

Publications

1. Ralf Widenhorn, *The physics of juggling a spinning ping-pong ball*. American Journal of Physics 84, 901 (2016).
2. Ralf Widenhorn, *Hitting the Goalpost: Calculating the Fine Line Between Winning and Losing a Penalty Shootout*. The Physics Teacher 54, 434 (2016).
3. Justin C. Dunlap, M. M. Blouke, Erik Bodegom, and Ralf Widenhorn. *Interpreting Activation Energies in Digital Image Sensors*. IEEE Trans. Electron Devices, Vol. 63 (1), 26-31 (2016).
4. Heike Theyßen, Sarah Struzyna, Elliot Mylott, and Ralf Widenhorn. *Online physics lab exercises – an international comparison of students attitudes and learning efficacy*. International Journal of Science and Mathematics Education, June 2016, Volume 14, Issue 5, pp 865–883.
5. Elliot Mylott, Ellynne Kutschera, Justin C. Dunlap, Warren Christensen, and Ralf Widenhorn. *Using biomedically relevant multimedia content in an introductory physics course for life science and pre-health students*. Journal of Science Education and Technology, April 2016, Volume 25, Issue 2, pp 222–231.
6. Justin C. Dunlap, Ellynne Kutschera, Grace R. Van Ness, and Ralf Widenhorn. *The electrocardiogram as an electronic filter and why AC circuits are important for pre-health physics students*. Physics Education 50 (1), 81, (2015).
7. Otto Zietz, Kelsey Adams, Elliot Mylott, and Ralf Widenhorn. *Infrared radiography: Modeling x-ray imaging without harmful radiation*. The Physics Teacher 53, 46 (2015).
8. Elliot E. Mylott, Justin C. Dunlap, Lester Lampert, Ralf Widenhorn. *Kinesthetic activities for the classroom*. The Physics Teacher 52, 525 (2014).
9. Juan Burciaga and Ralf Widenhorn. *From competencies to curricular objectives: preparing a new introductory physics for the life sciences (IPLS) Course*. APS Forum on Education. Summer 2014 newsletter.
10. Elliot Mylott, Ellynne Kutschera, and Ralf Widenhorn. *Bioelectrical impedance analysis as a laboratory activity: at the interface of physics and the body*. American Journal of Physics 82 (5), 521-528, May 2014.
11. Ellynne Kutschera, Justin C. Dunlap, Misti Byrd, Casey Norlin, and Ralf Widenhorn. *Pulse oximetry in the physics lab: a colorful alternative to traditional optics curriculum*. The Physics Teacher, Vol. 51, 495-497, November 2013.
12. Warren Christensen, James K. Johnson, Grace R. Van Ness, Elliot Mylott, Justin C. Dunlap, Elizabeth A. Anderson, and Ralf Widenhorn. *Developing and assessing curriculum on the physics of medical instruments*. CBE Life Sci Educ. 2013 Jun 1;12(2):250-61

13. Justin C. Dunlap, Morley M. Blouke, Erik Bodegom, and Ralf Widenhorn. *Modeling Nonlinear Dark Current Behavior in CCDs*. IEEE Transactions on Electron Devices, Volume: 59, Issue: 4, April 2012.
14. Justin C. Dunlap, M. M. Blouke, Erik Bodegom, and Ralf Widenhorn. *Dynamic CCD pixel depletion edge model and the effects on dark current production*. Proc. SPIE 8298, 82980F, 2012.
15. G. R. Van Ness and Ralf Widenhorn. *Engaging the community through an undergraduate biomedical physics course*. American Journal of Physics 80, 1094-1098, 2012.
16. Elliot Mylott, Ryan Klepetka, Justin C. Dunlap and Ralf Widenhorn. *An easily assembled laboratory exercise in computed tomography*. 2011 Eur. J. Phys. **32** 1227
17. Ralf Widenhorn, Richard Berry, Armin Rest, and Erik Bodegom. (2011). U.S. Patent Number 7880780. Washington, DC: U.S. Patent and Trademark Office.
18. Justin C. Dunlap, William C. Porter, Erik Bodegom and Ralf Widenhorn. *Dark current in an active pixel complimentary metal-oxide-semiconductor sensor*. Journal of Electronic Imaging 20(1), 013005 (2011).
19. R. Widenhorn, E. Bodegom, D. Iordache, I. Tunaru. *Computational Approach to Dark Current Spectroscopy in CCDs as Complex Systems II. Numerical Analysis of the Uniqueness Parameters evaluation*. Scientific Bulletin of "Politehnica" University Bucharest, Series A: Applied Mathematics and Physics, 73, no. 1, pp. 149-162(2011).
20. Justin C. Dunlap, Erik Bodegom, and Ralf Widenhorn. *Nonlinear time dependence of dark current in Charge-Coupled Devices*. Proc. SPIE 7875, 78750H (2011).
21. R. Widenhorn, E. Bodegom, D. Iordache, I. Tunaru. *Computational approach to dark current spectroscopy in CCDs as complex Systems. I. experimental part and choice of the uniqueness parameters*. Scientific Bulletin of "Politehnica" University Bucharest, Series A: Applied Mathematics and Physics, 72(4) 197-208(2010).
22. Ionel Tunaru, Ralf Widenhorn, Dan Iordache, and Erik Bodegom, *Study of the temperature dependence of dark current in some CCD. II. Numerical Analysis of the Uniqueness Parameters Evaluation*, Scientific Bulletin of University "Politehnica" of Bucharest (ISI review), 2010.
23. Ralf Widenhorn, Justin C. Dunlap, and Erik Bodegom. *Dark current in consumer cameras: not what you expect*. Web exclusive Photonics Spectra, September 2010, <http://photonics.com/Article.aspx?AID=44298>.
24. Ralf Widenhorn, Alexander Weber-Bargioni, Morley M. Blouke, Albert J. Bae, Erik Bodegom. *Charge diffusion in the field-free region of charge-coupled devices*. Optical Engineering 49(4), 044401 (2010).
25. J.C. Dunlap, E. Bodegom, and R. Widenhorn. *Correction of dark current in consumer cameras*. J. Electronic Imaging, Vol 19 (1), 013010 (2010).

26. R. Widenhorn, J.C. Dunlap, and E. Bodegom. *Exposure time dependence of dark current in CCD imagers*. IEEE Trans. Electron Devices, Vol. 57 (3), 581-587 (2010).
27. J.C. Dunlap, E. Bodegom, and R. Widenhorn, *Characterization and correction of dark current in compact consumer cameras*. Proc. SPIE 7536, 75360J (2010).
28. R. Widenhorn, I. Hartwig, J.C. Dunlap, and E. Bodegom. *Influence of illumination on dark current in charge-coupled device imagers*. Journal of Electronic Imaging, 18(3), 033015 (2009).
29. J.C. Dunlap, O. Sostin, R. Widenhorn, and E. Bodegom. *Dark current behavior in DSLR cameras*. Proc. SPIE 7249, 72490N (2009).
30. R. Widenhorn, E. Bodegom, D. Iordache, Vl. Iancu. *Study of the temperature dependence of the dark currents non-uniformity for some video-camera chips*. IEEE International Semiconductor Conference (CAS) 2009, Sinaia, Romania.
31. E. Bodegom, D. W. McClure, P. P. Delsanto, A. S. Gliozzi, D. Iordache, Fl. Pop, C. Roşu, R. Widenhorn. *Computational Physics Guide*. (D. Iordache, Fl. Pop, C. Roşu – editors), Politehnica Press, Bucharest, 2009, ISBN 978-606-515-062-1 and 978-606-515-063-8, 350 pages.
32. Ralf Widenhorn, William C. Porter, Justin C. Dunlap, Erik Bodegom. *Algorithm for computation of dark frames in a CMOS imager*. Annals of the Academy of Romanian Scientists, vol. 1, no. 2, pp. 7-14(2008).
33. Ralf Widenhorn, Erik Bodegom, Dan Iordache, Viorica Iordache. *Study of the temperature dependence of the dark currents non-uniformity for some video-camera chips*. Annals of the Academy of Romanian Scientists, vol. 1, no. 2, pp. 79-86(2008).
34. Ralf Widenhorn. *Charge-coupled devices - performance and dark noise characteristics*. VDM Verlag Dr. Mueller e.K. 2008. ISBN-10: 3639010183, ISBN-13: 978-3639010183.
35. Ralf Widenhorn, Ines Hartwig, Justin C. Dunlap, and Erik Bodegom. *Measurements of dark current in a CCD imager during light exposures*. Proceedings of SPIE Volume: 6816 (2008).
36. William Porter, Bradley Kopp, Justin C. Dunlap, Ralf Widenhorn, and Erik Bodegom. *Dark Current Measurements in a CMOS Imager*. Proceedings of SPIE Volume: 6816 (2008).
37. Ralf Widenhorn; Armin Rest; Morley M. Blouke; Richard L. Berry; Erik Bodegom. *Computation of dark frames in digital imagers*. Proceedings of SPIE Volume: 6501 (2007).
38. E. Bodegom, R. Widenhorn, D. A. Iordache, and V. Iordache. *On the evaluation of the energies of deep-level traps in charge coupled devices, Proceedings of the fourth edition of the Colloquium Mathematics in Engineering and Numerical Physics*. Bucharest (2007).
39. Erik Bodegom, Matthias Loch, and Ralf Widenhorn. *Dual Meyer-Neldel rules for infrared light in a charge-coupled device*. International Symposium, Optro 2005. Paris, France.

40. Erik Bodegom, Ralf Widenhorn, D.A. Iordache. *Interpreting fitting parameters of temperature dependence of dark currents in some CCDs*. International Semiconductor Conference (CAS), 2005 Proceedings **2**, 327.
41. Matthias Loch, Ralf Widenhorn, and Erik Bodegom. *Infrared response of charge-coupled devices*. Proceedings of SPIE Volume: 5677 (2005).
42. Ralf Widenhorn, Michael Fitzgibbons, and Erik Bodegom. *The Meyer-Neldel rule for diodes in forward bias*. J. Appl. Phys. **96**, 7379 (2004).
43. E. Bodegom, R. Widenhorn, and D. A. Iordache. *New Meyer-Neldel relations for the depletion and diffusion dark currents in some CCDs*. IEEE International Semiconductor Conference (CAS) 2004, Sinaia, Romania.
44. E. Bodegom, R. Widenhorn, D. A. Iordache, and V. Iordache. *Numerical analysis of experimental data concerning the temperature dependence of dark current in CCDs*. Proceedings of the 28th Annual Congress of the American-Romanian Academy of Arts and Sciences (ARA), vol.2, 763, (2003).
45. Ralf Widenhorn, Morley M. Blouke, Alexander Weber, Armin Rest, and Erik Bodegom. *Analysis of the activation energy of dark current in CCD pixels*. Proc. 2003 IEEE Workshop on Charge-coupled Devices and Advanced Image Sensors (Schloss Elmau, Germany, May 2003).
46. Ralf Widenhorn, Alexander Weber, Morley M. Blouke, Albert J. Bae, and Erik Bodegom. *PSF measurements on back-illuminated CCDs*. Proc. SPIE Int. Soc. Opt. Eng. **5017**, 176 (2003).
47. Ralf Widenhorn and Erik Bodegom., *Interpreting fitting parameters*. Proceedings of the second edition of the Colloquium "Mathematics in engineering of numerical physics", Bucharest, 26 (2002)
48. Ralf Widenhorn and Erik Bodegom. *Selected works of computer aided applied sciences, vol. 2*. Bucharest, 595 (2002).
49. Ralf Widenhorn, Armin Rest, and Erik Bodegom, *The Meyer-Neldel rule for a property determined by two transport mechanisms*. J. Appl. Phys. **91**, 6524 (2002).
50. Armin Rest, Lars Mündermann, Ralf Widenhorn, Erik Bodegom, and T. C. McGlinn. *Residual images in charge-coupled device detectors*. Rev. Sci. Instrum. **73**, 2028 (2002).
51. Ralf Widenhorn, Morley M. Blouke, Alexander Weber, Armin Rest, and Erik Bodegom. *Temperature dependence of dark current in a CCD*. Proc. SPIE Int. Soc. Opt. Eng. **4669**, 193 (2002).
52. Ralf Widenhorn, Lars Mündermann, Armin Rest, and Erik Bodegom. *Meyer-Neldel rule for dark current in charge-coupled devices*. J. Appl. Phys. **89**, 8179 (2001).