

# Curriculum Vitae

## Personal

Full name: Wolf Maximilian Harmening  
Date of birth: 16.03.1978  
Family status: Married, two children  
Nationality: German  
Office address: Department of Ophthalmology  
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## Research Interests

Optical, physiological and perceptual characteristics of human and animal vision.  
Methods: adaptive optics, high-resolution retinal imaging, visual psychophysics, behavioral testing

## Education and academic positions

- 2018 – Now Faculty member of the Bonn International Graduate School of Neuroscience, BIGS
- 2013 – Now Research group leader (*DFG Emmy Noether-Nachwuchsgruppenleiter*) at the Department of Ophthalmology, University of Bonn, Germany
- 2011 – 2013 Post-doctoral fellow at the School of Optometry, University of California, Berkeley, USA, with Prof. Dr. Austin Roorda
- 2008 – 2010 Research assistant at the Department of Zoology and Animal Physiology, Rheinisch Westfälische Technische Hochschule Aachen (RWTH), Aachen, Germany
- 2005 – 2008 Ph.D. program and dissertation on *Spatial vision in barn owls*, RWTH Aachen  
Grade: summa cum laude; Supervisor: Prof. Dr. Hermann Wagner
- 2004 – 2005 Diploma thesis in biology on *Hyperacute perception in barn owls*, RWTH Aachen  
Major: animal physiology
- 2000 – 2005 Biology, RWTH Aachen
- 1998 – 1999 Electrical engineering, RWTH Aachen
- 1997 – 1998 Electrical engineering, Distance Teaching University, Hagen, Germany
- 1997 Abitur, Helmholtz-Gymnasium, Bonn, Germany

## Competitive prizes and awards

- 2015 Best scientific talk at the annual meeting of the German Retina Society, Göttingen
- 2014 „Reinhard von König Förderpreis für Technik und Fortschritt“, Stiftung Schloss Fachsenfeld, Aalen, Germany
- 2014 Research grant of the Carl Zeiss Education and Science Fund
- 2013 Emmy Noether-Program of the German Research Foundation (DFG)
- 2013 Return stipend (*Rückkehrstipendium*) awarded by the DFG
- 2012 Finalist in the return program of the federal Ministry of Innovation, Science and Research (*NRW-Rückkehrerprogramm*)
- 2011 Two-year research fellowship awarded by the DFG

- 2011 Feodor-Lynen research fellowship awarded by the Alexander von Humboldt Foundation (*Returned by awardee to avoid overlap with DFG fellowship, see above*)
- 2009 Awarded the “Borchers Plakette” for excellent dissertation, RWTH Aachen
- 2007 Postgraduate scholarship for highly qualified doctoral candidates, RWTH Aachen
- 2006, 2007 Travel stipends awarded by the DFG and the German Neuroscientific Community for visiting international and national conferences: European Conference on Visual Perception (ECPV) 2007, Arezzo, Italy; the German Neuroscientific Meeting 2007, Göttingen, Germany; and ECPV 2006, St. Petersburg, Russia

### Research funding

- 2019 – 2021 *Binocular scanning laser ophthalmoscopy (BinoSLO)*  
PI: Dr. Wolf Harmening; Dr. Eberhard und Hilde Rüdiger Stiftung, Budget: 39k EUR
- 2018 – 2021 *Adaptive optics imaging and micro-stimulation to yield in vivo single-cell biomarker of retinal function and dysfunction in the human retina.*  
PI: Dr. Wolf Harmening; German Research Foundation, DFG, SPP 2127- Gene and cell based therapies to counteract neuroretinal degeneration (Ha 5323/6-1)  
Budget: 318k EUR
- 2018 – 2020 *Scotopic adaptive optics scanning laser ophthalmoscopy (Scotopic-AOSLO)*  
PI: Dr. Wolf Harmening; Gertrud Kusen Stiftung, Hamburg, Budget: 76k EUR
- 2015 – 2016 *High-contrast single cell micro-stimulation with adaptive optics (HC-AOSLO)*  
PI: Dr. Wolf Harmening; Carl Zeiss Förderfonds, Budget: 60k EUR
- 2013 – 2020 *Advanced adaptive optics instrumentation for ophthalmic imaging and function testing: the single cell approach to visual function and dysfunction*  
PI: Dr. Wolf Harmening; German Research Foundation, DFG (Ha 5323/5-1)  
Budget: 2.1Mio EUR
- 2011 – 2013 *Single cone contributions to color perception using adaptive optics*  
PI: Dr. Austin Roorda; National Eye Institute, NIH (EY021642)  
Role: primary postdoctoral researcher, Budget: 400k EUR
- 2011 – 2012 *Probing retinal and neural mechanisms of vision by hyperacute optical stimulation of single photoreceptor cells*  
PI: Dr. Wolf Harmening; German Research Foundation, DFG (Ha 5323/2-1)  
Budget: 100k EUR
- 2007 – 2010 *Mechanisms of active vision in barn owls: From atomic head movements to complex visual behaviors*  
PI: Dr. Hermann Wagner; German Research Foundation, DFG (Wa 606/17-1)  
Role: primary postdoctoral researcher, Budget: 200k EUR

Total funding of own proposals: 2.7 Mio EUR

### Teaching activity

- 2018 Lab during the European Summer School on Eye Movements (ESSEM 2018)
- 2018 Lab as part of the Bonn International Graduate School of Neuroscience summer school 2018
- 2016 – Now Journal Club and scientific methods for orthoptic students
- 2013 – Now Internal seminar, *Fortbildung f. ärztliche und wissenschaftliche Mitarbeitende*, Miscellaneous vision science topics
- 2009 Seminar *Neurobiology* for undergraduates, with Prof. Dr. Hermann Wagner (HW)
- 2009 Seminar *Statistics* for graduate students, with Prof. Dr. Jörg Mey
- 2009 Lecture *Biological Information Processing*, topic: Stereovision

- 2008 – 2010 Lecture *Ethology*, topics: *Stereovision, Conditioning, Cognition*
- 2008 Seminar *Neurobiology* for undergraduates, with HW
- 2008 Internal seminar, topic: *Error bars*
- 2008 Seminar *Ethology*, with HW
- 2006 – 2010 Advanced lab class Biological information processing for undergraduates, Course: *Visual psychophysics – experiments and models*
- 2005 – 2010 Lab class *Animal physiology* for undergraduates, course: *Visual psychophysics*

### Scientific mentoring

- 2019 – Now Ph.D. thesis of Julius Ameln, *Cone-targeted psychophysics in retinal disease*
- 2019 – Now Ph.D. thesis of Julia Hofmann, *Eye motion estimation from SLO imagery*
- 2018 – 2019 Master thesis of Lennart Domdei, *Binocular scanning laser ophthalmoscopy*
- 2018 Bachelor thesis of Sobika Suguna Sabesan, *Psychophysical determination of polarization perception during dark adaptation.*
- 2016 – 2017 Bachelor thesis of Lennart Domdei, *High-contrast light modulation for zero-background micro-stimulation.*
- 2016 – Now Ph.D. thesis of Jenny Reiniger, *Fundus-guided psychophysics.*
- 2014 – Now Ph.D. thesis of Niklas Domdei, *Single-cone psychophysics.*
- 2008 – 2010 Co-supervision of Ph.D. thesis of Anne Schüller, *Evaluating experimental tools for German second grammar school curriculum in mathematics and biology: The stereo acuity toolbox.*
- 2010 Bachelor thesis of Anna-Marina van der Meer, *The influence of stimulus configuration in visual hyperacuity tasks on test repeatability.*
- 2009 Supervision of advanced practical course of Anne Lobecke, *Vernier acuity and its relation to the optics of the human eye.*
- 2008 – 2009 Co-supervision of diploma thesis of Julius Orłowski, *Night vision in barn owls: visual resolution and absolute sensitivity under dark adaptation.*
- 2005 – 2006 Co-supervision of first state examination of Anna Schornstein, *Psychophysical measurement of stereo and Vernier acuity under dark adaptation in the human visual system.*
- 2005 – 2006 Co-supervision of diploma thesis of Katrin Göbbels, *Vernier acuity in barn owls (*Tyto alba*).*

### Service to the scientific community

Ad-hoc referee for international and national peer-reviewed journals:

*Vision Research; Journal of Vision; Proceedings of the National Academy of Sciences; Journal of Comparative Physiology A; Journal of Ornithology; Der Ophthalmologe; Visual Neuroscience; Biomedical Optics Express; PLOS One; Biological Cybernetics; British Journal of Ophthalmology; Optometry and Vision Science*

Ad-hoc referee for international and national research agencies:

*German Research Foundation (DFG, Germany); Biotechnology and Biological Sciences Research Councils (BBSRC, UK); MJ Murdock charitable trust (USA); FWF Austrian Science Fund (Austria); Swiss National Science Foundation (SNF, Switzerland); Moorfields Eye Charity, Springboard Award (London, UK)*

## Conference contributions:

- 2018: Organizer and chair of symposium at the annual meeting of the *Deutsche Ophthalmologische Gesellschaft, DOG* (Bonn, Germany), Das Bild verstehen: Grundlagen aktueller retinaler Bildgebungstechniken.
- 2017: Organizer and chair of symposium at the *European Conference on Visual Perception 2017* (Berlin, Germany), Seeing cells: linking individual photoreceptor function to visual perception.
- 2016: Scientific judge for OSA funded student awards at the *European Meeting on Visual and Physiological Optics 2016* (Antwerpen, Belgium)
- 2006: Member of the scientific committee of the *European Conference on Visual Perception 2006* (St. Petersburg, Russia)

## Foundation membership and consultant services:

- Since 2017: Member of the scientific advisory board for the *Dr. Eberhard and Hilde Rüdiger charitable trust (Stiftung)* (NRW, Germany)
- Since 2013: Contributing member of annual Preceptorship meetings for international ophthalmology practitioners.

**Publications**

(\*denotes equal contribution)

**Peer-reviewed journal articles and book chapters**

1. **Harmening WM**, Sincich LC (2019) Adaptive Optics for Photoreceptor-Targeted Psychophysics. *High Resolution Imaging in Microscopy and Ophthalmology*. Springer, Cham. pp 359-375. DOI 10.1007/978-3-030-16638-0\_17
2. Domdei N, Linden M, Reiniger JL, Holz FG, **Harmening WM** (2019) Eye tracking-based estimation and compensation of chromatic offsets for multi-wavelength retinal microstimulation with foveal cone precision. *Biomedical Optics Express*, 10: 4126-4141. DOI 10.1364/BOE.10.004126
3. Meyer J, Larsen P, Strack C, **Harmening WM**, Holz FG, Schmitz-Valckenberg S, Krohne TU (2019) Optical coherence tomography angiography (OCT-A) in an animal model of laser-induced choroidal neovascularization. *Experimental Eye Research*, 184: 162-171. DOI 10.1016/j.exer.2019.04.002
4. Reiniger JL, Lobecke AC, Sabesan R, Bach M, Verbakel F, de Brabander J, Holz FG, Berendschot TTJM, **Harmening WM** (2019) Habitual higher order aberrations affect Landolt but not Vernier acuity. *Journal of Vision*, 19(5): 1-15. DOI 10.1167/19.5.11
5. Domdei N\*, Domdei L\*, Reiniger J, Linden M, Holz FG, Roorda A, **Harmening WM** (2018) Ultra-high contrast retinal display system for single photoreceptor psychophysics. *Biomedical Optics Express*. 9: 157-172 DOI 10.1364/BOE.9.000157
6. Fang PP, Domdei N, Herrmann P, Schmitz-Valckenberg S, Holz FG, **Harmening WM**, Krohne TU (2017) Minimal optical coherence tomography B-scan density for reliable detection of intra- and subretinal fluid in patients with macular diseases. *Retina*. DOI 10.1097/IAE.0000000000001918
7. Birtel J, **Harmening WM**, Krohne TU, Holz FG, Issa P, Herrmann P (2017) Retinal injury following laser pointer exposure—a systematic review and case series. *Deutsches Ärzteblatt International*. 114: 831-837. DOI 10.3238/arztebl.2017.0831
8. Tuten WS\*, **Harmening WM\***, Sabesan R, Roorda A, Sincich LC (2017) Spatiochromatic interactions between individual cone photoreceptors in the human retina. *The Journal of Neuroscience*, 37(39) 9498-9509. DOI 10.1523/JNEUROSCI.0529-17.2017

9. **Harmening WM** (2017) [Contrast sensitivity and visual acuity in animals] Kontrastempfindlichkeit und Sehschärfe bei Tieren. *Der Ophthalmologe*. DOI 10.1007/s00347-017-0561-4
10. Pfau M, Lindner M, Mueller, PL, Birtel J, Finger RP, **Harmening WM**, Fleckenstein M, Holz FG, Schmitz-Valckenberg S (2017) Effective dynamic range and retest-reliability of two-color scotopic fundus-controlled perimetry using the S-MAIA in patients with macular diseases. *Investigative Ophthalmology & Visual Science*. DOI 10.1167/iovs.17-21454
11. Reiniger JL\*, Domdei N\*, Pfau M, Müller PL, Holz FG, **Harmening WM** (2017) Potential of adaptive optics for the diagnostic evaluation of hereditary retinal diseases. *Klinische Monatsblätter der Augenheilkunde*, 234: 311-319. DOI 10.155/s-0043-100631
12. Ratnam K, Domdei N, **Harmening WM\***, Roorda A\* (2017) Benefits of retinal image motion at the limits of spatial vision. *Journal of Vision*, 17(1): 30. DOI 10.1167/17.1.30
13. **Harmening WM** (2017) Adaptive optics for Ophthalmology. *Der Ophthalmologe*. 114(3): 196-197. DOI 10.1007/s00347-016-0413-7
14. Reiniger JL, Domdei N, Holz FG, **Harmening WM** (2017) Technical principles of adaptive optics in ophthalmology. *Der Ophthalmologe*. 114:198-205. DOI 10.1007/s00347-017-0440-z
15. Sincich LC, Sabesan R, Tuten WS, Roorda A, **Harmening WM** (2016) Functional Imaging of Cone Photoreceptors. In: Baraas R, Marshall J, Kremers J (eds.) *Human Color Vision. Volume 5 of the Springer Series in Vision Research*. pp 71-104
16. Domdei N, Reiniger JL, Pfau M, Charbel Issa P, Holz FG, **Harmening WM** (2016) Histology in the living eye: non-invasive microscopic structure and function analysis of the retina with adaptive optics. *Der Ophthalmologe*. DOI 10.1007/s00347-016-0411-9
17. Pfau M, Lindner M, Fleckenstein M, Finger RP, Rubin G, **Harmening WM**, Morales MU, Holz FG, Schmitz-Valckenberg S (2016) Test–retest reliability of scotopic and mesopic fundus-controlled perimetry using a modified MAIA in normal eyes. *Ophthalmologica*. DOI 10.1159/000453079
18. Meyer J, Fang PP, Krohne TU, **Harmening WM**, Holz FG, Schmitz-Valckenberg S (2016) Optical coherence tomography angiography (OCT-A) in rats. *Der Ophthalmologe*. 114(2): 140-147. DOI 10.1007/s00347-016-0309-6
19. Müller PL, Müller S, Gliem M, Küpper K, Holz FG, **Harmening WM\***, Issa P\* (2016) Perception of Haidinger brushes in macular disease depends on macular pigment density and visual acuity. *Investigative Ophthalmology & Visual Science*, 57(3): 1448-1456
20. Fang PP, **Harmening WM**, Müller PL, Lindner M, Krohne TU, Holz FG (2015) Technical principles of OCT angiography. *Der Ophthalmologe*, 113(1):6-13
21. Bruce KS, **Harmening WM**, Langston BR, Tuten WS, Roorda A, Sincich LC (2015) Normal perceptual sensitivity arising from weakly reflective cone photoreceptors. *Investigative Ophthalmology & Visual Science*, 56(8):4431-4438
22. **Harmening WM\***, Tuten WS\*, Roorda A, Sincich LC (2014) Mapping the perceptual grain of the human retina. *The Journal of Neuroscience*, 34(16):5667-5677
23. **Harmening WM**, Tiruveedhula P, Roorda A, Sincich LC (2012) Measurement and correction of transverse chromatic offsets for multi-wavelength retinal microscopy. *Biomedical Optics Express*, 3(9): 2066-2077
24. Scriba M, **Harmening WM**, Mettke-Hofman C, Vyssotski A, Roulin A, Wagner H, Rattenborg N (2012) Evaluation of two minimally-invasive techniques for electroencephalogram recording in wild or freely behaving animals. *Journal of Comparative Physiology A*, 199(3):183-189
25. Orłowski J, **Harmening WM**, Wagner H (2012) Night vision in barn owls: visual acuity and contrast sensitivity under dark adaptation. *Journal of Vision*, 12(4):1-8
26. **Harmening WM**, Wagner H (2011) From optics to attention: Visual perception in the barn owl. *Journal of Comparative Physiology A*, 197(11): 1031-42

27. **Harmening WM**, Orłowski J, Ben-Shahar O, Wagner H (2011) Overt attention towards oriented objects in free viewing barn owls. *Proceedings of the National Academy of Sciences*, 108(20): 8461-8466
28. van der Willigen RF\*, **Harmening WM\***, Vossen S, Wagner H (2010) Disparity sensitivity in man and owl: psychophysical evidence for equivalent perception of shape-from-stereo. *Journal of Vision*, 10(1): 10, 1-11
29. **Harmening WM**, Nikolay P, Orłowski J, Wagner H (2009) Spatial contrast sensitivity and grating acuity of barn owls. *Journal of Vision*, 9(7): 13, 1-12
30. **Harmening WM** (2009) A case of quasi-infinite visual acuity and illusionary size. *Perception*, 38(5) 781-783
31. Ohayon S, **Harmening WM**, Wagner H, Rivlin E (2008) Through a barn owl's eyes: interactions between scene content and visual attention. *Biological Cybernetics*, 98(2) 115-132
32. **Harmening WM**, Vobig MA, Walter P, Wagner H (2007) Ocular aberrations in barn owl eyes. *Vision Research*, 47(23), 2934-2942
33. **Harmening WM**, Göbbels K, Wagner H (2007) Vernier acuity in barn owls. *Vision Research*, 47(7), 1020-1026

#### Manuscripts submitted/pre-prints/in preparation

34. Birtel J, Gliem M, **Harmening WM**, Holz FG (201X) Imaging in ophthalmic genetics – The role of imaging in phenotyping of inherited ocular diseases. In: *Practical Genomics for Clinical Ophthalmology, Part 1, Chapter 7*. Submitted
35. Bruce KS, **Harmening WM**, Tuten WS, Roorda A, Sincich L (201X) Threshold and summation variability among human cone photoreceptors. In preparation

#### Non-peer reviewed

1. **Harmening WM** (2016) Adaptive Optiken: Möglichkeiten und Grenzen. *Ophthalmologische Nachrichten* 09.2016: 10-11
2. **Harmening WM** (2015) "Adaptive Optics Scanning Laser Ophthalmoscope": Einzelzellfunktionsprüfung möglich. Aus: Visuelle Wahrnehmung wahrgenommen. Abschiedssymposium für Michael Bach in Freiburg. Teil 2. *Z prakt Augenheilkd* 36: 541-544
3. **Harmening WM** (2015) Koppelung von Bildgebung und funktioneller Testung. *Ophthalmologische Nachrichten* 09.2015: 13-14
4. **Harmening WM** (2013) Adaptive Optiken – Scanning Laser Ophthalmoskopie, AOSLO. *Spitzenforschung in der Ophthalmologie. Deutsche Ophthalmologische Gesellschaft*, Ausgabe 2013, ISSN: 1861-4620. pp 92-93
5. **Harmening WM** (2013) Zellgenaue Funktionsprüfung. *Ophthalmologische Nachrichten* 09.2013: 17-18
6. **Harmening WM** (2008) Fundamentals of spatial vision in the barn owl — Ocular aberrations, grating acuity, contrast sensitivity, and vernier acuity. [PhD Thesis] *Rheinisch-Westfälische Technische Hochschule Aachen*. URN: urn:nbn:de:hbz:82-opus-23108

#### Invited talks

1. **Harmening WM** (2018) Neuronale Bildverarbeitung auf Einzelzellebene. *Tagung der Bielschowsky Gesellschaft für Schielforschung und Neuroophthalmologie*, Münster, Germany
2. **Harmening WM** (2018) Einzelzellpsychophysik durch adaptive Optiken. *Jahrestagung der Deutschen Ophthalmologischen Gesellschaft (DOG 2018)*, Bonn, Germany

3. **Harmening WM** (2018) Adaptive optics-SLO single photoreceptor imaging and psychophysics. *18<sup>th</sup> EURETINA Congress*, Vienna, Austria
4. **Harmening WM** (2018) Single cell stimulation of the living human retina. *Caesar Seminar Series*, Bonn, Germany
5. **Harmening WM** (2017) Visual psychophysics by single cell stimulation. *Seminar lecture at the Institute for Psychology*, Bern, Switzerland.
6. **Harmening WM** (2017) Adaptive Optik für die zellaufgelöste Bildgebung und Funktionstestung der Netzhaut. *Annual Meeting of the German Ophthalmology Society (DOG)*, Berlin, Germany.
7. **Harmening WM** (2017) Single cell psychophysics – Towards foveal cones and rods. *Imaging Series at the Institute of Ophthalmology and Moorfields Eye Hospital*, London, Great Britain
8. **Harmening WM** (2017) Single cell (?) psychophysics. *Kolloquium im Sonderforschungsbereich Wahrnehmung*, Justus-Liebig Universität Giessen, Germany
9. **Harmening WM** (2016) Cellular scale visual function testing. Where we're at. *Vision science seminar, University of Pennsylvania*, Philadelphia, PA, USA.
10. **Harmening WM** (2016) Adaptive optics in visual neuroscience-basics & clinical applications. *Argentinian and Brazilian Chapter of the Association for Research in Vision and Ophthalmology (ARVO) Annual Meeting* Buenos Aires, Argentina
11. **Harmening WM** (2016) Single-cell psychophysics; mapping the perceptual grain of the human retina. *8<sup>th</sup> European Meeting on Visual and Physiological Optics*. Antwerp, Belgium.
12. **Harmening WM** (2016) Adaptive optics in visual neuroscience-basics & clinical applications. *Symposium: Human visual system – Physiology, pathophysiology, rehabilitation and restoration*, Otto-von-Guericke University Magdeburg, Germany.
13. **Harmening WM** (2016) Adaptive Optiken für die ophthalmologische Bildgebung und Funktionsprüfung. *Novartis Makula Update*. Bonn, Germany.
14. **Harmening WM** (2016) Adaptive Optiken für die ophthalmologische Bildgebung und Funktionsprüfung. *178. Versammlung des Vereins Rheinisch-Westfälischer Augenärzte*. Bonn, Germany.
15. **Harmening WM** (2015) Einzelzellpsychophysik. Symposium: Vom Licht zur Wahrnehmung, *Festschrift Prof. Michael Bach*, Universität Freiburg, Germany.
16. **Harmening WM**, Tuten WS, Sincich LC, Roorda A, Holz FG (2015) Single-cone colour perimetry – Where are we now? *Annual Meeting of the German Ophthalmology Society (DOG)*, Berlin, Germany.
17. **Harmening WM**, Roorda A, Holz FG (2015) Adaptive Optiken. *Annual Meeting of the German Ophthalmology Society (DOG)*, Berlin, Germany.
18. **Harmening WM** (2015) Limits of contrast vision and why do owls have poor visual acuity despite their near-perfect optics (with considerations about visual acuity in the animal kingdom). *Annual Meeting of the German Ophthalmology Society (DOG)*, Berlin, Germany.
19. **Harmening WM** (2015) Monitoring of photoreceptor survival by AO-SLO. *VI. International Symposium on AMD*, Baden-Baden, Germany.
20. **Harmening WM**, Domdei N, Holz FG (2015) Neue adaptive Optiken für die ophthalmologische Bildgebung und Funktionsprüfung: Untersuchung visueller Funktion und Dysfunktion auf Einzelzellebene. *28. Tagung der retinologischen Gesellschaft*, Göttingen, Germany.
21. **Harmening WM** (2015) The potential of adaptive optics for retinal degenerations. *10<sup>th</sup> Pro Retina Research-Colloquium*, Potsdam, Germany.
22. **Harmening WM** (2015) Einzelzellpsychophysik. *A<sup>4</sup> Seminar*, Hochschule Aalen, Germany.
23. **Harmening WM** (2015) Single cell psychophysics. *4<sup>th</sup> Winter School and Final OPAL meeting (Optical and Adaptational Limits of Vision)*, Murcia, Spain

24. **Harmening WM**, Tuten WS, Sabesan R, Holz, FG, Roorda A, Sincich LC (2014) Retinale Morphometrie und Funktionsdiagnostik mittels höchstauflösendem adaptive Optics SLO.22. *Jahrestagung der Gesellschaft der Augenärzte Sachsen-Anhalts und Thüringens e.V.*, Magdeburg, Germany
25. **Harmening WM**, Tuten WS, Bruce KS, Holz FG, Roorda A, Sincich LC (2014) Probing single photoreceptor function with adaptive optics. *Macula of Paris, 8th International meeting*, Paris, France
26. **Harmening WM**, Tuten WS, Bruce KS, Holz FG, Roorda A, Sincich LC (2013) Visual function testing on single cone level with a multi-wavelength adaptive optics SLO. *13th EURETINA congress*, Hamburg, Germany
27. **Harmening WM**, Holz FG, Roorda A (2013) Perspektiven retinaler Bildgebung mit adaptiven Optiken bei neurodegenerativen Erkrankungen. *Annual Meeting of the German Ophthalmology Society (DOG)*, Berlin, Germany
28. **Harmening WM**, Holz FG, Roorda A (2013) Retinale Morphometrie und Funktionsdiagnostik mittels höchstauflösendem adaptive optics SLO. *DOG, Berlin*, Germany
29. **Harmening WM**, Sincich LC, Tiruveedhula P, Roorda A (2012) Measurement and correction of transverse chromatic aberration with the adaptive optics scanning laser ophthalmoscope. *Frontiers in Optics: Optical Society of America Annual Meeting*, Rochester, New York, USA
30. **Harmening WM**, Göbbels K, Orłowski J, Nikolay P, Wagner H (2008) Vision in a nocturnal predator: the barn owl. *AVA animal vision meeting*, Cambridge, UK

#### Conference talks and posters

1. Dysli C, Thiele S, Reiniger JL, Müller P, Holz FG, **Harmening WM** (2019) High magnification module – Photoreceptor resolved imaging without adaptive optics. *EURETINA*, Paris, France
2. Reiniger J, Domdei N, Linden M, Holz F, **Harmening WM** (2019) Relationship between the foveal photoreceptor mosaic and adaptive optics corrected visual acuity. *ARVO*. Vancouver, Canada
3. Domdei N, Reiniger J, Linden M, Holz F, **Harmening WM** (2019) Mapping the sensitivity of the central fovea with cone-targeted microstimulation. *ARVO*. Vancouver, Canada
4. Reiniger JL, Müller PL, Thiele S, Dysli C, Pfau M, Hess K, Holz FG, **Harmening WM** (2018) High Magnification Module – Photoreceptor resolved imaging without adaptive optics. *International Spectralis Symposium*, Bonn, Germany
5. Reiniger JL, Holz FG, **Harmening WM** (2018) Korrelation zwischen fovealer Rezeptordichte und maximaler Sehschärfe. *Annual Meeting of the German Ophthalmology Society (DOG 2018)*, Bonn, Germany
6. Domdei N, Domdei L, Reiniger JL, Holz FG, **Harmening WM** (2018) Funktionelle Untersuchung einzelner Stäbchen-Photorezeptoren in vivo. *Annual Meeting of the German Ophthalmology Society (DOG 2018)*, Bonn, Germany
7. **Harmening WM**, Bruce KS, Tuten WS, Roorda A, Sincich LC (2017) Variability in threshold and summation among human cone photoreceptors. *European Conference on Visual Perception (ECVP)*, Berlin, Germany
8. Domdei N, Domdei L, Reiniger JL, Holz FG, Görlitz A, **Harmening WM** (2017) High contrast stimulation with an optimized adaptive optics SLO for cellular level visual psychophysics. *European Conference on Visual Perception (ECVP)*, Berlin, Germany
9. Reiniger JL, Sheehy C, Domdei N, Holz FG, Roorda A, **Harmening WM** (2017) Photoreceptor-resolved visual psychophysics with and without adaptive optics. *European Conference on Visual Perception (ECVP)*, Berlin, Germany
10. Meyer JH, Fang PP, Krohne TU, **Harmening WM**, Holz FG, Schmitz-Valckenberg S (2017) Optical coherence tomography angiography (OCT-A) in an animal model of laser-induced choroidal neovascularization. *ARVO*. Baltimore, MD, USA



11. Fang P, Domdei N, Herrmann P, **Harmening WM**, Schmitz-Valckenberg S, Holz FG, Krohne TU (2017) Effect of optical coherence tomography B-scan density on the identification of intra- and subretinal fluid in patients with macular diseases. *Annual Meeting of the German Ophthalmology Society (DOG)*, Berlin, Germany
12. Pfau M, Lindner M, Müller PL, Birtel J, Finger RP, **Harmening WM**, Fleckenstein M, Holz FG, Schmitz-Valckenberg S (2017) Effective dynamic range and retest-reliability of two-color dark-adapted fundus-controlled perimetry in patients with macular diseases. *Association for Research in Vision and Ophthalmology (ARVO) Annual Meeting*. Baltimore, MD, USA
13. Mueller PL, Mueller S, Gliem M, Küpper K, Holz FG, **Harmening WM**, Charbel Issa P (2016) Wahrnehmung des Haidinger Büschels bei Gesunden und Patienten mit Makulaerkrankungen. *Annual Meeting of the German Ophthalmology Society (DOG)*, Berlin, Germany
14. Roorda A, **Harmening WM**, Neitz J, Sabesan R, Schmidt BP, Sincich LC, Tuten WS (2016) Color percepts elicited by stimulation of individual targeted cones *Fall Vision Meeting of the Optical Society of America*, Rochester, NY, USA
15. Meyer JH, Fang PP, **Harmening WM**, Krohne TU, Holz FG, Schmitz-Valckenberg S (2016) Optical coherence tomography angiography (OCT-A) in an animal model of laser-induced choroidal neovascularization. *ARVO*. Seattle, WA, USA
16. Tuten WS, **Harmening WM**, Sabesan R, Sincich LC, Roorda A (2016) Psychophysical evidence for inhibitory lateral interactions between individual cones in the parafovea. *ARVO*. Seattle, WA, USA
17. Mueller PL, Mueller S, Gliem M, Küpper K, Holz FG, **Harmening WM**, Charbel Issa P (2016) Perception of Haidinger Brushes in retinal disease depends on macular pigment optical density and visual acuity. *ARVO*. Seattle, WA, USA
18. Domdei N, Holz FG, **Harmening WM** (2016) Functional imaging of single photoreceptor cells in the living human eye. *Young Researcher Vision Camp*, Leibertingen, Germany
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