156
20. A. Secchi, S. Brener, A. I. Lichtenstein, and M. I. Katsnelson, *Non-equilibrium spin-spin interactions in strongly correlated systems*, in: *Ultrafast Magnetism I: Proceedings of the International Conference UMC 2013 Strasbourg, France, October 28th - November 1st, 2013* (Springer, 2015), ed. by J.-Y. Bigot, W. Huebner, T. Rasing, and R. Chantrell, p. 179
21. A. I. Lichtenstein, J. Koloenc, A. B. Shick, and M. I. Katsnelson, *Racah materials: Role of atomic multiplets and intermediate valence in f-electron systems*, in: *MRS Advances*, Vol. 1, Issue 44 (Energy and Environment), p. 2967 (2016), doi: 10.1557/adv.2016.358
22. M. I. Katsnelson and A. Fasolino, *Graphene: basic properties*, in: *2D Materials*:

Properties and Devices (Cambridge Univ. Press, 2017), ed. by P. Avouris, T. F. Heinz, and T. Low, Chapter 1

23. E. V. Koonin, Y. I. Wolf, and M. I. Katsnelson, *Conflict-driven evolution*, in: *New Horizons in Evolution* (Academic Press, 2021), ed. by S. P. Wasser and M. Frenkel-Morgenstern, p.77

Papers in scientific journals

2025

1. F. L. Ruta, Y. Shao, S. Acharya, A. Mu, N. H. Jo, S. H. Ryu, D. Balatsky, Y. Su, D. Pashov, B. S. Y. Kim, M. I. Katsnelson, J. G. Analytis, E. Rotenberg, A. J. Millis, M. van Schilfgaarde, and D. N. Basov,
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SCIENCE 387, 786 (2025)

2. Y. Shao, F. Dirnberger, S. Qiu, S. Acharya, S. Terres, E. J. Telford, D. Pashov, B. S. Y. Kim, F. L. Ruta, D. G. Chica, A. H. Dismukes, M. E. Ziebel, Y. Wang, J. Choe, Y. J. Bae, A. J. Millis, M. I. Katsnelson, K. Mosina, Z. Sofer, R. Huber, X. Zhu, X. Roy, M. van Schilfgaarde, A. Chernikov, and D. N. Basov,
Magnetically confined surface and bulk excitons in a layered antiferromagnet
NATURE MATER 24, 391 (2025)

3. I. P. Miranda, M. Pankratova, M. Weißenhofer, A. B. Klautau, D. Thonig, M. Pereiro, E. Sjöqvist, A. Delin, M. I. Katsnelson, O. Eriksson, and A. Bergman,
Spin-lattice couplings in 3d ferromagnets: Analysis from first-principles
PHYS REV MATER 9, 024409 (2025)

4. W. Xu, A. A. Bagrov, F. T. Chowdhury, L. D. Smith, D. R. Kattnig, H. J. Kappen, and M. I. Katsnelson,
Fröhlich versus Bose-Einstein condensation in pumped bosonic systems
PHYS REV RESEARCH, accepted

5. S. Y. Grebenchuk, M. Grzeszczyk, Z. Chen, M. Šiškins, V. Borisov, M. Pereiro, M. I. Katsnelson, O. Eriksson, K. S. Novoselov, and M. Koperski,
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2024

1. S. Acharya, D. Pashov, M. I. Katsnelson, and M. van Schilfgaarde,
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PHYS STAT SOL (RRL) 18, 2300156 (2024)

2. D. Laniel, F. Trybel, A. Aslandukov, S. Khandarkhaeva, T. Fedotenko, Y. Yin, N. Miyajima, F. Tasnádi, A. V. Ponomareva, N. Jena, F. I. Akbar, B. Winkler, A. Néri, S. Chariton, V. Prakapenka, V. Milman, W. Schnick, A. N. Rudenko, M. I. Katsnelson, I. A. Abrikosov, L. Dubrovinsky, and N. Dubrovinskaia,

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ADV MATER 36, 2308030 (2024)

3. A. N. Rudenko, D. I. Badrtdinov, I. A. Abrikosov, and M. I. Katsnelson,
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PHYS REV B 109, 014502 (2024)

4. S. Grytsiuk, M. I. Katsnelson, E. G. C. P. van Loon, and M. Rösner,
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5. V. N. Valmispild, E. Gorelov, M. Eckstein, A. I. Lichtenstein, H. Aoki, M. I. Katsnelson, M. Yu. Ivanov, and O. Smirnova,
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7. S. Iskakov, M. I. Katsnelson, and A. I. Lichtenstein,
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8. Z. Wu, Z. Zhan, J. A. Silva-Guillén, F. Guinea, M. I. Katsnelson, and S. Yuan,
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9. Y. Guan, C. Dutreix, H. Gonzales-Herrero, M. M. Ugeda, I. Brihuega, M. I. Katsnelson, O. V. Yazyev, and V. T. Renard,
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10. R. J. Sokolewicz, M. Baglai, I. A. Ado, M. I. Katsnelson, and M. Titov,
Gilbert damping in two-dimensional metallic antiferromagnets
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11. A. Mauri and M. I. Katsnelson,
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12. T. W. J. Metzger, K. A. Grishunin, C. Reinhoffer, R. M. Dubrovin, A. Arshad, I. Ilyakov, T. V. A. G. de Oliveira, A. Ponomaryov, J.-C. Deinert, S. Kovalev, R. V. Pisarev, M. I. Katsnelson, B. A. Ivanov, P. H. M. van Loosdrecht, A. V. Kimel, and E. A. Mashkovich,

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13. Q. Yao, X. Yang, A. A. Iliasov, M. I. Katsnelson, and S. Yuan,
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15. H. De Raedt, M. I. Katsnelson, M. S. Jattana, V. Mehta, M. Willsch, D. Willsch,
K. Michielsen, and F. Jin,
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17. R. Yadav, L. Xu, M. Pizzochero, J. van den Brink, M. I. Katsnelson, and O. V.
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3. M. Grzeszczyk, S. Acharya, D. Pashov, Z. Chen, K. Vaklinova, M. van Schilfgaarde, K. Watanabe, T. Taniguchi, K. S. Novoselov, M. I. Katsnelson, and M. Koperski,
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5. V. Vijayan, L. Chotorlishvili, A. Ernst, S. S. P. Parkin, M. I. Katsnelson, and S. K. Mishra,
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6. S. Paischer, G. Vignale, M. I. Katsnelson, A. Ernst, and P. A. Buczek,
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8. H. De Raedt, M. I. Katsnelson, M. S. Jattana, V. Mehta, M. Willsch, D. Willsch, K. Michielsen, and F. Jin,
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ANN PHYS (NY) 453, 169314 (2023)
9. S. Acharya, M. I. Katsnelson, and M. van Schilfgaarde,
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10. A. N. Rudenko, M. Rösner, and M. I. Katsnelson,
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11. S. Ghosh, G. Menichetti, M. I. Katsnelson, and M. Polini,
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PHYS REV B 107, 195302 (2023)
12. M. Bianchi, S. Acharya, F. Dirnberger, J. Klein, D. Pashov, K. Mosina, Z. Sofer, A. N. Rudenko, M. I. Katsnelson, M. van Schilfgaarde, M. Rösner, and P. Hofmann,

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13. A. A. Katanin, A. S. Belozerov, A. I. Lichtenstein, and M. I. Katsnelson,
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14. E. Sierda, X. Huang, D. I. Badrtdinov, B. Kiraly, E. J. Knol, G. C. Groenenboom,
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16. D. I. Badrtdinov, G. V. Pushkarev, M. I. Katsnelson, and A. N. Rudenko,
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17. G. Yu, Y. Wang, M. I. Katsnelson, and S. Yuan,
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18. M. Simonato, M. I. Katsnelson, and M. Rösner,
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PHYS REV B 108, 064513 (2023)

19. T. M. Koskamp, M. I. Katsnelson, and K. J. A. Reijnders,
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PHYS REV B 108, 085414 (2023)

20. A. Szilva, Y. Kvashnin, E. A. Stepanov, L. Nordström, O. Eriksson, A. I.
Lichtenstein, and M. I. Katsnelson,
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I. Katsnelson,
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25. O. M. Sotnikov, E. A. Stepanov, M. I. Katsnelson, F. Mila, and V. V. Mazurenko,
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26. F. L. Ruta, S. Zhang, Y. Shao, S. L. Moore, S. Acharya, Z. Sun, S. Qiu, J. Geurs, B. S. Y. Kim, M. Fu, D. G. Chica, D. Pashov, X. Xu, D. Xiao, M. Delor, X.-Y. Zhu, A. J. Millis, X. Roy, J. C. Hone, C. R. Dean, M. I. Katsnelson, M. van Schilfgaarde, and D. N. Basov,
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2. R. Cardias, A. Szilva, A. Bergman, Y. Kvashnin, J. Fransson, S. Streib, A. Delin, M. I. Katsnelson, D. Thonig, A. B. Klautau, O. Eriksson, and L. Nordström,
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3. V. Vanchurin, Y. I. Wolf, M. I. Katsnelson, and E. V. Koonin,
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5. G. Yu, Y. Wang, M. I. Katsnelson, H.-Q. Lin, and S. Yuan,
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PHYS REV B 105, 125403 (2022)

6. E. J. Knol, B. Kiraly, A. N. Rudenko, W. M. J. van Weerdenburg, M. I. Katsnelson, and A. A. Khajetoorians,
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PHYS REV LETT 128, 106801 (2022)

7. E. A. Stepanov, S. Brener, V. Harkov, M. I. Katsnelson, and A. I. Lichtenstein,
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8. O. M. Sotnikov, I. A. Iakovlev, A. A. Iliasov, M. I. Katsnelson, A. A. Bagrov, and
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13. Y. O. Kvashnin, A. N. Rudenko, P. Thunstrom, Malte Roesner, and M. I.
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