

Kenneth G. Libbrecht

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Education

1980-84 Princeton University, Ph.D., Physics
Thesis advisor: Robert H. Dicke
Thesis topic: Gravitational physics
1978-80 California Institute of Technology, B.S., Physics
1977-78 University of North Dakota

Appointments

1997-2013 Executive Officer for Physics, Caltech
1995- Professor of Physics, Caltech
1989-95 Associate Professor of Physics, Caltech
1984-89 Assistant Professor of Astrophysics, Caltech

Awards and Honors

2010 Lennart Nilsson Award (for outstanding contributions to scientific photography)
2009 Emile Chamot Award (for outstanding contributions in light microscopy)
2006-13 Snowflake photographs on postage stamps (several billion sold)
U.S. (2006 and 2013), Austria (2006), and Sweden (2010)
2004 National Outdoor Book Award
2004 Benjamin Franklin Book Award
1991 AAS Newton Lacy Pierce Prize in Astrophysics
1987 Alfred P. Sloan Research Fellowship
1987 Presidential Young Investigator Award

Synergistic Activities

2015- hQphotonics, consultant
Produces opto-electronics equipment
2014- Newtonian Labs, founder and president
Produces equipment for physics laboratory teaching
2004-6 TeachSpin, consultant
Produces equipment for physics laboratory teaching
2003-15 Popular-science books (all published by Voyageur Press):
2003: The Snowflake: Winter's Secret Beauty
2004: The Little Book of Snowflakes
2005: The Magic of Snowflakes
2006: Ken Libbrecht's Field Guide to Snowflakes
2007: The Art of the Snowflake
2008: Snowflakes
2010: The Secret Life of a Snowflake
2015: The Snowflake: Winter's Frozen Artistry

Recent Publications (2015-)

- K. G. Libbrecht and E. D. Black, "Improved microparticle electrodynamic ion traps for physics teaching", *Am. J. Phys.*, DOI: 10.1119/1.5034344 (2018).
- K. G. Libbrecht, "Physical dynamics of ice crystal growth", (*invited review*), *Ann. Rev. Mater. Res.* **47**, 7.1-7.25 (2017).
- K. G. Libbrecht, "Toward a comprehensive model of snow crystal growth: 5. Measurements of changes in attachment kinetics from background gas interactions at -5 C", arXiv:1602.08528 (2016).
- K. G. Libbrecht, "Measurements of cylindrical ice crystal growth limited by combined particle and heat diffusion," arXiv:1602.02683 (2016).
- K. G. Libbrecht, C. Miller, R. Potter, et. al., "Toward a comprehensive model of snow crystal growth: 4. measurements of diffusion-limited growth at -15 C," arXiv:1512.03389 (2015).
- J., Aasi, *et al.*, "Searches for continuous gravitational waves from nine young supernova remnants," *Ap. J.* **813**: 1-16 (2015).
- K. G. Libbrecht and E. D. Black, "A basic Michelson laser interferometer for the undergraduate teaching laboratory demonstrating picometer sensitivity," *Am. J. Phys.* **83**: 409-417 (2015).
- J. Aasi *et al.*, Advanced LIGO, *Class. Quant. Grav.* 32: 074001 (2015).
- E. A. Vinitsky, E. D. Black, and K. G. Libbrecht, "Particle dynamics in damped nonlinear quadrupole ion traps," *Am. J. Phys.* **83**: 313-319 (2015).
- J. Aasi et al., "Directed search for gravitational waves from Scorpius X-1 with initial LIGO data," *Phys. Rev. D* **91**, 062008 (2015).
- M. Principe et. al., "Material loss angles from direct measurements of broadband thermal noise," *Phys. Rev. D* **91**: 022005 (2015).
- J. Aasi *et al.*, "Narrow-band search of continuous gravitational-wave signals from Crab and Vela pulsars in Virgo VSR4 data," *Phys. Rev. D* **91**, 022004 (2015).
- K. G. Libbrecht, "Incorporating surface diffusion into a cellular automata model of ice growth from water vapor," arXiv:1509.08543 (2015).
- K. G. Libbrecht, "The surface diffusion length of water molecules on faceted ice: A reanalysis of 'Roles of surface/volume diffusion in the growth kinetics of elementary spiral steps on ice basal faces grown from water vapor', by Asakawa et al," arXiv:1509.06609 (2015).