

Prof. Dr. Michael Vollmer



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Teaching

- experimental physics
- physical and technical optics
- laser physics
- vacuum physics
- spectroscopy
- infrared physics and technology
- thin film optics
- renewable energy
- English in physics and technology

Research

three main fields:

1) Infrared Thermal Imaging

- 2) Atmospheric optics / optics
 - 3) Didactics of physics, physics education research
- see also list of publications

Published books

Books:

1. U. Kreibitz und M. Vollmer:
Optical Properties of Metal Clusters,
Springer Series Materials Science 25, Springer (1995)
2. M. Vollmer
Lichtspiele in der Luft - atmosphärische Optik für Einsteiger
Spektrum-Elsevier (2005)
3. M. Vollmer, K.-P. Möllmann
Infrared Thermal Imaging: Fundamentals, Research and Applications
Wiley (2010)
(also Spanish and Korean translations)
4. M. Vollmer, K.-P. Möllmann
Infrared Thermal Imaging: Fundamentals, Research and Applications
2nd completely revised and extended ed., Wiley (2018)
5. M. Vollmer
Atmosphärische Optik für Einsteiger - Lichtspiele in der Luft
2nd ed, Springer (2019)

Publications IR imaging (since 2005)

- *Heiße Quellen im Wärmebild - Yellowstonepark im Infrarot*, M. Vollmer, J.A. Shaw, P.W. Nugent, W. Harris, Physik in unserer Zeit **50/5**, 244-250 (2019)
- *Near infrared photography of atmospheric optical phenomena*, J.A. Shaw, M. Vollmer, Proc. SPIE 11143, Fifteenth Conference on Education and Training in Optics and Photonics: ETOP 2019, 111431P (2 July 2019); doi: 10.1117/12.2523165
- *Infrared camera accessories for smartphone : facts and needs*, M. Vollmer, K.-P. Möllmann, Phys. Educ. **53**, 065019 (2018), 10 pages
- *Thermal imaging in nature*, M. Vollmer, K.-P. Möllmann, Inframation 2018 Proceedings, 2018-063
- *Measurement of SWIR background lighting for the detection of methane*, A. Richard, M. Hübner, M. Vollmer, Proc. SPIE 10625, Infrared Imaging Systems : Design, Analysis, Modeling, and Testing XXIX, 106250P (2018)
- *Teaching physics and understanding infrared thermal imaging*, M. Vollmer, K.-P.

Möllmann, in Education

and Training in Optics and Photonics (ETOP) 2017, edited by Xu Li and Xi-Cheng Zhang, Proc. of SPIE

Vol. 10452, 104522C-1

Photonics in Nature: Yellowstone National Park in IR, M. Vollmer, J.A. Shaw, P.W. Nugent, W. Harris, K.

Gillis, W. Weiss, L. Carpenter, A. Carpenter, B. Scherrer, in Education and Training in Optics and

Photonics (ETOP) 2017, edited by Xu Liu and Xi-Cheng Zhang, Proc. of SPIE Vol. 10452, 104521B-1

· Infrared Yellowstone, J.A. Shaw, P.W. Nugent, W. Harris, M. Vollmer, Optics and Photonics News 28 (6), 37-43 (2017)

· NIR photography and NIR thermal cameras, M. Vollmer, K.-P. Möllmann, Inframation 2016 Proceedings, 2016-039

· Infrared moon imaging for remote sensing of atmospheric smoke layers, J.A. Shaw, P.W. Nugent, M.

Vollmer, Applied Optics 54/4, B64-B75 (2015)

· The Physics of Near-Infrared Photography, K. Mangold, J.A. Shaw, M. Vollmer, Eur. J. Phys. 34/6, S51-71 (2013)

· The Allure of Multicolored Images Building Thermography Examined Closely, K.-P. Möllmann, M.

Vollmer, Inframation 2013 Proceedings, Vol14

· Moisture detection at building walls using evaporative cooling, F. Pinno, K.-P. Möllmann, M. Vollmer, Inframation 2013 Proceedings, Vol14

· Measurements of the surface temperature of the moon from earth with IR cameras, M. Vollmer, K.-P.

Möllmann, J.A. Shaw, P.W. Nugent, Proceedings Temperatur 2013, Ed.:PTB Berlin, p. 149-154 (2013)

· Einfache Charakterisierung der zeitlichen und räumlichen Auflösung von Wärmebildkameras, K.-P.

Möllmann, M. Vollmer, Proceedings Temperatur 2013, Ed.:PTB Berlin, p. 137-142 (2013)

· The magic of the invisible: using IR imaging in physics education, M. Vollmer, K.-P. Möllmann,

Inframation 2013 Proceedings, Vol14

· Moisture detection at building walls using evaporative cooling, F. Pinno, K.-P. Möllmann, M. Vollmer,

Inframation 2013 Proceedings, Vol14

· Jenseits unserer Wahrnehmung, M. Vollmer, PhysikJournal 12 Nr. 8/9, 47-51(2013)

· Characterization of IR cameras in student labs, M. Vollmer, K.-P. Möllmann, Eur. J. Phys. 34/6, S73-90 (2013)

· The Allure of Multicolored Images Building Thermography Examined Closely, M. Vollmer, K.-P.

- Möllmann, in Renewable Energy Sustainable Concepts for the Energy Change, Eds.: R. Wengenmayr, Th. Bührcke, 2nd ed., Wiley VCH (2013)
- Wie warm ist es auf dem Mond, M. Vollmer, K.-P. Möllmann, Sterne und Weltraum 51, 82-86 (Dez. 2012)
 - Dark colors of building walls thermal problems due to solar load, F. Pinno, K.-P. Möllmann and M. Vollmer, in Inframation 2012, Proc. Vol 13
 - Surprising warm edges associated with moisture on surfaces, M. Vollmer, K.-P. Möllmann, S. Wood, in Inframation 2012, Proc. Vol 13
 - Surface temperatures of the Moon: measurements with commercial infrared cameras, M. Vollmer, K.-P. Möllmann, Eur. J. Phys. 33, 1703-1719 (2012)
 - CO2 Detektion mit IR Kameras: Grundlagen, Experimente und Anwendungen, M. Vollmer; K.-P. Möllmann, Technisches Messen (tm) 79/1, 65-72 (2012)
 - Optics of glass fronts of buildings: the science of skyscraper death rays , K.-P. Möllmann, M. Vollmer, M. Winburn, Inframation 2011, Proc. Vol 12, p. 79-92
 - CO2-Nachweis mit Infrarotkameras, M. Vollmer, K.-P. Möllmann, Physik in unserer Zeit 43/4, 181-185 (2012)
 - Die Versuchung bunter Bilder Gebäudethermographie unter der Lupe, M. Vollmer, K.-P. Möllmann, F. Pinno, Physik in unserer Zeit 42 (4), 176-184 (2011); gekürzte Version: p. 164-167 in: Erneuerbare Energie, 3. Auflage, Hrsg. Thomas Bührcke, Roland Wengenmayr, Wiley-VCH, Weinheim, 2011
 - Measurements of sun and moon with IR cameras: effects of air mass, M. Vollmer, F. Pinno, K.-P. Möllmann, Inframation 2010, Proc. Vol 11, p. 57-74
 - Two-color or ratio thermal imaging - potentials and limits, K.-P. Möllmann , F. Pinno, M. Vollmer, Inframation 2010, Proc. Vol 11, p.41-56
 - Improved sensitivity for blower door thermography using image subtraction, F. Pinno, M. Vollmer, K.-P. Möllmann, Inframation 2010, Proc. Vol 11, p. 29-40
 - IR imaging of gases: potential applications for CO2 cameras, M. Vollmer, K.-P. Möllmann, Inframation 2009, Proc. Vol 10, p.113 - 124
 - IR imaging of gases: quantitative analysis, M. Vollmer, K.-P. Möllmann, Inframation 2009, Proc. Vol 10, p. 99 - 112
 - IR feedback loops to spotlights: thermography and contemporary dancing, M. Vollmer, M. Vujkovic , Y.Trellu, K.-P. Möllmann, Inframation 2009, Proc. Vol 10, p. 89 - 97

- Solar load and reflection effects and respective time constants in outdoor building inspections, F.
Pinno, K.-P. Möllmann and M. Vollmer, Inframation 2009, Proc. Vol 10, p.319 - 330
- Microscopic and high-speed thermal imaging: a powerful tool in physics R&D, K.-P. Möllmann, F. Pinno,
M. Vollmer, Inframation 2009, Proc. Vol 10, p. 303 317
- Perspectives of IR imaging for industrial detection and monitoring of CO₂, M. Vollmer, K.-P. Möllmann,
Proceedings Temperatur 2009, Ed.:PTB Berlin, p.27-36 (2009)
- Thermographie - Grundlagen, Forschung und moderne Anwendungen in Industrie und Technik, M.
Vollmer, K.-P. Möllmann, Praxis d. Naturwiss. Physik, 57/8, 5-14 (2008)
- Infrarotkameras - es gibt mehr zu sehen als unsere Augen wahrnehmen, M. Vollmer, K.-P. Möllmann,
Naturwiss. Rundschau 61/11, 557-565 (2008)
- Cheese cubes, light bulbs, soft drinks: An unusual approach to study convection, radiation and size
dependent heating and cooling, M. Vollmer, K.-P. Möllmann, F. Pinno, Inframation 2008 Proceedings
Vol. 9, 477-492
- Night Sky Radiant Cooling Influence on Outdoor Thermal Imaging Analysis, K.-P. Möllmann, F. Pinno,
M. Vollmer, Inframation 2008 Proceedings Vol. 9, 279-295
- Thermography of window panes problems, possibilities and troubleshooting, F. Pinno, K.-P.
Möllmann and M. Vollmer, Inframation 2008 Proceedings Vol. 9, 355-362
- Infrared thermal imaging as a tool in university physics education, K.-P. Möllmann and M. Vollmer, Eur.
J. Phys. 28, S37-S50 (2007)
- Looking through matter: quantitative IR imaging when observing through IR windows, M. Vollmer, K.-
P. Möllmann, F. Pinno, Inframation 2007, Proceedings Vol. 8, 109-127
- Influence of wind effects on thermal imaging results Is the wind chill effect relevant ?
K.-P. Möllmann, F. Pinno, M. Vollmer, Inframation 2007, Proceedings Vol. 8, 21-31
- Cost and energy savings for a factory building after modernizing the heating system, F. Pinno, K.-P.
Möllmann and M. Vollmer, Inframation 2007, Proceedings Vol. 8, 521-527
- Influence of gaseous species on thermal infrared imaging, D. Karstädt, K.P. Möllmann, F. Pinno and M.
Vollmer, Inframation 2006 Proceedings Vol.7, 65-78
- Thermal image quality Visualization of spatial and thermal resolution in thermal imaging, D.
Karstädt, K.P. Möllmann, F. Pinno, and M. Vollmer, Inframation 2006 Proceedings Vol.7, 79-91
- Energy savings for an old factory building by optimization of the heating system, D. Karstädt, K.P.

- Möllmann, F. Pinno, and M. Vollmer, Inframation 2006 Proceedings Vol.7, 253-261
- Thermography of microwave ovens, M. Vollmer, F. Pinno, K.-P. Möllmann, D. Karstädt, Inframation 2005 Proceedings Vol.6, 29-40
- Optimization, quality control and minimization of damages of floor heating systems, F. Pinno, D. Karstädt, K.-P. Möllmann, and M. Vollmer, Inframation 2005 Proceedings Vol.6, 313-321
- Selected critical applications for thermography: convections in fluids, selective emitters and highly reflecting materials, mK.-P. Möllmann, D. Karstädt, F. Pinno, and M. Vollmer, Inframation 2005 Proceedings Vol.6, 161-173

Publications Atmospheric Optics / Optics (since 2005)

- Extended visual range during solar eclipses, M.Vollmer, J.A. Shaw, Applied Optics **57**/14, 140001 (2018)
- Atmospheric Optics in the Near Infrared, J.A. Shaw, M. Vollmer, Applied Optics, **56**/19, G145 (2017)
- Blue sun glints on water viewed through a polarizer, J.A. Shaw, M. Vollmer, Applied Optics, **56**/19, G36 (2017)
- Near infrared photography of atmospheric optical phenomena, J.A. Shaw, M. Vollmer, Proc. SPIE 11143, Fifteenth Conference on Education and Training in Optics and Photonics: ETOP 2019, 111431P (2 July 2019); doi: 10.1117/12.2523165
- Extended visual range: an observation during a total solar eclipse, M. Vollmer, J.A. Shaw, Proc. SPIE 11143, Fifteenth Conference on Education and Training in Optics and Photonics: ETOP 2019, 111431Q (2 July 2019); doi: 10.1117/12.2523167
- Blue sun reflected from water: optical lessons from observations of nature, J.A. Shaw, M. Vollmer, in Education and Training in Optics and Photonics (ETOP) 2017, edited by Xu Liu and Xi-Cheng Zhang, Proc. of SPIE Vol. 10452, 104523B-1
- Colors of the Yellowstone Thermal Pools for Teaching Optics , J.A. Shaw, P.W. Nugent, M. Vollmer, Education and Training in Optics and Photonics (ETOP) 2015, edited by Eric Cormier, Laurent Sarger, Proc. of SPIE Vol. 9793, 97931S
- Colors of thermal pools at Yellowstone National Park, P.W. Nugent, J.A. Shaw, M. Vollmer, Applied Optics 54/4, B128-B139 (2015)
- Artificially generated halos: rotating samples crystals around various axes, M. Großmann,

K.-P.

Möllmann, M. Vollmer, Applied Optics 54/4, B97-B106 (2015)

· Infrared moon imaging for remote sensing of atmospheric smoke layers, J.A. Shaw, P.W. Nugent, M.

Vollmer, Applied Optics 54/4, B64-B75 (2015)

· Visible and invisible mirages: Comparing inferior mirages in the visible and thermal infrared,

M.Vollmer, J.A. Shaw, P.W. Nugent, Applied Optics 54/4, B76-B84 (2015)

· Flimmernde Luft und funkelnde Sterne, (Rasante Physik) M. Vollmer, K.-P. Möllmann, Physik in

unserer Zeit Heft 46/5, 254-255 (2015)

· Double pane windows elastic deformations, gas thermodynamics, thermal and optical phenomena,

M. Vollmer, K.-P. Möllmann, H.J. Schlichting, Eur. J. Phys. 35, 045023 (2014)

· Achtung Solarofen, Kaustiken von Hochhausverglasungen, M. Vollmer, K.-P. Möllmann, Physik in

unserer Zeit Heft 45/3, 134-139 (2014)

· Das farbenprächtige Glitzern frischen Schnees, M. Vollmer, J. A. Shaw, Physik in unserer Zeit Heft

45/2, 97-98 (2014)

· Light cone: Engaging students of all levels in processes that physicists use in research, E. Etkina, G.

Planinsic, M. Vollmer, Am. J. Phys. 81/11, 815-822 (2013)

· Brilliant colours from a white snow cover, M. Vollmer, J.A. Shaw, Physics Ed. 48/3, 322-331 (2013)

· Caustic effects due to sun light reflections from skyscrapers: simulations and experiments, M.

Vollmer, K.-P. Möllmann, Eur. J. Phys. 33, 1429 1455 (2012)

· Optical Phenomena in the Atmosphere, M. Vollmer, überarbeitetes und ergänztes Kapitel für 2.

Auflage: p. 1493-1517, Sect. 23.6 23.12, Springer Handbook of Lasers and Optics, 2nd ed., F.

Träger (Ed.), 2012

· Crepuscular rays: laboratory experiments and simulations: S. D. Gedzelman, M.Vollmer, Applied

Optics 50/28, pp. F142 F151 (2011)

· Rainbows, water droplets, and seeing slow motion analysis of experiments in atmospheric optic, M.

Vollmer, K.-P. Möllmann, Applied Optics 50/28, pp. F21 F28 (2011)

· Twice in a blue moon, S.D. Gedzelman, M. Vollmer, Weatherwise 62/5, 28-35 (2009)

· Blauer Mond: poetische Methapher oder beobachtbares Phänomen ? M. Vollmer, S.D. Gedzelman,

Naturwissenschaftliche Rundschau 62/6, 285-291 (2009)

· Progress in atmospheric optics and light and color in nature, S.D.Gedzelman, M. Vollmer, Bull. Am.

Met. Soc. 90, 689-693 (May 2009)

· Mirrors in the air:mirages in nature and in the laboratory, M. Vollmer, Physics Education

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K.-P. Möllmann, M. Regehly, M. Vollmer, Proc. SPIE 11143, Fifteenth Conference on Education and

- Teaching Electric Fences: The Physics Behind the Brainiac Video, M. Vollmer, The Physics Teacher **54**, 492-496 (2016)
- *Micrographie kinematische Demonstration der elektrischen Leitung*, M. Vollmer, K.-P. Möllmann, Phys. Educ. **51** (2016) 034002 (8pp)
- *Final Physics Hand-on experiment in physics teaching*, M. Vollmer, p. 293-301, Veletrh nápadP učitelP fyziky 20 (2016) (Proceedings 20th Czech Physics Teacher Training Conference, Prag, 2015)
Ed.: V. Koudelková, 2016, ISBN 978-80-87343-58-6
- *Flüchtige Regenbogen ein einzelner Tropfen* (Rasante Physik) M. Vollmer, K.-P. Möllmann, Physik in unserer Zeit Heft **47/6**, 305-306 (2016)
- *Elko oder Böller: die Polung macht's!* (Rasante Physik) M. Vollmer, K.-P. Möllmann, Physik in unserer Zeit Heft **47/4**, 200-201 (2016)
- *Funkeln im Labor: kleine Bräder der Blitze* (Rasante Physik) M. Vollmer, K.-P. Möllmann, Physik in unserer Zeit Heft **47/3**, 149-150 (2016)
- *Scheitelfrei entlang der Pendel* (Rasante Physik) M. Vollmer, K.-P. Möllmann, Physik in unserer Zeit Heft **47/2**, 96-97 (2016)
- The optics and physics of near infrared imaging, M. Vollmer, K.-P. Möllmann, J.A. Shaw, in Education and Training in Optics and Photonics (ETOP) 2015, edited by Eric Cormier, Laurent Sarger, Proc. of SPIE Vol. 9793, 97930Z
- Bouncing poppers, M. Vollmer, K.-P. Möllmann, The Physics Teacher **50**, 489-493 (2015)
- The tablecloth pull revisited, M. Vollmer, K.-P. Möllmann, Physics Education **50** (3) 324-328 (2015)
- Flickering lamps, M. Vollmer, K.-P. Möllmann, Eur. J. Phys. **36** (2015) 035027 (20pp)
- Light emitting pickles, M. Vollmer, K.-P. Möllmann, Physics Education **50/1**, 94-104 (2015)
- Krach-bumm-peng Böller und Tischfeuerwerke (Rasante Physik) M. Vollmer, K.-P. Möllmann, Physik in unserer Zeit Heft **46/6**, 305-306 (2015)
- Flimmernde Luft und funkelnde Sterne, (Rasante Physik) M. Vollmer, K.-P. Möllmann, Physik in unserer Zeit Heft **46/5**, 254-255 (2015)
- Der Trick mit der Tischdecke, (Rasante Physik) M. Vollmer, K.-P. Möllmann, Physik in unserer Zeit Heft **46/4**, 199-201 (2015)
- Springende Hüpfgummis, (Rasante Physik) M. Vollmer, K.-P. Möllmann, Physik in unserer Zeit Heft **46/3**, 149-150 (2015)
- Die Gurke leuchtet komplex, M. Vollmer, K.-P. Möllmann, Physik in unserer Zeit Heft

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Heft 44/5, 251-251 (2013)

- Die Münze in Würfelturm (Rasante Physik), M. Vollmer, K.-P. Möllmann, Physik in unserer Zeit, 44/4, 200-201 (2013)
- Zerstäuben großer Wassertropfen (Rasante Physik), M. Vollmer, K.-P. Möllmann, Physik in unserer Zeit, 44/3, 149-150 (2013)
- Schneller als der freie Fall (Rasante Physik), M. Vollmer, K.-P. Möllmann, Physik in unserer Zeit, 44/1, 46-47 (2013)
- Prost Neujahr: die Physik von Champagnerflaschen (Rasante Physik), M. Vollmer, K.-P. Möllmann, Physik in unserer Zeit, 43/6, 307 308 (2012)
- Oscillating droplets and incompressible liquids: slow motion visualization of experiments with fluids, M. Vollmer, K.-P. Möllmann, Physics Education 47, 664-679 (2012)
- Low cost hands-on experiments for Physics teaching, M. Vollmer, K.-P. Möllmann, Lat. Am. J. Phys. Educ. Vol. 6, Suppl. I, pp. 3-9 (2012). www.lajpe.org
- Faster than g a never ending story? M. Vollmer, K.-P. Möllmann, Eur. J. Phys. 33, 1277 1288 (2012)
- Vapour pressure, combustion and adiabatic cooling from champagne: slow motion visualization of thermodynamics of gases, M. Vollmer, K.-P. Möllmann, Phys. Ed. 47/5, 608 615 (2012)
- Hochgeschwindigkeitskameras im Physikunterricht, M. Vollmer, K.-P. Möllmann, MNU 65/6 349-355 (2012)
- Tropfen auf dem kalten Wein (Rubrik Rasante Physik), M. Vollmer, K.-P. Möllmann, Physik in unserer Zeit, 43/5, 252-253 (2012)
- Raindrops keep falling on my head (Rubrik Rasante Physik), M. Vollmer, K.-P. Möllmann, Physik in unserer Zeit 43/4, 200 201 (2012)
- Lorentz-Pendel in der Glühbirne (Rubrik Rasante Physik), M. Vollmer, K.-P. Möllmann, Physik in unserer Zeit, 43 (2), 96-97 (2012)
- Feynmans Rätsel der brechenden Spaghetti (Rubrik Rasante Physik), M. Vollmer, K.-P. Möllmann, Physik in unserer Zeit, 43 (1), 46-47 (2012)
- Zersplitterndes Holz auf rohen Eiern (Rubrik Rasante Physik), M. Vollmer, K.-P. Möllmann, Physik in unserer Zeit, 42 (6), 305-306 (2011)
- Ring falling into a chain: no magic just physics, M. Vollmer, K.-P. Möllmann, The Physics Teacher 49, 337-339 (2011)
- Das seltsame Verhalten von Superbällen (Rasante Physik), M. Vollmer, K.-P. Möllmann,

Physik in

unserer Zeit, 42 (5), 255-256 (2011)

· Exploding balloons, deformed balls, strange reflections, and breaking rods: slow motion analysis of

selected hands-on experiments, M. Vollmer, K.-P. Möllmann, Physics Education 46(4) p.472-485

(2011)

· High speed slow motion: technology of modern high speed cameras, M. Vollmer, K.-P. Möllmann,

Physics Education 46/2, 191-202 (2011)

(2008)

- Locomotion by blowing into the sail of a sailboat? From a basic physics question to thrust reversal of

and size

dependent heating and cooling, Inframation 2008 in Reno/ USA, 11/2008

- IR imaging of gases: potential applications for CO2 cameras, IR feedback loops to spotlights:

thermography and contemporary dancing, Inframation 2009 in Las Vegas/ USA, 10/2009

- Inframation 2009, Las Vegas, 10/2009

- High speed - slow motion I: new insights for hands on experiments in mechanics, II : more experiments using gases, fluids, heat and electromagnetism, GIREP-ICPE-MPTL

International

Conference on Teaching and Learning Physics Today in Reims/France, 08/2010

- Measurements of sky, clouds and moon with IR cameras: effects of air mass, Inframation 2010, Las

Vegas/USA, 10/2010

- High speed slow motion: fascinating phenomena observed in hands-on experiments, Science on

Stage, Copenhagen 04/2011 (with K.-P. Möllmann)

- IR Imaging of CO2: Basics, Experiments, and Potential Industrial Applications, IRS2, Nürnberg,

05/2011

- Low cost hands-on experiments for physics teaching, ICPE, Mexico

/201

Spanien,

06/2016

- The optics and physics of NIR imaging, Light and Color in Nature in Granada / Spanien, 06/2016

- NIR photography and NIR thermal cameras, Inframation, Las Vegas, 09/2016

- Workshop Basics of thermography: IR camera parameters and selected topics, Inframation, Las

Vegas, 09/2016

Unterricht

09/2006: Lichtspiele in der Luft - optische Phänomene der Atmosphäre / Schulexperimente mit Lasern

02/2010: High speed - slow motion: Experimente mit der Hochgeschwindigkeitskamera

02/2014: Freihandexperimente und Experimente mit IR Kameras

3. Fisica Nocturna, Puebla, Mexico, 05/2006:

05/2006: Hands-on experiments in physics education

4. Physics Teacher Training Workshops in Windhoek, Namibia (1 week, with K.-P. Möllmann):

03/2008: Hands-on experiments in physics education

07/2009: Hands-on experiments in physics education

Nationwide in Germany

The Physikzentrum Bad Honnef/Germany (www.pbh.de) hosts week-long teacher training courses (several per year) for physics teachers from all over Germany, typically 50 to 100 participants funded by the German Physical Society (DPG, www.dpg-physik.de).

The following courses were organized/coorganized:

1. Licht, Schatten und Farben in der Umwelt (1997) with H.J. Schlichting (Essen)
2. Physik und Musik (2000) with H.J. Schlichting (Essen)
3. Physikalische Aspekte der Meteorologie (2001), with W. Wehry (Berlin)
4. Naturphänomene für den Physikunterricht aus fachdidaktischer und fachwissenschaftlicher Sicht (2002), with W. Schneider (Erlangen)
5. Physik der Erde (2003), with W. Schneider (Erlangen)
6. Laser, Grundlagen und Anwendungen in Forschung und Technik (2005), with W. Schneider (Erlangen)
7. Regenerative Energien (2006), with V. Nordmeier (Berlin)
8. Physik und Sport (2008), with L. Mathelitsch (Graz)
9. Naturphänomene (2010), with H.J. Schlichting (Münster)
10. Thermodynamik (2011), with H. Engel (Oldenburg)
11. Klima, Atmosphäre, Umwelt, (2016), with L. Wöste (Berlin)

Regional in Brandenburg

The physics group of the University of Applied Sciences in Brandenburg organizes 1-day physics teacher training courses, typically for 100 teachers with main topic of low cost experiments, funded by the Wilhelm und Else Heraeus-foundation

(www.we-heraeus-stiftung.de) and the DPG (www.dpg-physik.de)

Organisation: M. Vollmer; experiments with K.-P. Möllmann, since 2000 additional external speaker

1. 1998: Mechanik, Akustik, Fluide
2. 1998: Wärmelehre
3. 1999: Elektrodynamik
4. 1999: Optik
5. 2000: Moderne Physik, physikalisches Spielzeug (C. Ucke/München)
6. 2001: Physik im Alltag, Low cost high tech-Experimente (W. Stetzenbach/Winnweiler)
7. 2002: Low cost Experimente, Messwerterfassung easy und low cost (V. Nordmeier/Münster,
Komplexität und Selbstorganisation (H.-J. Schlichting/Münster))

- Totale Sonnenfinsternis in Deutschland
- Lichtspiele in der Luft - optische Phänomene der Atmosphäre
- Die Sonnenfinsternis vom 29.03.2006 in der Türkei
- Die Rückkehr der Physiker Unterhaltsame Experimente am laufenden Band Audimax FHB
- Was haben Klimawandel, Treibhauseffekt und regenerative Energien miteinander zu tun
- Öffentliche Weihnachtsvorlesung Unterhaltsame Experimente am laufenden Band
- Weihnachtsvorlesung Unterhaltsame Experimente am laufenden Band
- Naturwissenschaft auf Banknoten

on stage of the theater in Brandenburg

- Es gibt mehr zu sehen als die Augen wahrnehmen
- Was Sie schon immer über Ihre Mikrowelle wissen wollten
- Physik im Rampenlicht Unterhaltsame Experimente am laufenden Band

in other universities, schools, museums, planetariums etc.

- Luftspiegelungen
- Lichtstreuung und Himmelsfarben
- Atmosphärische Optik
- Experimente zur Haushaltsmikrowelle
- Wärmestrahlung, der Blick ins Unsichtbare (Es gibt mehr zu sehen als unsere Augen wahrnehmen)
- Experimente zur Physik Einsteins (für die Grundschule)
- Physics für Nonscientists
- Treibhauseffekt und Klimawandel
- Ursachen und Folgen von Fukushima
- High Speed- slow motion: Freihandexperimente unter der (Zeit-)Lupe
- Messungen der Temperatur des Mondes mit kommerziellen Thermokameras
- Sunlight reflections from buildings: the physics behind skyscraper death rays

CV

- Studies of physics in Heidelberg, Diploma (1983), PhD (1986), Habilitation (1991)
- Stays abroad: Berkeley/USA; Bangkok/Thailand; New York, Boston, and Bozeman/USA
- since 1994 at University of Applied Sciences Brandenburg / Germany
- Member advisory board of Internet based journal phydid
- Member advisory board of journal Physik in unserer Zeit
- Member editorial board of journal Physics Education
- Editor of journal European Journal of Physics
- Member VDI FA 8.16 Temperaturmessung mit Wärmebildkameras
- Robert Wichard Pohl Award 2013 of the German Physical Society

student Diploma / Bachelor thesis in industry, e.g. at

- Firma Inventron in Mölndal (near Göteborg / Sweden)
- Fraunhofer-Gesellschaft (in Magdeburg and Freiburg)
- Astro- und Feinwerktechnik (Adlershof)
- Brown University (RI, USA)
- Volkswagen (Wolfsburg)
- Astrophysikalisches Institut (Potsdam)
- Katana Technologies (Kleinmachnow)
- PicoQuant (Adlershof)
- SenTech (Adlershof)
- Fraunhofer Institut für Physikalische Messtechnik (Freiburg)
- Institut für angewandte Gewässerökologie (Seddin)
- Sacher-Lasertechnik (Marburg)
- Johanna Solar (Bosch, Brandenburg)
- Solarion AG (Leipzig)
- Fraunhofer IZM (Berlin)
- Bundesamt für Strahlenschutz (Berlin)
- PTB (Berlin)
- OSRAM GmbH (Berlin)
- Schäfter und Kirchhoff GmbH (Hamburg)

Alle öffnen Alle schließen