

Publications – Dieter Koelle

APRIL 2024

Book Contributions

- [6] **NanoSQUIDs: Basics & Recent Advances**
M. J. Martínez-Pérez, D. Koelle
Chapter 11, pp. 339–382
in *Superconductors on the Nanoscale*
R. Wördenweber, V. Moshchalkov, S. Bending, F. Tafuri (Eds.)
De Gruyter 2017; DOI:[10.1515/9783110456806-012](https://doi.org/10.1515/9783110456806-012)
- [5] **NanoSQUIDs Applied to the Investigation of Small Magnetic Systems**
M. J. Martínez-Pérez, R. Kleiner, D. Koelle
Chapter 19
in *The Oxford Handbook of Small Superconductors*
A. V. Narlikar (Ed.)
Oxford University Press 2017; DOI:[10.1093/oxfordhb/9780198738169.013.19](https://doi.org/10.1093/oxfordhb/9780198738169.013.19)
- [4] **Ferromagnetic Josephson Junctions with Critical Current Density Artificially Modulated on a ‘Short’ Scale**
N. G. Pugach, M. Yu. Kupriyanov, E. Goldobin, D. Koelle, R. Kleiner, A. S. Sidorenko, C. Lacroix
Chapter 6, pp. 133–170
in *Fundamentals of Superconducting Nanoelectronics*
Anatolie Sidorenko (Ed.)
Springer 2011; DOI:[10.1007/978-3-642-20158-5_6](https://doi.org/10.1007/978-3-642-20158-5_6)
- [3] **SQUID Theory**
B. Chesca, R. Kleiner, D. Koelle
Chapter 2, pp. 29–92
in *The SQUID Handbook, Vol. I, Fundamentals and Technology of SQUIDs and SQUID Systems*
John Clarke, Alex I. Braginski (Eds.)
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- [2] **Practical DC SQUIDs**
R. Cantor, D. Koelle
Chapter 5, pp. 172–217
in *The SQUID Handbook, Vol. I, Fundamentals and Technology of SQUIDs and SQUID Systems*
John Clarke, Alex I. Braginski (Eds.)
Wiley-VCH 2004; ISBN: 3527402292; DOI:[10.1002/3527603646.ch5](https://doi.org/10.1002/3527603646.ch5)
- [1] **Basic Properties of Superconductivity**
R. Kleiner, D. Koelle
Appendix 1, pp. 357–366
in *The SQUID Handbook, Vol. I, Fundamentals and Technology of SQUIDs and SQUID Systems*
John Clarke, Alex I. Braginski (Eds.)
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Public Articles

- [3] **Zentrum für Licht-Materie Interaktion, Sensoren & Analytik – LISA⁺**
D. Kölle, M. Fleischer, A. Stibor, D. Kern, R. Kleiner
Nanotechnologie Aktuell **5**, 38–45 (2012)
- [2] **Fraktionale Flussquanten – Steuerbare Atome im Supraleiter**
E. Goldobin, R. Kleiner, D. Kölle, W. Schleich, K. Vogel, R. Walser
Themenheft Forschung “Quantenmaterie” **5**, 22–30 (2008)
- [1] **Bose-Einstein-Kondensate am Chip**
C. Zimmermann, J. Fortágh, D. Kölle
Themenheft Forschung “Quantenmaterie” **5**, 58–66 (2008)

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- [294] **Vortex matching at 6 T in $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ thin films by imprinting a 20 nm-periodic pinning array with a focused helium ion beam**
M. Karrer, B. Aichner, K. Wurster, C. Schmid, R. Hutt, C. Magén, B. Budinská, O. V. Dobrovolskiy, R. Kleiner, W. Lang, E. Goldobin, D. Koelle
[arXiv:2404.05382v1](#) [[cond-mat.supr-con](#)]
- [293] **Extracting the current-phase relation of a monolithic three-dimensional nano-constriction using a DC-current-tunable superconducting microwave cavity**
K. Uhl, D. Hackenbeck, D. Koelle, R. Kleiner, D. Bothner
[arXiv:2402.10276v1](#) [[cond-mat.mes-hall](#)]
- [292] **Laser-induced quenching of metastability at the Mott-insulator to metal transition**
T. Luibrand, L. Fratino, F. Tahouni-Bonab, A. Kronman, Y. Kalcheim, I. K. Schuller, M. Rozenberg, R. Kleiner, D. Koelle, S. Guénon
[arXiv:2401.11889v1](#) [[cond-mat.str-el](#)]

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- [291] **Niobium quantum interference microwave circuits with monolithic three-dimensional nanobridge junctions**
Kevin Uhl, Daniel Hackenbeck, Janis M. Peter, Reinhold Kleiner, Dieter Koelle, Daniel Bothner
Phys. Rev. Applied **21**, 024051 (2024) DOI:[10.1103/PhysRevApplied.21.024051](#)
- [290] **Why shot noise does not generally detect pairing in mesoscopic superconducting tunnel junctions**
Jiasen Niu, Koen M. Bastiaans, Jianfeng Ge, Ruchi Tomar, John Jesudasan, Pratap Raychaudhuri, Max Karrer, Reinhold Kleiner, Dieter Koelle, Arnaud Barbier, Eduard F.C. Driessen, Yaroslav M. Blanter, Milan P. Allan
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- [289] **Temporal evolution of electric transport properties of $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ Josephson junctions produced by focused-helium-ion-beam irradiation**
M. Karrer, K. Wurster, J. Linek, M. Meichsner, R. Kleiner, E. Goldobin, D. Koelle
Phys. Rev. Applied **21**, 014065 (2024) DOI:[10.1103/PhysRevApplied.21.014065](#)
- [288] **THz properties of He-FIB $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ Josephson junctions**
M. Pröpper, D. Hanisch, C. Schmid, P. J. Ritter, M. Neumann, E. Goldobin, D. Koelle, R. Kleiner, M. Schilling, B. Hampel
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- [287] **On the coupling of magnetic moments to superconducting quantum interference devices**
J. Linek, M. Wyszynski, B. Müller, D. Korinski, M. Milošević, R. Kleiner, D. Koelle
Supercond. Sci. Technol. (2024) DOI:[10.1088/1361-6668/ad1ae9](#)
- [286] **$\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ Terahertz Oscillators Controlled with Additional Heaters**
D. Oikawa, E. Dorsch, S. Guénon, D. Koelle, R. Kleiner
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- [285] **Roadmap for focused ion beam technologies**
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- [284] **High-Q magnetic levitation and control of superconducting microspheres**
J. Hofer, R. Gross, G. Higgins, H. Huebl, O. F. Kieler, R. Kleiner, D. Koelle, P. Schmidt, J. Slater, M. Trupke, K. Uhl, T. Weimann, W. Wiczorek, M. Aspelmeyer
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- [283] **A flux-tunable $\text{YBa}_2\text{Cu}_3\text{O}_7$ quantum interference microwave circuit**
K. Uhl, D. Hackenbeck, C. Fuger, R. Kleiner, D. Koelle, D. Bothner
Appl. Phys. Lett. **122**, 182603 (2023) DOI:[10.1063/5.0146524](https://doi.org/10.1063/5.0146524)
- [282] **Angle-dependent Magnetoresistance of an Ordered Bose Glass of Vortices in $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ Thin Films with a Periodic Pinning Lattice**
Bernd Aichner, Lucas Backmeister, Max Karrer, Katja Wurster, Reinhold Kleiner, Edward Goldobin, Dieter Koelle, Wolfgang Lang
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- [281] **Tailoring $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ surface Josephson junctions**
Z. Wei, H. Du, D. Li, M.-P. Jiang, P. Zhang, S. Chen, Y.-Y. Lyu, H. Sun, Y.-L. Wang, D. Koelle, R. Kleiner, H.-B. Wang, P.-H. Wu
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- [280] **Compact high- T_c superconducting terahertz emitter with tunable frequency from 0.15 to 1 THz**
H. Sun, S. Chen, Z. Wei, D. Li, H. Du, P. Zhang, Y. Lv, M. Yu, J. Pan, X. Tu, Y.-L. Wang, S. Ishida, H. Eisaki, Y. Yoshida, G. Sun, J. Chen, T. Hatano, V. P. Koshelets, D. Koelle, R. Kleiner, H.-B. Wang, P.-H. Wu
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- [279] **Characteristic lengthscales of the electrically induced insulator-to-metal transition**
T. Luibrand*, A. Bercher*, R. Rocco*, F. Tahouni-Bonab, L. Varbaro, W. Rischau, C. Domınguez, Y. Zhou, W. Luo, S. Bag, L. Fratino, R. Kleiner, S. Gargilo, D. Koelle, J.-M. Triscone, M. J. Rozenberg, A. B. Kuzmenko, S. Guenon, J. del Valle
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L. Backmeister, B. Aichner, M. Karrer, K. Wurster, R. Kleiner, E. Goldobin, D. Koelle, W. Lang
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- [277] **Impedance spectroscopy of ferroelectrics: The domain wall pinning element**
M. T. Becker, C. J. Burkhardt, R. Kleiner, D. Koelle
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- [276] **Static and dynamic transport properties of multi-terminal, multi-junction micro-SQUIDs realized with Nb/HfTi/Nb Josephson junctions**
S. Wolter, J. Linek, W. Weimann, D. Koelle, R. Kleiner, O. Kieler
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- [275] **Cavity-driven Rabi oscillations between Rydberg states of atoms trapped on a superconducting atom chip**
M. Kaiser, C. Glaser, L. Y. Ley, J. Grimmel, H. Hattermann, D. Bothner, D. Koelle, R. Kleiner, D. Petrosyan, A. Gunther, J. Fortagh
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M. Lange*, S. Guenon*, Y. Kalcheim, T. Luibrand, N. M. Vargas, D. Schwebius, R. Kleiner, I. K. Schuller, D. Koelle
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- [272] **Space-time crystalline order of a high-critical-temperature superconductor with intrinsic Josephson junctions**
R. Kleiner, X. Zhou, E. Dorsch, X. Zhang, D. Koelle, D. Jin
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- [271] **Nb/Au/ NbSe_2 hybrid Josephson junctions**
W. Tian, S. Chen, Z. Xu, D. Li, H. Du, Z. Wei, K. Wu, H. Sun, S. Dong, Y. Lv, Y.-L. Wang, D. Koelle, R. Kleiner, H.-B. Wang, P.-H. Wu
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- [270] **Vertical Josephson field-effect transistors based on black phosphorus**
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- [269] **Fabrication process for deep submicron SQUID circuits with three independent niobium layers**
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- [268] **Nb-based nanoscale superconducting quantum interference devices tuned by electroannealing**
S. Collienne, B. Raes, W. Keijers, J. Linek, R. Kleiner, D. Koelle, R. B. G. Kramer, J. Van de Vondel, A. V. Silhanek
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V. Morosh, J. Linek, B. Müller, M. J. Martínez-Pérez, S. Wolter, T. Weimann, J. Beyer, T. Schurig, O. Kieler, A. B. Zorin, R. Kleiner, D. Koelle
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- [265] **NanoSQUIDs from $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}/\text{SrTiO}_3$ superlattices with bicrystal grain boundary Josephson junctions**
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- [264] **Direct visualization of phase-locking of large Josephson junction arrays by surface electromagnetic waves**
M. A. Galin, F. Rudau, E. A. Borodianskyi, V. V. Kurin, D. Koelle, R. Kleiner, V. M. Krasnov, A. M. Klushin
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- [263] **Vertical Nb/TiO_x/Nb Josephson junctions controlled by in-plane hot-electron injection**
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- [261] **Angular magnetic-field dependence of vortex matching in pinning lattices fabricated by focused or masked helium ion beam irradiation of superconducting $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ thin films**
B. Aichner, K. L. Mletschnig, B. Müller, M. Karrer, M. Dosmailov, J. D. Pedarnig, R. Kleiner, D. Koelle, W. Lang
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- [260] **$\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ nano superconducting quantum interference devices on MgO bicrystal substrates**
J. Lin, B. Müller, J. Linek, M. Karrer, M. Wenzel, M. J. Martínez-Pérez, R. Kleiner, D. Koelle
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M. J. Martínez-Pérez, B. Müller, J. Jin, L. A. Rodríguez, E. Snoeck, R. Kleiner, J. Sesé, D. Koelle
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H. Zhang, Y. Lei, Q. Zhu, T. Qing, T. Zhang, W. Tian, M. Lange, M. Jiang, C. Han, J. Li, D. Koelle, R. Kleiner, W. Xu, Y. Wang, L. Yu, H.-B. Wang, P. H. Wu
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