



## List of Publications, Patent Applications, and Talks

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01 October 2024

### Monographs and edited volumes

1. U. Wittrock, *Feldstrukturen, thermooptische Effekte und Wirkungsgrade von Festkörper-Rohrlasern*, dissertation (Shaker-Verlag, Aachen, 1994).
2. U. Wittrock, ed., *Proceedings of the 4th International Workshop on Adaptive Optics for Industry and Medicine* (Springer-Verlag, Heidelberg, 2005).
3. U. Wittrock, U. Kynast, T. Jüstel, and M. Bredol, eds., *6th Laser Ceramics Symposium*, Optical Materials **34** (6), 935-1002 (Elsevier, 2012).

### Papers in Peer-Reviewed Journals and Conference Proceedings

1. U. Wittrock, B. Eppich, and H. Weber, "Inside-pumped Nd:YAG tube laser," Opt. Lett. **16**, 1092-1094 (1991).
2. N. Hodgson, Q. Lü, S. Dong, B. Eppich, and U. Wittrock, "Hochleistungs-Festkörper-Laser in Stab-, Slab- und Rohrgeometrie," Laser und Optoelektronik **23** (3), 82-92 (1991).
3. U. Wittrock, "High-power Nd:YAG lasers," Advanced Materials **4**, 295 (1992).
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7. H. Weber, U. Wittrock, S. Dong, Q. Lü, and M. Kumkar, "High average power lasers with unstable resonators and high average power Q-switched lasers," in *Proceedings of the International Meeting of the EUREKA HPSSL*, Project EU226, Budapest (1994).
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9. B. Eppich, H. Weber, and U. Wittrock, "Beam quality of unstable and aberrated resonators," *invited*, in *Proceedings of the International Conference on Lasers '94*, Quebec, Canada, V. J. Corcoran and T. A. Goldman, eds., paper TN1 (1994).
10. U. Wittrock, S. Dong, B. Eppich, Q. Lü, N. Müller, and H. Weber, "Beam parameter products of unstable resonators," in *Beam Control, Diagnostics, Standards, and Propagation* (part of Photonics West 1995), L. W. Austin, A. Giesen, D. H. Leslie, eds., Proc. SPIE **2375**, 172-183 (1995).
11. Q. Lü, U. Wittrock, and S. Dong, "Photoelastic effects in Nd:YAG rod and slab lasers," *Optics & Laser Technology* **27**, 95 (1995).
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14. I. Buske, H.-M. Heuck, and U. Wittrock, "Master-oscillator-power-amplifier laser with adaptive aberration correction," in *Proceedings of the 3<sup>rd</sup> International Workshop on Adaptive Optics for Industry and Medicine*, S. R. Restaino and S. W. Teare, eds., 49-54 (Starline Printing Inc., Albuquerque, USA, 2002).
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21. H.-M. Heuck, I. Buske, U. Buschmann, H. Krause, and U. Wittrock, "A novel micro-processor-controlled high-voltage driver for deformable mirrors," in *Proceedings of the 4<sup>th</sup> International Workshop on Adaptive Optics for Industry and Medicine*, U. Wittrock, ed., 73-81 (Springer, Heidelberg, 2005).
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49. C. Vorholt and U. Wittrock, "Intra-cavity pumped Yb:YAG thin-disk laser with 1.74% quantum defect," *Opt. Lett.* **40**, 4819-4822 (2015).
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51. P. Rausch, S. Verpoort, and U. Wittrock, "Unimorph piezoelectric deformable mirrors for space telescopes," *Space Telescopes and Instrumentation 2016: Optical, Infrared, and Millimeter Wave*, Proc. SPIE **9904**, 990468 (2016).
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53. G. Durand, J. Amiaux, M. Sauvage, J Austin, S. Chesne, C. Collette, S. Helgouashl, J. Pareschi, Y. Penfornis, G. Valsecchi, and U. Wittrock, "TALC a far-infrared 20m space telescope and the ELICSIR consortium to reach TRL 3," in *Proceedings of the 37th ESA Antenna Workshop*, Noordwijk, Netherlands (2016).
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58. O. Kazasidis, S. Verpoort, and U. Wittrock, "Aberration balancing using an image-sharpness metric," *J. Opt. Soc. Am. A* **36**, 1418-1422 (2019).
59. O. Kazasidis, S. Verpoort, and U. Wittrock, "Sensor for dynamic focus control of a deformable mirror," *Appl. Opt.* **59**, 5625-5630 (2020).
60. S. Verpoort, M. Bittner, and U. Wittrock, "Fast focus-shifter based on a unimorph deformable mirror," *Appl. Opt.* **59**, 6959-6965 (2020).
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63. S. Leitz, M. Gerhards, S. Verpoort, U. Wittrock, M. Freudling, A. Grzesik, M. Erhard, and P. Hallibert, "Vibration and shock testing of a 50 mm aperture unimorph deformable mirror," *International Conference on Space Optics (ICSO)*, virtual, poster and proceedings, P140 (2021).
64. M. Freudling, A. Grzesik, M. Erhard, S. Leitz, S. Verpoort, and U. Wittrock, "Space-qualified piezo based deformable mirror for future Instruments with active optics," *International Conference on Space Optics (ICSO)*, virtual, Proc. SPIE **11852**, 1185231-11 (2021).
65. I. Alonso et al, "Cold atoms in space: community workshop summary and proposed road-map," *EPJ Quantum Technology* **9** (2022).
66. T. Fiehler, C. Saraceno, G. Steinmeyer, and U. Wittrock, "A pitfall in autocorrelation measurements of laser radiation," *Opt. Expr.* **32**, 36811-36823 (2024) [doi: 10.1364/OE.533567](https://doi.org/10.1364/OE.533567).

### Other Publications and Awards

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2. H.-M. Heuck, S. Borneis, E. Gaul, C. Häfner, A. Kudryashov, T. Kühl, P. Wiewior, and U. Wittrock, "Beam diagnostics and adaptive optics for PHELIX," in GSI Scientific Report 2003, Gesellschaft für Schwerionenforschung, Darmstadt, 124 (2004).
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4. V. Bagnoud, A. Blazevich, R. Bock, S. Borneis, H. Brand, C. Bruske, J. Caird, U. Eisenbarth, J. Fils, R. Fuchs, S. Götte, M. Hagemann, T. Hahn, H.-M. Heuck, C. Hildebrandt, D. H. H. Hoffmann, D. Javorkova, H.-J. Kluge, F. Knobloch, Th. Kühl, S. Kunzer, M. Kreutz, R. Lotz, T. Merz, P. Neumayer, E. Onkels, D. Reemts, M. Roth, H. Schmidt, C. Spielmann, R. Stenner, A. Tauschwitz, R. Thiel, U. Thiemer, D. Ursescu, K. Witte, U. Wittrock, and B. Zielbauer, "PHELIX progress report," in GSI Scientific Report 2005, Gesellschaft für Schwerionenforschung, Darmstadt, 356-358 (2006).
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8. R. Köjer, P. Welp, S. Verpoort, H.-M. Heuck, K. Albers, and U. Wittrock, "Adaptive Optik für Festkörperlaser," in InnovationsForum Photonik, Posterwettbewerb 2007, award for research accomplishments with a perspective for practical applications, Goslar (2007).
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12. O. Kazasidis and U. Wittrock, "Interferometric measurement of the temperature coefficient of the refractive index  $dn/dT$  and the coefficient of thermal expansion of Pr:YLF laser crystals: erratum," Opt. Expr. **23**, 24097 (2015).
13. C. Vorholt and U. Wittrock, "Wavelength control by angle-tuning of the laser radiation in an intracavity pumped Yb:YAG thin-disk laser," awarded in: ASSL Best Student Oral and Poster Presentations - IPG Best Students Poster Presentations (2015).

## Patent Applications / Patents

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2. U. Wittrock, *Festkörperlaseranordnung (Slab-Laser)*, German Patent Application DE 4428968 A1 (1994).
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4. U. Wittrock, *Faserlaser mit einer Faser als aktivem Material und einer Pumplichtquelle zum optischen Pumpen der Faser*, German Patent Application DE 19635608 A1 (1996).
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## Talks

1. U. Wittrock, J. Eicher, and N. Hodgson, "Efficiency, thermal stress, and thermal lensing of a solid state tube laser," presented at the Fourth International Meeting of the EUREKA HPSSL Project EU226, Paris (1989).
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### Supervised Ph. D. Theses\*

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2. H. Zimer, "Leistungskalierung nicht-planarer, monolithischer Ringlaser," dissertation, Friedrich-Schiller-Universität Jena, 2005 (Mensch & Buch Verlag, 2005).
3. H. Heuck, "Einsatz adaptiver Optik und Kompensation chromatischer Aberration beim Petawattlaser PHELIX," dissertation, Technische Universität Clausthal, 2006 (Verlag H. Balck, Clausthal-Zellerfeld, 2007).
4. P. Welp, "Festkörperlaser mit resonatorinterner Kompensation von Aberrationen durch adaptive Spiegel," dissertation, Westfälische Wilhelms-Universität Münster, 2008.
5. S. Verpoort, "Entwicklung neuartiger deformierbarer Spiegel für den Einsatz in Hochleistungslasern," dissertation, Universität Duisburg-Essen, 2011 (Verlag Dr. Hut, München, 2011).
6. K. Albers, "Neue Konzepte für Nd:YVO4-Laser," dissertation, Universität Hamburg, 2012.
7. Christian Vorholt, "Die thermodynamischen Grenzen des optischen Pumpens – Untersuchung eines resonatorintern gepumpten Scheibenlasers," dissertation, Westfälische Wilhelms-Universität Münster, 2016.
8. Peter Rausch, "Deformierbare Spiegel für Weltraumteleskope und Hochleistungslaser," dissertation, Westfälische Wilhelms-Universität Münster, 2016.
9. Julian Perchermeier, "Untersuchung eines Yb:YAG-Scheibenlasers im Hinblick auf eine Aberrationskorrektur mit einem deformierbaren Resonatorspiegel," dissertation, Westfälische Wilhelms-Universität Münster, 2017.
10. O. Kazasidis, "Methods for controlling deformable mirrors with hysteresis," dissertation, TU Delft (March 2021).

\*) Muenster University of Applied Sciences does not grant Ph. D. degrees. The research for the listed dissertations was performed at the Photonics Laboratory at Muenster University of Applied Sciences. However, the Ph. D. degrees were granted by cooperating universities.

### Externally Reviewed Ph. D. Theses

1. M. Kahle, "Entwicklung eines hocheffizienten Lasersystems mit minimalen thermischen Effekten," dissertation, Friedrich-Schiller-Universität Jena, 2017.
2. J. Pilař, "Adaptive optics for high average-power laser systems," dissertation, Czech Technical University of Prague, 2017.
3. H. Liebetrau, "Erzeugung und zeitliche Streckung kontrast-optimierter Seed-Pulse für Hochintensitätslaser bei 1030 nm," dissertation, Friedrich-Schiller-Universität Jena, 2017.
4. H. Gong, "Optical field sampling for imaging and optical testing," dissertation, Delft University of Technology, 2019.
5. L. Bremer, "Dynamic High Power Laser Beam Shaping in Directed Energy Deposition," dissertation, University of Twente, 2024.