

## Publikationen

### 2023

1. X. Jiang, S. Yin, H. Li, J. Quan, H. Goh, M. Cotrufo, J. Kullig, J. Wiersig, A. Alu  
› Coherent control of chaotic optical microcavity with reflectionless scattering modes  
Nat. Phys. (2023)
2. J. Kullig, D. Grom, S. Klembt, and J. Wiersig  
› Higher-order exceptional points in waveguide-coupled microcavities: perturbation induced frequency splitting and mode patterns  
Photonics Res. 11, A54-A64 (2023)
3. J. Wiersig  
› Moving along an exceptional surface towards a higher-order exceptional point  
Phys. Rev. A 108, 033501 (2023)
4. J. Wiersig  
› Petermann factors and phase rigidities near exceptional points  
Phys. Rev. Research 5, 033042 (2023)

### 2022

1. J. Wiersig  
› Revisiting the hierarchical construction of higher-order exceptional points  
Phys. Rev. A 106, 063526 (2022)
2. J. Kullig and J. Wiersig  
› Ray–Wave Correspondence in Microstar Cavities  
Entropy 24, 1614 (2022)
3. J. Wiersig  
› Distance between exceptional points and diabolic points and its implication for the response strength of non-Hermitic systems  
Phys. Rev. Research 4, 033179 (2022)
4. J. Wiersig  
› Response strengths of open systems at exceptional points  
Phys. Rev. Research 4, 023121 (2022)

### 2021

1. Y.J. Qian, H. Liu, Q.-T. Cao, J. Kullig, K. Rong, C.-W. Qiu, J. Wiersig, Q. Gong, J. Chen, and Y.F. Xiao  
› Regulated Photon Transport in Chaotic Microcavities by Tailoring Phase Space  
Phys. Rev. Lett. 127, 273902 (2021)
2. W. Seemann, A. Kothe, C. Tessarek, G. Schmidt, S. Qiao, N. von den Driesch, J. Wiersig, A. Pawlis, G. Callsen, and Gutowski  
› Free-Standing ZnSe-Based Microdisk Resonators: Influence of Edge Roughness on the Optical Quality and Reducing Degradation with Supported Geometry  
Phys. Status Solidi B 258, 2100249 (2021)
3. H. Deng, G. L. Lippi, J. Mørk, J. Wiersig, S. Reitzenstein  
› Physics and Applications of High- $\beta$  Micro- and Nanolasers  
Adv. Optical Mater. 9, 2100415 (2021)

4. J. Kullig and J. Wiersig
  - › Microdisk cavities with a Brewster notch
  - Phys. Rev. Research 3, 023202 (2021)
5. M. Schmidt, I.H. Grothe, S. Neumeier, L. Bremer, M. von Helversen, W. Zent, B. Melcher, J. Beyer, C. Schneider, S. Höfling, J. Wiersig, and S. Reitzenstein
  - › Bimodal behavior of microlasers investigated with a two-channel photon-number-resolving transition-edge sensor system
  - Phys. Rev. Research 3, 013263 (2021)

## 2020

1. J. Kullig and J. Wiersig
  - › Weakly deformed optical microdisks: A third-order perturbation theory for transverse-magnetic modes
  - J. Phys. Commun. 4, 105020 (2020)
2. J. Kullig, C.-H. Yi, and J. Wiersig
  - › Resonance-assisted Tunneling in Weakly Deformed Microdisk Cavities
  - In: Y.-F. Xiao, C.-L. Zou, Q. Gong, and L. Yang, Ultra-High-Q Optical Microcavities, World Scientific
3. J. Wiersig
  - › Review of exceptional point-based sensors
  - Photonics Res. 8, 1457 (2020)
4. P. C. Burke, J. Wiersig, and M. Haque
  - › Non-Hermitian scattering on a tight-binding lattice
  - Phys. Rev. A 103, 012212 (2020)
5. M. Khanbekyan and J. Wiersig
  - › Decay suppression of spontaneous emission of a single emitter in a high-Q cavity at exceptional points
  - Phys. Rev. Research 2, 023375 (2020)
6. J. Wiersig
  - › Robustness of exceptional-point-based sensors against parametric noise: The role of Hamiltonian and Liouvillian degeneracies
  - Phys. Rev. A 101, 053846 (2020)
7. J. Wiersig
  - › Prospects and fundamental limits in exceptional point-based sensing
  - Nat. Commun. 11, 2454 (2020)
8. C.-H. Yi, J.-W. Lee, J. Ryu, J.-H. Kim, H.-H. Yu, S. Gwak, K.-R. Oh, J. Wiersig, C.-M. Kim
  - › Robust lasing of modes localized on marginally unstable periodic orbits
  - Phys. Rev. A 101, 053809 (2020)
9. J. Kullig, X. Jiang, L. Yang, and J. Wiersig
  - › Microstar cavities: An alternative concept for the confinement of light
  - Phys. Rev. Research 2, 012072(R) (2020)
10. M. Eichelmann and J. Wiersig
  - › Morphology of wetting-layer states in a simple quantum-dot wetting-layer model
  - J. Phys.: Condens. Matter 32, 075301 (2020)

## 2019

1. J. Wiersig
  - › Nonorthogonality constraints in open quantum and wave systems
  - Phys. Rev. Research 1, 033182 (2019)
2. J. Kullig and J. Wiersig
  - › High-order exceptional points of counterpropagating waves in weakly deformed microdisk cavities
  - Phys. Rev. A 100, 043837 (2019)
3. L.-K. Chen, Y.-Z. Gu, Q.-T. Cao, Q. Gong, J. Wiersig, Y.-F. Xiao
  - › Regular-Orbit-Engineered Chaotic Photon Transport in Mixed Phase Space
  - Phys. Rev. Lett. 123, 173903 (2019)
4. B. Melcher, B. Gulyak, and J. Wiersig
  - › Information-theoretical approach to the many-particle hierarchy problem
  - Phys. Rev. A 100, 013854 (2019)

5. M. Badel and J. Wiersig  
 › Corrected perturbation theory for transverse-electric whispering-gallery modes in deformed microdisks  
 Phys. Rev. A 99, 063825 (2019)
6. C.-H. Yi, J. Kullig, M. Hentschel, and J. Wiersig  
 › Non-Hermitian degeneracies of internal–external mode pairs in dielectric microdisks  
 Photonics Res. 7, 464 (2019)

## 2018

1. B Gulyak, B. Melcher, and J. Wiersig  
 › Determination of the full statistics of quantum observables using the maximum-entropy method  
 Phys. Rev. A 98, 053857 (2018)
2. J. Wiersig  
 › Non-Hermitian Effects Due to Asymmetric Backscattering of Light in Whispering-Gallery Microcavities  
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3. J. Wiersig  
 › Role of nonorthogonality of energy eigenstates in quantum systems with localized losses  
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4. Y.-K. Lu, P. Peng, Q.-T. Cao, D. Xu, J. Wiersig, Q. Gong, Y.-F. Xiao  
 › Spontaneous T-symmetry breaking and exceptional points in cavity quantum electrodynamics systems  
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5. S. Liu, J. Wiersig, W. Sun, Y. Fan, L. Ge, J. Yang, S. Xiao, Q. Song, and H. Cao  
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 Laser Photonics Rev. 12, 1800027 (2018)
6. J. Kullig, C.-H. Yi, and J. Wiersig  
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 Phys. Rev. A 98, 023851 (2018)
7. J. Kullig, C.-H. Yi, M. Hentschel, and J. Wiersig  
 › Exceptional points of third-order in a layered optical microdisk cavity  
 New J. Phys. 20, 083016 (2018)
8. E. Schlottmann, M. von Helversen, H. A. M. Leymann, T. Lettau, F. Krüger, M. Schmidt, C. Schneider, M. Kamp, S. Höfling, J. Beyer, J. Wiersig, and S. Reitzenstein  
 › Exploring the Photon-Number Distribution of Bimodal Microlasers with a Transition Edge Sensor  
 Phys. Rev. Appl. 9, 064030 (2018)
9. T. Lettau, H. A. M. Leymann, B. Melcher, and J. Wiersig  
 › Superthermal photon bunching in terms of simple probability distributions  
 Phys. Rev. A 97, 053835 (2018)
10. C.-H. Yi, J. Kullig, and J. Wiersig  
 › Pair of Exceptional Points in a Microdisk Cavity under an Extremely Weak Deformation  
 Phys. Rev. Lett. 120, 093902 (2018)
11. M. Khanbekyan  
 › Three-dimensional cavity-assisted spontaneous emission as a single-photon source: Two cavity modes and Rabi resonance  
 Phys. Rev. A 97, 023809 (2018)

## 2017

1. X. Jiang, L. Shao, S.-X. Zhang, X. Yi, J. Wiersig, L. Wang, Q. Gong, M. Loncar, L. Yang, Y.-F. Xiao  
 › Chaos-assisted broadband momentum transformation in optical microresonators  
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2. J.-H. Kim, J. Kim, C.-H. Yi, H.-H. Yu, J.-W. Lee, and C.-M. Kim  
 › Avoided level crossings in an elliptic billiard  
 Phys. Rev. E 96, 042205 (2017)
3. C.-H. Yi, J. Kullig, C.-M. Kim, and J. Wiersig  
 › Frequency splittings in deformed optical microdisk cavities

- Phys. Rev. A 96, 023848 (2017)
4. W. Chen, S.K. Özdemir, G. Zhao, J. Wiersig, and L. Yang  
‣ Exceptional points enhance sensing in an optical microcavity  
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  5. H. A. M. Leymann, D. Vorberg, T. Lettau, C. Hopfmann, C. Schneider, M. Kamp, S. Höfling, R. Ketzmerick, J. Wiersig, S. Reitzenstein, and A. Eckardt  
‣ Pump-Power-Driven Mode Switching in a Microcavity Device and Its Relation to Bose-Einstein Condensation  
Phys. Rev. X 7, 021045 (2017)
  6. J. Wiersig and J. Kullig  
‣ Optical microdisk cavities with rough sidewalls: A perturbative approach based on weak boundary deformations  
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  7. C.-H. Yi, J. Kullig, J.-W. Lee, J.-H. Kim, H.-H. Yu, J. Wiersig, and C.-M. Kim  
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  8. T. Lettau, H.A.M. Leymann, and J. Wiersig  
‣ Pitfalls in the theory of carrier dynamics in semiconductor quantum dots: Single-particle basis versus the many-particle configuration basis  
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‣ Chirality of a resonance in the absence of backscatterings  
Opt. Express 25, 3381 (2017)
  10. A. Foerster, H.A.M. Leymann, and J. Wiersig  
‣ Computer-aided cluster expansion: An efficient algebraic approach for open quantum many-particle systems  
Computer Physics Communications 212, 210 (2017)
  11. M. Khanbekyan and D.-G. Welsch  
‣ Cavity-assisted spontaneous emission of a single  $\Lambda$ -type emitter as a source of single-photon packets with controlled shape  
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1. N. Mertig, J. Kullig, C. Löbner, A. Bäcker, and R. Ketzmerick  
‣ Perturbation-free prediction of resonance-assisted tunneling in mixed regular-chaotic systems  
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2. J.-B. Shim, P. Schlagheck, M. Hentschel, and J. Wiersig  
‣ Nonlinear dynamical tunneling of optical whispering gallery modes in the presence of a Kerr nonlinearity  
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3. J. Kullig and J. Wiersig  
‣ Perturbation theory for asymmetric deformed microdisk cavities  
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4. M. Fanaei, A. Foerster, H. A. M. Leymann, and J. Wiersig  
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5. J. Kullig and J. Wiersig  
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6. M. Kraft and J. Wiersig  
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7. B. Peng, Ş. K. Özdemir, M. Liertzer, W. Chen, J. Kramer, H. Yılmaz, J. Wiersig, S. Rotter, and L. Yang  
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‣ Sub- and Superradiance in Nanolasers  
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2. A. Musiał, C. Hopfmann, T. Heindel, C. Gies, M. Florian, H. A. M. Leymann, A. Foerster, C. Schneider, F. Jahnke, S. Höfling, M. Kamp, and S. Reitzenstein  
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4. M. Schermer, S. Bittner, G. Singh, C. Ulysee, M. Lebental, and J. Wiersig  
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2. J. Kullig, C. Löbner, N. Mertig, A. Bäcker, and R. Ketzmerick  
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3. J. Wiersig  
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‣ Adiabatic formation of high-Q modes by suppression of chaotic diffusion in deformed microdiscs

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2. L. Ge, Q. Song, B. Redding, A. Eberspächer, J. Wiersig, and H. Cao  
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  4. H.A.M. Leymann, A. Foerster, M. Khanbekyan, and J. Wiersig  
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  5. H.A.M. Leymann, A. Foerster, and J. Wiersig  
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  6. Q. Song, L. Ge, J. Wiersig, and H. Cao  
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  7. A. Schlehahn, F. Albert, C. Schneider, S. Höfling, S. Reitzenstein, J. Wiersig, and M. Kamp  
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 ›Intensity fluctuations in bimodal micropillar lasers enhanced by quantum-dot gain competition  
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  10. M. Witzany, T.-L. Liu, J.-B. Shim, F. Hargart, E. Koroknay, W.-M. Schulz, M. Jetter, E. Hu, J. Wiersig, and P. Michler  
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3. J. Wiersig  
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5. M. Benyoucef, J.-B. Shim, J. Wiersig, and O.G. Schmidt  
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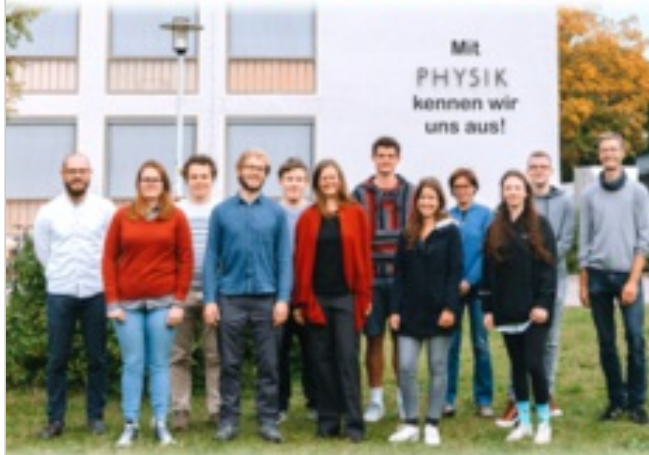
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