

References

- Agarwal, S., R. Ramamoorthi, S. Belongie, and H. W. Jensen. 2003. Structured importance sampling of environment maps. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2003)* 22(3), 605–12.
- Aggarwal, A. 2002. Software caching vs. prefetching. In *Proceedings of the Third International Symposium on Memory Management*, pp. 157–62. ACM Press.
- Aila, T., and S. Laine. 2009. Understanding the Efficiency of Ray Traversal on GPUs. In *Proceedings of High Performance Graphics 2009*, pp. 145–50.
- Airey, J., J. Rohlf, and F. Brooks, Jr. 1990. Towards image realism with interactive update rates in complex virtual building environments. In *Proceedings of the 1990 Symposium on Interactive 3D Graphics*, pp. 41–50.
- Akenine-Möller, T. 2001. Fast 3D triangle-box overlap testing. *Journal of Graphics Tools* 6(1), 29–33.
- Akenine-Möller, T., and J. Hughes. 1999. Efficiently building a matrix to rotate one vector to another. *Journal of Graphics Tools* 4(4). 1–4.
- Akenine-Möller, T., E. Haines, and N. Hoffman. 2008. *Real-Time Rendering*. Natick, MA: A. K. Peters.
- Amanatides, J. 1984. Ray tracing with cones. *Computer Graphics (SIGGRAPH '84 Proceedings)*, 18, 129–35.
- Amanatides, J. 1992. Algorithms for the detection and elimination of specular aliasing. In *Graphics Interface '92*, pp. 86–93.
- Amanatides, J., and D. P. Mitchell. 1990. Some regularization problems in ray tracing. In *Graphics Interface '90*, pp. 221–28.
- Amanatides, J., and A. Woo. 1987. A fast voxel traversal algorithm for ray tracing. In *Eurographics '87*, pp. 3–10.
- Anderson, S. 2004. graphics.stanford.edu/~seander/bithacks.html.
- Annen, T., J. Kautz, F. Durand, and H.-P. Seidel. 2004. Spherical harmonic gradients for mid-range illumination. In *Proceedings of Eurographics Symposium on Rendering*. 331–36.
- Anton, H. A., I. Bivens, and S. Davis. 2001. *Calculus* (7th ed.). New York: John Wiley & Sons.
- Apodaca, A. A., and L. Gritz. 2000. *Advanced RenderMan: Creating CGI for Motion Pictures*. San Francisco: Morgan Kaufmann.
- Appel, A. 1968. Some techniques for shading machine renderings of solids. In *AFIPS 1968 Spring Joint Computer Conference.*, 32, 37–45.
- Arbree, A., B. Walter, and K. Bala. 2008. Single-pass scalable subsurface rendering with lightcuts. *Computer Graphics Forum (Proceedings of Eurographics 2008)* 27(2), 507–16.
- Arikan, O., D. Forsyth, and J. F. O'Brien. 2005. Fast and detailed approximate global illumination by irradiance decomposition. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2005)* 24(3), 1108–14.

- Arnaldi, B., T. Priol, and K. Bouatouch. 1987. A new space subdivision method for ray tracing CSG modeled scenes. *The Visual Computer* 3(2), 98–108.
- Arvo, J. 1986. Backward ray tracing. *Developments in Ray Tracing, SIGGRAPH '86 Course Notes*.
- Arvo, J. 1988. Linear-time voxel walking for octrees. *Ray Tracing News* 12(1).
- Arvo, J. 1990. Transforming axis-aligned bounding boxes. In A. S. Glassner (Ed.), *Graphics Gems I*, pp. 548–50. San Diego: Academic Press.
- Arvo, J. 1993. Transfer equations in global illumination. In *Global Illumination, SIGGRAPH '93 Course Notes*, Volume 42.
- Arvo, J. 1995. *Analytic Methods for Simulated Light Transport*. Ph.D. thesis, Yale University.
- Arvo, J., and D. Kirk. 1987. Fast ray tracing by ray classification. *Computer Graphics (SIGGRAPH '87 Proceedings)*, 21, 55–64.
- Arvo, J., and D. Kirk. 1990. Particle transport and image synthesis. *Computer Graphics (SIGGRAPH '90 Proceedings)* 24(4), 63–66.
- Ashdown, I. 1993. Near-field photometry: a new approach. *Journal of the Illuminating Engineering Society* 22(1), 163–80.
- Ashdown, I. 1994. *Radiosity: A Programmer's Perspective*. New York: John Wiley & Sons.
- Ashikhmin, M., and P. Shirley 2000. An Anisotropic Phong Light Reflection Model, Technical report UUCS-00-014. University of Utah.
- Ashikhmin, M., and P. Shirley 2002. An anisotropic Phong BRDF model. *Journal of Graphics Tools* 5(2), 25–32.
- Ashikhmin, M., S. Premoze, and P. S. Shirley. 2000. A microfacet-based BRDF generator. In *Proceedings of ACM SIGGRAPH 2000*, Computer Graphics Proceedings, Annual Conference Series, pp. 65–74. ACM Press.
- Atkinson, K. 1993. *Elementary Numerical Analysis*. New York: John Wiley & Sons.
- Badouel, D., and T. Priol. 1989. An efficient parallel ray tracing scheme for highly parallel architectures. In *Fifth Eurographics Workshop on Graphics Hardware*.
- Bahar, E., and S. Chakrabarti. 1987. Full-wave theory applied to computer-aided graphics for 3D objects. *IEEE Computer Graphics and Applications* 7(7), 46–60.
- Banks, D. C. 1994. Illumination in diverse codimensions. In *Proceedings of SIGGRAPH '94*, Computer Graphics Proceedings, Annual Conference Series, pp. 327–34.
- Barkans, A. C. 1997. High-quality rendering using the Talisman architecture. In *1997 SIGGRAPH/Eurographics Workshop on Graphics Hardware*, pp. 79–88.
- Barzel, R. 1997. Lighting controls for computer cinematography. *Journal of Graphics Tools* 2(1), 1–20.
- Basri, R. and D. Jacobs. 2001. Lambertian reflectance and linear subspaces. In *IEEE International Conference on Computer Vision*. 383–90.
- Becker, B. G., and N. L. Max. 1993. Smooth transitions between bump rendering algorithms. In *Proceedings of SIGGRAPH '93*, Computer Graphics Proceedings, Annual Conference Series, pp. 183–90.
- Beckmann, P., and A. Spizzichino. 1963. *The Scattering of Electromagnetic Waves from Rough Surfaces*. New York: Pergamon.

- Ben-Artzi, A., K. Egan, F. Durand, and R. Ramamoorthi. 2008. A precomputed polynomial representation for interactive BRDF editing with global illumination. *ACM Transactions on Graphics* 27(2), 13:1–13:13.
- Benthin, C., and I. Wald. 2009. Efficient Ray Traced Soft Shadows using Multi-Frusta Tracing. In *Proceedings of High Performance Graphics 2009*, pp. 135–44.
- Benthin, C., S. Boulos, D. Lacewell, and I. Wald. 2007. Packet-Based Ray Tracing of Catmull–Clark Subdivision Surfaces, *SCI Institute Technical Report, No. UUSCI-2007-011*. University of Utah.
- Benthin, C., I. Wald, and P. Slusallek. 2003. A scalable approach to interactive global illumination. In *Computer Graphics Forum* 22(3). 621–30.
- Benthin, C., I. Wald, and P. Slusallek. 2004. Techniques for interactive ray tracing of Bézier surfaces. *Journal of Graphics, GPU, and Game Tools* 11(2), 1–16.
- Berger, E. D., B. G. Zorn, and K. S. McKinley. 2001. Composing high-performance memory allocators. In *SIGPLAN Conference on Programming Language Design and Implementation*, pp. 114–24.
- Berger, E. D., B. G. Zorn, and K. S. McKinley. 2002. Reconsidering custom memory allocation. In *Proceedings of ACM OOPSLA 2002*.
- Betrissey, C., J. F. Blinn, B. Dresevic, B. Hill, G. Hitchcock, B. Keely, D. P. Mitchell, J. C. Platt, and T. Whitted. 2000. Displaced filtering for patterned displays. *Society for Information Display International Symposium. Digest of Technical Papers* 31, 296–99.
- Bhate, N., and A. Tokuta. 1992. Photorealistic volume rendering of media with directional scattering. In *Proceedings of the Third Eurographics Rendering Workshop*, pp. 227–45.
- Bigler, J., A. Stephens, and S. Parker. 2006. Design for parallel interactive ray tracing systems. *IEEE Symposium on Interactive Ray Tracing*, pp. 187–195.
- Bikker, J. and R. Reijerse. 2009. A precalculated point set for caching shading information. *Eurographics Short Papers*.
- Bjorke, K. 2001. Using Maya with RenderMan on Final Fantasy: The Spirits Within. *SIGGRAPH 2001 RenderMan Course Notes*.
- Blasi, P., B. L. Saëc, and C. Schlick. 1993. A rendering algorithm for discrete volume density objects. *Computer Graphics Forum (Proceedings of Eurographics '93)* 12(3), 201–10.
- Blinn, J. F. 1977. Models of light reflection for computer synthesized pictures. *Computer Graphics (SIGGRAPH '77 Proceedings)*, 11, 192–98.
- Blinn, J. F. 1978. Simulation of wrinkled surfaces. In *Computer Graphics (SIGGRAPH '78 Proceedings)*, 12, 286–92.
- Blinn, J. F. 1982a. A generalization of algebraic surface drawing. *ACM Transactions on Graphics* 1(3), 235–56.
- Blinn, J. F. 1982b. Light reflection functions for simulation of clouds and dusty surfaces. *Computer Graphics* 16(3), 21–29.
- Blinn, J. F., and M. E. Newell. 1976. Texture and reflection in computer generated images. *Communications of the ACM* 19, 542–46.
- Bloom, C., J. Blow, and C. Muratori. 2004. Errors and omissions in Marc Alexa's "Linear Combination of Transformations". www.cbloom.com/3d/techdocs/lcot_errors.pdf
- Blow, J. 2004. Understanding slerp, then not using it. *Game Developer Magazine*. Also available from number-none.com/product/Understanding_Slerp,_Then_Not_Using_It

- Blumofe, R., and C. Leiserson. 1999. Scheduling multithreaded computations by work stealing. *Journal of the ACM* 46(5), 720–48.
- Blumofe, R., C. Joerg, B. Kuszmaul, C. Leiserson, K. Randall, and Y. Zhou. 1996. Cilk: an efficient multithreaded runtime system. *Journal of Parallel and Distributed Computing* 37(1), 55–69.
- Boehm, H.-J. 2005. Threads cannot be implemented as a library. *ACM SIGPLAN Notices* 40(6), 261–68.
- Bolin, M. R., and G. W. Meyer. 1995. A frequency based ray tracer. In *Proceedings of SIGGRAPH '95*, Computer Graphics Proceedings, Annual Conference Series, pp. 409–18.
- Bolin, M. R., and G. W. Meyer. 1998. A perceptually based adaptive sampling algorithm. In *Proceedings of SIGGRAPH '98*, Computer Graphics Proceedings, Annual Conference Series, pp. 299–310.
- Bolz, J., and P. Schröder. 2002. Rapid evaluation of Catmull–Clark subdivision surfaces. In *Web3D 2002 Symposium*.
- Booth, T. E. 1986. A Monte Carlo learning/biasing experiment with intelligent random numbers. *Nuclear Science and Engineering* 92, 465–81.
- Borges, C. 1991. Trichromatic approximation for computer graphics illumination models. In *Computer Graphics (Proceedings of SIGGRAPH '91)*, 25, 101–04.
- Boulos, S., and E. Haines. 2006. Ray–box sorting. *Ray Tracing News* 19(1), tog.acm.org/resources/RTNews/html/rtnv19n1.html.
- Boulos, S., I. Wald, and C. Benthin. 2008. Adaptive ray packet reordering. In *Proceedings of IEEE Symposium on Interactive Ray Tracing*, pp. 131–38.
- Bracewell, R. N. 2000. *The Fourier Transform and Its Applications*. New York: McGraw-Hill.
- Bronsvoort, W. F., and F. Klok. 1985. Ray tracing generalized cylinders. *ACM Transactions on Graphics* 4(4), 291–303.
- Buck, R. C. 1978. *Advanced Calculus*. New York: McGraw-Hill.
- Budge, B., D. Coming, D. Norpchen, and K. Joy. 2008. Accelerated building and ray tracing of restricted BSP trees. In *IEEE Symposium on Interactive Ray Tracing*, pp. 167–174.
- Budge, B., T. Bernardin, J. Stuart, S. Sengupta, K. Joy, and J. D. Owens. 2009. Out-of-core data management for path tracing on hybrid resources. *Computer Graphics Forum (Proceedings of Eurographics 2009)* 28(2), 385–96.
- Buhler, J., and D. Wexler. 2002. A phenomenological model for Bokeh rendering. *SIGGRAPH Sketch*. See also www.flarg.com/bokeh.html.
- Burke, D., A. Ghosh, and W. Heidrich. 2005. Bidirectional importance sampling for direct illumination. In *Rendering Techniques 2005: 16th Eurographics Workshop on Rendering*, 147–56.
- Buss, S., J. Fillmore. 2001. Spherical averages and applications to spherical splines and interpolation. *ACM Transactions on Graphics* 20(2), 95–126.
- Cabral, B., N. Max, and R. Springmeyer. 1987. Bidirectional reflection functions from surface bump maps. *Computer Graphics (SIGGRAPH '87 Proceedings)*, 21, 273–81.
- Calder, B., K. Chandra, S. John, and T. Austin. 1998. Cache-conscious data placement. In *Proceedings of the Eighth International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS-VIII)*, San Jose.

- Cammarano, M., and H. W. Jensen. 2002. Time dependent photon mapping. In *Rendering Techniques 2002: 13th Eurographics Workshop on Rendering*. 135–44.
- Cant, R. J., and P. A. Shrubsole. 2000. Texture potential MIP mapping, a new high-quality texture antialiasing algorithm. *ACM Transactions on Graphics* 19(3), 164–84.
- Cantrill, B., M. Shapiro, and A. Leventhal. 2004. Dynamic Instrumentation of Production Systems. In *Proceedings of the 2004 USENIX Annual Technical Conference*.
- Carr, N., J. D. Hall, and J. Hart. 2002. The ray engine. In *Proceedings of Graphics Hardware 2002* (September).
- Catmull, E., and J. Clark. 1978. Recursively generated B-spline surfaces on arbitrary topological meshes. *Computer-Aided Design* 10, 350–55.
- Cazals, F., G. Drettakis, and C. Puech. 1995. Filtering, clustering and hierarchy construction: a new solution for ray-tracing complex scenes. *Computer Graphics Forum* 14(3), 371–82.
- Cerezo, E., F. Perez-Cazorla, X. Pueyo, F. Seron, and F. Sillion. 2005. A survey on participating media rendering techniques. *The Visual Computer* 21(5), 303–28.
- Chalmers, A., T. Davis, and E. Reinhard. 2002. *Practical Parallel Rendering*. Natick, Massachusetts: A. K. Peters.
- Chandrasekhar, S. 1960. *Radiative Transfer*. New York: Dover Publications. Originally published by Oxford University Press, 1950.
- Chib, S. and E. Greenberg. 1995. Understanding the Metropolis–Hastings algorithm. *The American Statistician* 49(4), 327–35.
- Chilimbi, T. M., B. Davidson, and J. R. Larus. 1999a. Cache-conscious structure definition. In *SIGPLAN Conference on Programming Language Design and Implementation*, pp. 13–24.
- Chilimbi, T. M., M. D. Hill, and J. R. Larus. 1999b. Cache-conscious structure layout. In *SIGPLAN Conference on Programming Language Design and Implementation*, pp. 1–12.
- Chiu, K., P. Shirley, and C. Wang. 1994. Multi-jittered sampling. In P. Heckbert (Ed.), *Graphics Gems IV*, pp. 370–74. San Diego: Academic Press.
- Chen, B., F. Dacheville, and A. Kaufman. 2004. Footprint area sampled texturing. *IEEE Transactions on Visualization and Computer Graphics* 10(2), 230–40.
- Christensen, P. H. 1999. Faster photon map global illumination. *Journal of Graphics Tools* 4(3), 1–10.
- Christensen, P. H. 2003. Adjoints and importance in rendering: an overview. *IEEE Transactions on Visualization and Computer Graphics* 9(3), 329–40.
- Christensen, P., and D. Batali. 2004. An irradiance atlas for global illumination in complex production scenes. In *Rendering Techniques 2004: 15th Eurographics Workshop on Rendering*. 133–42.
- Christensen, P. H., D. M. Laur, J. Fong, W. L. Wooten, and D. Batali. 2003. Ray differentials and multiresolution geometry caching for distribution ray tracing in complex scenes. In *Computer Graphics Forum (Eurographics 2003 Conference Proceedings)*, pp. 543–52.
- Chvolson, O. D. 1890. Grundzüge einer mathematischen Theorie der inneren Diffusion des Lichtes. *Izv. Peterburg. Akademii Nauk* 33, 221–65.
- Clarberg, P. 2008. Fast equal-area mapping of the (hemi)sphere using SIMD. *Journal of Graphics Tools* 13(3), 53–68.
- Clarberg, P., and T. Akenine-Möller. 2008a. Practical product importance sampling for direct illumination. *Computer Graphics Forum (Proceedings of Eurographics 2008)* 27(2), 681–90.

- Clarberg, P., and T. Akenine-Möller. 2008b. Exploiting visibility correlation in direct illumination. *Computer Graphics Forum* 27(4), 1125–36.
- Clarberg, P., W. Jarosz, T. Akenine-Möller, and H. W. Jensen. 2005. Wavelet importance sampling: efficiently evaluating products of complex functions. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2005)* 24(3), 1166–75.
- Clark, J. H. 1976. Hierarchical geometric models for visible surface algorithms. *Communications of the ACM* 19(10), 547–54.
- Cleary, J. G., and G. Wyvill. 1988. Analysis of an algorithm for fast ray tracing using uniform space subdivision. *The Visual Computer* 4(2), 65–83.
- Cleary, J. G., B. M. Wyvill, R. Vatti, and G. M. Birtwistle. 1983. Design and analysis of a parallel ray tracing computer. In *Graphics Interface '83*, pp. 33–38.
- Cline, D., D. Adams, and P. Egbert. 2008. Table-driven adaptive importance sampling. *Computer Graphics Forum (Proceedings of the 2008 Eurographics Symposium on Rendering)* 27(4), 1115–23.
- Cline, D., J. Talbot, and P. Egbert. 2005. Energy redistribution path tracing. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2005)* 24(3), 1186–95.
- Cline, D., P. Egbert, J. Talbot, and D. Cardon. 2006. Two stage importance sampling for direct lighting. *Rendering Techniques 2006: 17th Eurographics Workshop on Rendering*, 103–14.
- Cline, D., S. Jeschke, K. White, A. Razdan, and P. Wonka. 2009a. Dart throwing on surfaces. In *Computer Graphics Forum (Proceedings of the 20th Eurographics Symposium on Rendering)* 28(4), 1217–26.
- Cline, D., A. Razdan, and P. Wonka. 2009b. A comparison of tabular PDF inversion methods. *Computer Graphics Forum* 28(1), 154–60.
- Cohen, J., A. Varshney, D. Manocha, G. Turk, H. Weber, P. Agarwal, F. P. Brooks Jr., and W. Wright. 1996. Simplification envelopes. In *Proceedings of SIGGRAPH '96*, Computer Graphics Proceedings, Annual Conference Series, pp. 119–28.
- Cohen, M., and J. Wallace. 1993. *Radiosity and Realistic Image Synthesis*. San Diego: Academic Press Professional.
- Collins, S. 1994. Adaptive splatting for specular to diffuse light transport. In *Fifth Eurographics Workshop on Rendering*, Darmstadt, Germany, pp. 119–35.
- Contini, D., F. Martelli, and G. Zaccanti. 1997. Photon migration through a turbid slab described by a model based on diffusion approximation. I. Theory. *Applied Optics* 36(19), 4587–4599.
- Cook, R. L. 1984. Shade trees. *Computer Graphics (SIGGRAPH '84 Proceedings)*, 18, 223–31.
- Cook, R. L. 1986. Stochastic sampling in computer graphics. *ACM Transactions on Graphics* 5(1), 51–72.
- Cook, R., and T. DeRose. 2005. Wavelet noise. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2005)* 24(3), 803–11.
- Cook, R. L., and K. E. Torrance. 1981. A reflectance model for computer graphics. *Computer Graphics (SIGGRAPH '81 Proceedings)*, 15, 307–16.
- Cook, R. L., and K. E. Torrance. 1982. A reflectance model for computer graphics. *ACM Transactions on Graphics* 1(1), 7–24.
- Cook, R. L., T. Porter, and L. Carpenter. 1984. Distributed ray tracing. *Computer Graphics (SIGGRAPH '84 Proceedings)*, 18, 137–45.

- Cook, R. L., L. Carpenter, and E. Catmull. 1987. The REYES image rendering architecture. *Computer Graphics (Proceedings of SIGGRAPH '87)*, 95–102.
- Crow, F. C. 1977. The aliasing problem in computer-generated shaded images. *Communications of the ACM* 20(11), 799–805.
- Crow, F. C. 1984. Summed-area tables for texture mapping. *Computer Graphics (Proceedings of SIGGRAPH '84)*, 18, 207–12.
- Dachsbacher, C., and M. Stamminger. 2003. Translucent shadow maps. In *Proceedings of the 13th Eurographics Workshop on Rendering*, pp. 197–201.
- Dachsbacher, C., and M. Stamminger. 2006. Splatting of indirect illumination. *ACM Symposium on Interactive 3D Graphics and Games* 93–100.
- Dammertz, H., and A. Keller. 2006. Improving ray tracing precision by object space intersection computation. *IEEE Symposium on Interactive Ray Tracing*. pp. 25–31.
- Dammertz, H., and A. Keller. 2008. The edge volume heuristic—robust triangle subdivision for improved BVH performance. In *IEEE Symposium on Interactive Ray Tracing*. pp. 155–58.
- Dana, K. J., B. van Ginneken, S. K. Nayar, and J. J. Koenderink. 1999. Reflectance and texture of real-world surfaces. *ACM Transactions on Graphics* 18(1), 1–34.
- Danskin, J., and P. Hanrahan. 1992. Fast algorithms for volume ray tracing. In *1992 Workshop on Volume Visualization*, pp. 91–98.
- de Berg, M., M. van Kreveld, M. Overmars, and O. Schwarzkopf. 2000. *Computational Geometry: Algorithms and Applications*. New York: Springer-Verlag.
- de Voigt, E., A. van der Helm, and W. F. Bronsvort. 2000. Ray tracing deformed generalized cylinders. *The Visual Computer* 16(3–4), 197–207.
- Debevec, P. 1998. Rendering synthetic objects into real scenes: bridging traditional and image-based graphics with global illumination and high dynamic range photography. In *Proceedings of SIGGRAPH '98*, 189–98.
- Deering, M. F. 1995. Geometry compression. In *Proceedings of SIGGRAPH '95*, Computer Graphics Proceedings, Annual Conference Series, pp. 13–20.
- d'Eon, E., D. Luebke, and E. Enderton. 2007. Efficient rendering of human skin. In *Rendering Techniques 2007: 18th Eurographics Workshop on Rendering*, 147–58.
- DeRose, T. D. 1989. *A Coordinate-Free Approach to Geometric Programming*. Math for SIGGRAPH, SIGGRAPH Course Notes #23. Also available as Technical Report No. 89-09-16, Department of Computer Science and Engineering, University of Washington, Seattle.
- Deussen, O., P. M. Hanrahan, B. Lintermann, R. Mech, M. Pharr, and P. Prusinkiewicz. 1998. Realistic modeling and rendering of plant ecosystems. In *Proceedings of SIGGRAPH '98*, Computer Graphics Proceedings, Annual Conference Series, pp. 275–86.
- Devlin, K., A. Chalmers, A. Wilkie, and W. Purgathofer. 2002. Tone reproduction and physically based spectral rendering. In D. Fellner and R. Scopigno (Eds.), *Proceedings of Eurographics 2002*, pp. 101–23. The Eurographics Association.
- Dippé, M. A. Z., and E. H. Wold. 1985. Antialiasing through stochastic sampling. *Computer Graphics (SIGGRAPH '85 Proceedings)*, 19, 69–78.
- Dobashi, Y., K. Kaneda, H. Nakatani, and H. Yamashita. 1995. A quick rendering method using basis functions for interactive lighting design. *Computer Graphics Forum* 14(3), 229–40.

- Dobkin, D. P., and D. P. Mitchell. 1993. Random-edge discrepancy of supersampling patterns. In *Graphics Interface '93*, Toronto, Ontario, pp. 62–69. Canadian Information Processing Society.
- Dobkin, D. P., D. Eppstein, and D. P. Mitchell. 1996. Computing the discrepancy with applications to supersampling patterns. *ACM Transactions on Graphics* 15(4), 354–76.
- Donikian, M., B. Walter, K. Bala, S. Fernandez, and D. P. Greenberg. 2006. Accurate direct illumination using iterative adaptive sampling. *IEEE Transactions on Visualization and Computer Graphics* 12(3), 353–64.
- Donner, C. 2006. *Towards Realistic Image Synthesis of Scattering Materials*. Ph.D. thesis, University of California, San Diego.
- Donner, C., and H. W. Jensen. 2005. Light diffusion in multi-layered translucent materials. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2005)* 24(3), 1032–39.
- Donner, C., and H. W. Jensen. 2006. A Spectral BSSRDF for shading human skin. *Rendering Techniques 2006: 17th Eurographics Workshop on Rendering*, 409–417.
- Donner, C., T. Weyrich, E. d'Eon, R. Ramamoorthi, and S. Rusinkiewicz. 2008. A layered, heterogeneous reflectance model for acquiring and rendering human skin. *ACM Transactions on Graphics (Proceedings of ACM SIGGRAPH Asia 2008)* 27(5), 140:1–140:12.
- Donner, C., J. Lawrence, R. Ramamoorthi, T. Hachisuka, H. W. Jensen, and S. Nayar. 2009. An empirical BSSRDF model. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2009)* 28(3), 30:1–30:10.
- Doo, D., and M. Sabin. 1978. Behaviour of recursive division surfaces near extraordinary points. *Computer-Aided Design* 10, 356–60.
- Dorsey, J. O., F. X. Sillion, and D. P. Greenberg. 1991. Design and simulation of opera lighting and projection effects. In *Computer Graphics (Proceedings of SIGGRAPH '91)*, 25, 41–50.
- Dorsey, J., J. Arvo, and D. Greenberg. 1995. Interactive design of complex time-dependent lighting. *IEEE Computer Graphics and Applications* 15(2), 26–36.
- Dorsey, J., H. K. Pedersen, and P. M. Hanrahan. 1996. Flow and changes in appearance. In *Proceedings of SIGGRAPH '96*, Computer Graphics Proceedings, Annual Conference Series, pp. 411–20.
- Dorsey, J., A. Edelman, J. Legakis, H. W. Jensen, and H. K. Pedersen. 1999. Modeling and rendering of weathered stone. In *Proceedings of SIGGRAPH '99*, Computer Graphics Proceedings, Annual Conference Series, pp. 225–34.
- Dorsey, J., H. Rushmeier, and F. Sillion. 2008. *Digital Modeling of Material Appearance*. San Francisco: Morgan Kaufmann.
- Drebin, R. A., L. Carpenter, and P. Hanrahan. 1988. Volume rendering. *Computer Graphics (Proceedings of SIGGRAPH '88)*, 22, 65–74.
- Drepper, U. 2007. What Every Programmer Should Know About Memory. people.redhat.com/drepper/cpumemory.pdf.
- Drew, M. and G. Finlayson. 2003. Multispectral rendering without spectra. *Journal of the Optical Society of America A* 20(7), 1181–1193.
- Driemeyer, T., and R. Herken. 2002. *Programming mental ray*. Wien: Springer-Verlag.
- Duff, T. 1985. Compositing 3-D rendered images. *Computer Graphics (Proceedings of SIGGRAPH '85)*, 19, 41–44.

- Dunbar, D., and G. Humphreys. 2006. A spatial data structure for fast Poisson-disk sample generation. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2006)* 25(3), 503–08.
- Dungan, W. Jr., A. Stenger, and G. Suttly. 1978. Texture tile considerations for raster graphics. *Computer Graphics (Proceedings of SIGGRAPH '78)*, 12, 130–34.
- Dutr , P. 2003. Global Illumination Compendium. www.cs.kuleuven.ac.be/~phil/GI/.
- Dutr , P., K. Bala, and P. Bekaert. 2006. *Advanced Global Illumination*. Natick, Massachusetts: A. K. Peters.
- Eberly, D. H. 2001. *3D Game Engine Design: A Practical Approach to Real-Time Computer Graphics*. San Francisco: Morgan Kaufmann.
- Ebert, D., F. K. Musgrave, D. Peachey, K. Perlin, and S. Worley. 2003. *Texturing and Modeling: A Procedural Approach*.
- Edwards, D., S. Boulos, J. Johnson, P. Shirley, M. Ashikhmin, M. Stark, and C. Wyman. 2005. The halfway vector disk for brdf modeling. *ACM Transactions on Graphics* 25(1), 1–18.
- Egan, K., Y.-T. Tseng, N. Holzschuch, F. Durand, and R. Ramamoorthi. 2009. Frequency analysis and sheared reconstruction for rendering motion blur. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2009)* 28(3), 93:1–93:13.
- Eisemann, M., M. Magnor, T. Grosch, and S. M ller. 2007. Fast ray/axis-aligned bounding box overlap tests using ray slopes. *Journal of Graphics, GPU, and Game Tools* 12(4), 35–46.
- Ericson, C. 2004. *Real-Time Collision Detection*. Morgan Kaufmann Series in Interactive 3D Technology. San Francisco: Morgan Kaufmann.
- Ernst, M. and G. Greiner. 2007. Early split clipping for bounding volume hierarchies. *IEEE Symposium on Interactive Ray Tracing*. pp. 73–78.
- Evans, G. and M. McCool. 1999. Stratified wavelength clusters for efficient spectral Monte Carlo rendering. In *Graphics Interface '99*, pp. 42–49.
- Fabianowski, B. and J. Dingliana. 2009. Interactive global photon mapping. *Computer Graphics Forum (Proceedings of the Eurographics Symposium on Rendering)* 28(4), 1151–59.
- Fabianowski, B., C. Fowler, and J. Dingliana. 2009. A cost metric for scene-interior ray origins. In *Short Paper Proceedings of the 30th Annual Conference of the European Association for Computer Graphics (Eurographics 2009)*, pp. 49–50.
- Fairchild, M. D., and D. R. Wyble. 1998. Colorimetric Characterization of the Apple Studio Display (Flat Panel LCD). Technical report, RIT Munsell Color Science Laboratory.
- Fan, S., S. Chenney, and Y.-C. Lai. 2005. Metropolis photon sampling with optional user guidance. In *Rendering Techniques 2005: 16th Eurographics Workshop on Rendering*, 127–38.
- Fante, R. L. 1981. Relationship between radiative-transport theory and Maxwell's equations in dielectric media. *Journal of the Optical Society of America* 71(4), 460–468.
- Farrell, T., M. Patterson, and B. Wilson. 1992. A diffusion theory model of spatially resolved, steady-state diffuse reflectance for the noninvasive determination of tissue optical properties *in vivo*. *Med. Phys.* 19(4), 879–888.
- Fatahalian, K. 2008. Running code at a teraflop: how GPU shader cores work. In *Beyond Programmable Shading, SIGGRAPH 2008 Course Notes*. s08.idav.ucdavis.edu/fatahalian-gpu-architecture.pdf
- Fattal, R. 2009. Participating media illumination using light propagation maps. *ACM Transactions on Graphics* 28(1), 7:1–7:11.

- Fedkiw, R., J. Stam, and H. W. Jensen. 2001. Visual simulation of smoke. In *Proceedings of ACM SIGGRAPH 2001*, Computer Graphics Proceedings, Annual Conference Series, pp. 15–22.
- Feibush, E. A., M. Levoy, and R. L. Cook. 1980. Synthetic texturing using digital filters. *Computer Graphics (Proceedings of SIGGRAPH '80)*, 14, 294–301.
- Fernandez, S., K. Bala, and D. P. Greenberg. 2002. Local illumination environments for direct lighting acceleration. In *Rendering Techniques 2002: 13th Eurographics Workshop on Rendering*, pp. 7–14.
- Ferwerda, J. A. 2001. Elements of early vision for computer graphics. *IEEE Computer Graphics and Applications* 21(5), 22–33.
- Fisher, M., K. Fatahalian, S. Boulos, K. Akeley, W. R. Mark, and P. Hanrahan. 2009. DiagSplit: parallel, crack-free, adaptive tessellation for micropolygon rendering. *ACM Transactions on Graphics (Proceedings of ACM SIGGRAPH Asia 2009)* 28(5).
- Fishman, G. S. 1996. *Monte Carlo: Concepts, Algorithms, and Applications*. New York: Springer-Verlag.
- Fleischer, K., D. Laidlaw, B. Currin, and A. H. Barr. 1995. Cellular texture generation. In *Proceedings of SIGGRAPH '95*, Computer Graphics Proceedings, Annual Conference Series, pp. 239–48.
- Foley, J. D., A. van Dam, S. K. Feiner, and J. F. Hughes. 1990. *Computer Graphics: Principles and Practice*. Reading, Massachusetts: Addison-Wesley.
- Fournier, A. 1992. Normal distribution functions and multiple surfaces. In *Graphics Interface '92 Workshop on Local Illumination*, pp. 45–52.
- Fournier, A., and E. Fiume. 1988. Constant-time filtering with space-variant kernels. *Computer Graphics (SIGGRAPH '88 Proceedings)*, 22, 229–38.
- Fournier, A., D. Fussell, and L. Carpenter. 1982. Computer rendering of stochastic models. *Communications of the ACM* 25(6), 371–84.
- Fraser, C., and D. Hanson. 1995. *A Retargetable C Compiler: Design and Implementation*. Reading, Massachusetts: Addison-Wesley.
- Friedel, I., and A. Keller. 2000. Fast generation of randomized low discrepancy point sets. In *Monte Carlo and Quasi-Monte Carlo Methods 2000*, pp. 257–73. Berlin: Springer-Verlag.
- Frisvad, J., N. Christensen, and H. W. Jensen. 2007. Computing the scattering properties of participating media using Lorenz-Mie theory. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2007)* 26(3), 60:1–60:10.
- Fujimoto, A., T. Tanaka, and K. Iwata. 1986. Arts: accelerated ray-tracing system. *IEEE Computer Graphics and Applications* 6(4), 16–26.
- Gardner, G. Y. 1984. Simulation of natural scenes using textured quadric surfaces. *Computer Graphics (SIGGRAPH '84 Proceedings)*, 18, 11–20.
- Gardner, G. Y. 1985. Visual simulation of clouds. *Computer Graphics (Proceedings of SIGGRAPH '85)*, 19, 297–303.
- Gardner, R. P., H. K. Choi, M. Mickael, A. M. Yacout, Y. Yin, and K. Verghese. 1987. Algorithms for forcing scattered radiation to spherical, planar circular, and right circular cylindrical detectors for Monte Carlo simulation. *Nuclear Science and Engineering* 95, 245–56.
- Gassenbauer, V., J. Krivánek, and K. Bouatouch. 2009. Spatial directional radiance caching. *Computer Graphics Forum (Proceedings of The Eurographics Symposium on Rendering)* 28(4).

- Gautron, P., K. Bouatouch, and S. Pattanaik. 2007. Temporal Radiance Caching. *IEEE Transactions on Visualization and Computer Graphics* 13(5), 891–901.
- Gershbein, R., and P. M. Hanrahan. 2000. A fast relighting engine for interactive cinematic lighting design. In *Proceedings of ACM SIGGRAPH 2000*, Computer Graphics Proceedings, Annual Conference Series, pp. 353–58.
- Gershun, A. 1939. The light field. *Journal of Mathematics and Physics* 18, 51–151.
- Génevaux, O., F. Larue, J.-M. Dischler. 2006. Interactive refraction on complex static geometry using spherical harmonics. In *Proceedings of the S006 symposium on Interactive 3D graphics and games*, 145–52.
- Georgiev, I., and P. Slusallek. 2008. RTfact: generic concepts for flexible and high performance ray tracing. In *Proceedings of IEEE Symposium on Interactive Ray Tracing*, 115–22.
- Ghosh, A., and W. Heidrich. 2006. Correlated visibility sampling for direct illumination. *The Visual Computer* 22(9–10), 693–701.
- Ghosh, A., A. Doucet, and W. Heidrich. 2006. Sequential sampling for dynamic environment map illumination. In *Proceedings of the Eurographics Symposium on Rendering*, 115–26.
- Ghosh, A., T. Hawkins, P. Peers, S. Frederiksen, and P. Debevec. 2008. Practical modeling and acquisition of layered facial reflectance. *ACM Transactions on Graphics (Proceedings of ACM SIGGRAPH Asia 2008)* 27(5), 139:1–139:10.
- Gibson, J. E., and M. D. Fairchild. 2000. Colorimetric characterization of three computer displays (LCD and CRT). Technical report, RIT Munsell Color Science Laboratory, www.cis.rit.edu/research/mcsl/research/reports.shtml.
- Glassner, A. 1984. Space subdivision for fast ray tracing. *IEEE Computer Graphics and Applications* 4(10), 15–22.
- Glassner, A. (Ed.) 1989a. *An Introduction to Ray Tracing*. San Diego: Academic Press.
- Glassner, A. 1989b. How to derive a spectrum from an RGB triplet. *IEEE Computer Graphics and Applications* 9(4), 95–99.
- Glassner, A. 1993. Spectrum: an architecture for image synthesis, research, education, and practice. *Developing Large-Scale Graphics Software Toolkits, SIGGRAPH '93 Course Notes*, 3, 1-14–1-43.
- Glassner, A. 1994. A model for fluorescence and phosphorescence. In *Proceedings of the Fifth Eurographics Workshop on Rendering*. pp. 57–68.
- Glassner, A. 1995. *Principles of Digital Image Synthesis*. San Francisco: Morgan Kaufmann.
- Glassner, A. 1999. An open and shut case. *IEEE Computer Graphics and Applications* 19(3), 82–92.
- Goesele, M. H. Lensch, J. Lang, C. Fuchs, and H.-P. Seidel. 2004. DISCO—Acquisition of translucent objects. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2004)* 23(3), 844–53.
- Goldberg, A., M. Zwicker, and F. Durand. 2008. Anisotropic noise. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2008)* 27(3), 54:1–54:8.
- Goldman, D. B. 1997. Fake fur rendering. In *Proceedings of SIGGRAPH '97*, Computer Graphics Proceedings, Annual Conference Series, pp. 127–34.
- Goldman, R. 1985. Illicit expressions in vector algebra. *ACM Transactions on Graphics* 4(3), 223–43.

- Goldsmith, J., and J. Salmon. 1987. Automatic creation of object hierarchies for ray tracing. *IEEE Computer Graphics and Applications* 7(5), 14–20.
- Goldstein, R. A., and R. Nagel. 1971. 3-D visual simulation. *Simulation* 16(1), 25–31.
- Gortler, S. J., R. Grzeszczuk, R. Szeliski, and M. F. Cohen. 1996. The lumigraph. In *Proceedings of SIGGRAPH '96*, Computer Graphics Proceedings, Annual Conference Series, pp. 43–54.
- Gray, A. 1993. *Modern Differential Geometry of Curves and Surfaces*. Boca Raton, Florida: CRC Press.
- Green, S. A., and D. J. Paddon. 1989. Exploiting coherence for multiprocessor ray tracing. *IEEE Computer Graphics and Applications* 9(6), 12–26.
- Greenberg, D. P., K. E. Torrance, P. S. Shirley, J. R. Arvo, J. A. Ferwerda, S. Pattanaik, E. P. F. Lafortune, B. Walter, S.-C. Foo, and B. Trumbore. 1997. A framework for realistic image synthesis. In *Proceedings of SIGGRAPH '97*, Computer Graphics Proceedings, Annual Conference Series, pp. 477–94.
- Greene, N. 1986. Environment mapping and other applications of world projections. *IEEE Computer Graphics and Applications* 6(11), 21–29.
- Greene, N., and P. S. Heckbert. 1986. Creating raster Omnimax images from multiple perspective views using the elliptical weighted average filter. *IEEE Computer Graphics and Applications* 6(6), 21–27.
- Greger, G., P. Shirley, P. Hubbard, and D. Greenberg. 1998. The irradiance volume. *IEEE Computer Graphics and Applications* 18(2), 32–43.
- Gribble, C., and K. Ramani. 2008. Coherent ray tracing via stream filtering. In *Proceedings of IEEE Symposium on Interactive Ray Tracing*, pp. 59–66.
- Gritz, L., and E. d'Eon. 2008. The importance of being linear. In H. Nguyen (Ed.), *GPU Gems 3*. Boston, Massachusetts: Addison-Wesley.
- Gritz, L., and J. K. Hahn. 1996. BMRT: a global illumination implementation of the RenderMan standard. *Journal of Graphics Tools* 1(3), 29–47.
- Grunwald, D., B. G. Zorn, and R. Henderson. 1993. Improving the cache locality of memory allocation. In *SIGPLAN Conference on Programming Language Design and Implementation*, pp. 177–86.
- Guatron, P., J. Krivánek, S.-N. Pattanaik, and K. Bouaouach. 2004. A novel hemispherical basis for accurate and efficient rendering. In *Rendering Techniques 2004: 15th Eurographics Workshop on Rendering*. 321–330.
- Günther, J., T. Chen, M. Goesele, I. Wald, and H.-P. Seidel. 2005. Efficient acquisition and realistic rendering of car paint. In *Proceedings of Vision, Modeling, and Visualization (VMV)*, 487–94.
- Günther, J., S. Popov, H. P. Seidel, and P. Slusallek. 2007. Realtime ray tracing on GPU with BVH-based packet traversal. In *IEEE Symposium on Interactive Ray Tracing*, pp. 113–18.
- Guthe, S., and Heckbert, P. 2005. *Non-Power-of-Two Mipmapping*, NVIDIA Technical Report, developer.nvidia.com/object/np2_mipmapping.html.
- Haber, T., T. Mertens, P. Bekaert, and F. Van Reeth. 2005. A computational approach to simulate subsurface light diffusion in arbitrarily shaped objects. In *Proceedings of Graphics Interface*, 79–86.
- Hachisuka, T. 2005. High-quality global illumination rendering using rasterization. In M. Pharr (Ed.), *GPU Gems 2: Programming Techniques for High Performance Graphics and General-Purpose Computation*.

- Hachisuka, T., W. Jarosz, R. P. Weistroffer, K. Dale, G. Humphreys, M. Zwicker, and H. W. Jensen. 2008a. Multidimensional adaptive sampling and reconstruction for ray tracing. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2008)* 27(3), 33:1–33:10.
- Hachisuka, T., S. Ogaki, and H. W. Jensen. 2008b. Progressive Photon Mapping. *ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia 2008)* 27(5), 130:1–130:8.
- Haines, E. A. 1987. A proposal for standard graphics environments. *IEEE Computer Graphics and Applications* 7(11), 3–5.
- Haines, E. A. 1994. Point in polygon strategies. In P. Heckbert (Ed.), *Graphics Gems IV*, pp. 24–46. San Diego: Academic Press.
- Haines, E. A., and D. P. Greenberg. 1986. The light buffer: a shadow testing accelerator. *IEEE Computer Graphics and Applications* 6(9), 6–16.
- Haines, E. A., and J. R. Wallace. 1994. Shaft culling for efficient ray-traced radiosity. In *Second Eurographics Workshop on Rendering (Photorealistic Rendering in Computer Graphics)*. Also in *SIGGRAPH 1991 Frontiers in Rendering Course Notes*.
- Hakura, Z. S., and A. Gupta. 1997. The design and analysis of a cache architecture for texture mapping. In *Proceedings of the 24th International Symposium on Computer Architecture*, Denver, Colorado, pp. 108–20.
- Hall, R. 1989. *Illumination and Color in Computer Generated Imagery*. New York: Springer-Verlag.
- Hall, R. 1999. Comparing spectral color computation methods. *IEEE Computer Graphics and Applications* 19(4), 36–46.
- Hall, R. A., and D. P. Greenberg. 1983. A testbed for realistic image synthesis. *IEEE Computer Graphics and Applications* 3, 10–20.
- Hammersley, J., and D. Handscomb. 1964. *Monte Carlo Methods*. New York: John Wiley.
- Han, C., B. Sun, R. Ramamoorthi, and E. Grinspun. 2007. Frequency domain normal map filtering. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2007)* 26(3), 28:1–28:11.
- Hanrahan, P. 1983. Ray tracing algebraic surfaces. *Computer Graphics (Proceedings of SIGGRAPH '83)*, 17, 83–90.
- Hanrahan, P., and W. Krueger. 1993. Reflection from layered surfaces due to subsurface scattering. In *Computer Graphics (SIGGRAPH '93 Proceedings)*, pp. 165–74.
- Hanrahan, P., and J. Lawson. 1990. A language for shading and lighting calculations. *Computer Graphics (SIGGRAPH '90 Proceedings)*, 24, 289–98.
- Hansen, J. E., and L. D. Travis. 1974. Light scattering in planetary atmospheres. *Space Science Reviews* 16, 527–610.
- Hao, X., T. Baby, and A. Varshney. 2003. Interactive subsurface scattering for translucent meshes. In *ACM Symposium on Interactive 3D Graphics*, pp. 75–82.
- Hart, D., P. Dutré, and D. P. Greenberg. 1999. Direct illumination with lazy visibility evaluation. In *Proceedings of SIGGRAPH '99*, Computer Graphics Proceedings, Annual Conference Series, pp. 147–54.
- Hart, J. C. 1996. Sphere tracing: a geometric method for the antialiased ray tracing of implicit surfaces. *The Visual Computer* 12(9), 527–45.
- Hart, J. C., D. J. Sandin, and L. H. Kauffman. 1989. Ray tracing deterministic 3-D fractals. *Computer Graphics (Proceedings of SIGGRAPH '89)*, 23, 289–96.

- Hasenfratz, J.-M., M. Lapierre, N. Holzschuch, F. Sillion. 2003. A survey of real-time soft shadows algorithms. *Computer Graphics Forum (Eurographics State of the Art Report)* 22(4), 753–74.
- Havran, V., and J. Bittner. 2002. On improving kd-trees for ray shooting. In *Proceedings of WSCG 2002 Conference*, pp. 209–17.
- Havran, V., J. Bittner, R. Herzog, and H.-P. Seidel. 2005a. Ray maps for global illumination. In *Rendering Techniques 2005: 16th Eurographics Workshop on Rendering*, pp. 43–54.
- Havran, V., R. Herzog, and H.-P. Seidel. 2005b. Fast final gathering via reverse photon mapping. *Computer Graphics Forum (Proceedings of Eurographics 2005)* 24(3), 323–34.
- Havran, V., R. Herzog, and H.-P. Seidel. 2006. On the fast construction of spatial hierarchies for ray tracing. In *IEEE Symposium on Interactive Ray Tracing*, pp. 71–80.
- Hawkins, T., P. Einarsson, and P. Debevec. 2005. Acquisition of time-varying participating media. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2005)* 24(3), 812–15.
- He, X. D., K. E. Torrance, F. X. Sillion, and D. P. Greenberg. 1991. A comprehensive physical model for light reflection. *Computer Graphics (SIGGRAPH '91 Proceedings)*, 25, 175–86.
- Heckbert, P. 1984. *The Mathematics of Quadric Surface Rendering and SOID*, 3-D Technical Memo, New York Institute of Technology Computer Graphics Lab.
- Heckbert, P. 1989. Image Zooming Source Code. www-2.cs.cmu.edu/~ph/src/zoom/.
- Heckbert, P. S. 1986. Survey of texture mapping. *IEEE Computer Graphics and Applications* 6(11), 56–67.
- Heckbert, P. S. 1987. Ray tracing JELL-O brand gelatin. *Computer Graphics (SIGGRAPH '87 Proceedings)*, 21 73–74.
- Heckbert, P. S. 1989. Fundamentals of Texture Mapping and Image Warping. M.S. thesis, Department of Electrical Engineering and Computer Science, University of California, Berkeley.
- Heckbert, P. 1990a. What are the coordinates of a pixel? In A. S. Glassner (Ed.), *Graphics Gems I*, pp. 246–48. San Diego: Academic Press.
- Heckbert, P. S. 1990b. Adaptive radiosity textures for bidirectional ray tracing. *Computer Graphics (Proceedings of SIGGRAPH '90)*, 24, 145–54.
- Heckbert, P. S., and P. Hanrahan. 1984. Beam tracing polygonal objects. In *Computer Graphics (Proceedings of SIGGRAPH '84)*, 18, 119–27.
- Heidrich, W., and H.-P. Seidel. 1998. Ray-tracing procedural displacement shaders. In *Graphics Interface '98*, pp. 8–16.
- Heidrich, W., J. Kautz, P. Slusallek, and H.-P. Seidel. 1998. Canned lightsources. In *Rendering Techniques '98: Proceedings of the Eurographics Rendering Workshop*. 293–300.
- Heney, L. G., and J. L. Greenstein. 1941. Diffuse radiation in the galaxy. *Astrophysical Journal* 93, 70–83.
- Hery, C. 2003. Implementing a skin BSSRDF. *SIGGRAPH 2003 RenderMan Course Notes*.
- Herzog, R., and H.-P. Seidel. 2007. Lighting details preserving photon density estimation. In *Proceedings of the 15th Pacific Conference on Computer Graphics and Applications*, 407–10.
- Herzog, R., V. Havran, S. Kinuwaki, K. Myszkowski, and H.-P. Seidel. 2007. Global illumination using photon ray splatting. *Computer Graphics Forum (Proceedings of Eurographics 2007)* 26(3), 503–13.

- Herzog, R., K. Myszkowski, and H.-P. Seidel. 2009. Anisotropic radiance-cache splatting for efficiently computing high-quality global illumination with lightcuts. *Computer Graphics Forum (Proceedings of Eurographics 2009)* 28(2), 259–68.
- Hey, H., and W. Purgathofer. 2002. Importance sampling with hemispherical particle footprints. In *Proceedings of the 18th Spring Conference on Computer Graphics*.
- Higham, N. 1986. Computing the polar decomposition—with applications. *SIAM Journal of Scientific and Statistical Computing*, 7(4), 1160–74.
- Hoberock, J. 2008. Accelerating Physically-Based Light Transport Algorithms. Ph.D. thesis, University of Illinois at Urbana-Champaign.
- Hoberock, J., V. Lu, Y. Jia, J. Hart. 2009. Stream compaction for deferred shading. *Proceedings of High Performance Graphics 2009*, pp. 173–80.
- Hoffmann, C. M. 1989. *Geometric and Solid Modeling: An Introduction*. San Francisco: Morgan Kaufmann.
- Hoppe, H., T. DeRose, T. Duchamp, M. Halstead, H. Jin, J. McDonald, J. Schweitzer, and W. Stuetzle. 1994. Piecewise smooth surface reconstruction. In *Proceedings of SIGGRAPH '94*, Computer Graphics Proceedings, Annual Conference Series, Orlando, Florida, pp. 295–302.
- Hunt, W. 2008. Corrections to the surface area metric with respect to mail-boxing. In *IEEE Symposium on Interactive Ray Tracing*, pp. 77–80.
- Hunt, W., and B. Mark. 2008a. Ray-specialized acceleration structures for ray tracing. In *IEEE Symposium on Interactive Ray Tracing*, pp. 3–10.
- Hunt, W., and B. Mark. 2008b. Adaptive acceleration structures in perspective space. In *IEEE Symposium on Interactive Ray Tracing*, pp. 117–17.
- Hunt, W., W. Mark, and G. Stoll. 2006. Fast kd-tree construction with an adaptive error-bounded heuristic. In *IEEE Symposium on Interactive Ray Tracing*, pp. 81–88.
- Hurley, J., A. Kapustin, A. Reshetov, and A. Soupikov. 2002. Fast ray tracing for modern general purpose CPU. In *Proceedings of GraphiCon 2002*.
- Igarashi, T., K. Nishino and S. K. Nayar. 2007. The appearance of human skin: a survey. *Foundations and Trends in Computer Graphics and Vision* 3(1), 1–95.
- Igehy, H. 1999. Tracing ray differentials. In *Proceedings of SIGGRAPH '99*, Computer Graphics Proceedings, Annual Conference Series, pp. 179–86.
- Igehy, H., M. Eldridge, and K. Proudfoot. 1998. Prefetching in a texture cache architecture. In *1998 SIGGRAPH/Eurographics Workshop on Graphics Hardware*, pp. 133–42.
- Igehy, H., M. Eldridge, and P. Hanrahan. 1999. Parallel texture caching. In *1999 SIGGRAPH/Eurographics Workshop on Graphics Hardware*, pp. 95–106.
- Illuminating Engineering Society of North America Computer Committee. 1986. IES recommended standard file format for electronic transfer of photometric data. IES LM-63-1986.
- Illuminating Engineering Society of North America. 2002. IESNA standard file format for electronic transfer of photometric data. BSR/IESNA Publication LM-63-2002. www.iesna.org.
- Immel, D. S., M. F. Cohen, and D. P. Greenberg. 1986. A radiosity method for non-diffuse environments. In *Computer Graphics (SIGGRAPH '86 Proceedings)*, Volume 20, pp. 133–42.
- Institute of Electrical and Electronic Engineers. 1985. IEEE standard 754-1985 for binary floating-point arithmetic. Reprinted in *SIGPLAN* 22(2) 9–25.
- Irawan, P. 2008. Appearance of Woven Cloth. Ph.D. thesis, Cornell University.

- Ishimaru, A. 1978. *Wave Propagation and Scattering in Random Media*. Oxford: Oxford University Press.
- Ize, T., P. Shirley, and S. Parker. 2007. Grid creation strategies for efficient ray tracing. In *IEEE Symposium on Interactive Ray Tracing*, pp. 27–32.
- Ize, T., I. Wald, and S. Parker. 2008. Ray tracing with the BSP tree. In *IEEE Symposium on Interactive Ray Tracing*, pp. 159–166.
- Jackson, W. H. 1910. The solution of an integral equation occurring in the theory of radiation. *Bulletin of the American Mathematical Society* 16, 473–75.
- James, D., and K. Fatahalian. 2003. Precomputing interactive dynamic deformable scenes. *ACM Transactions on Graphics* 22(3), 879–87.
- Jansen, F. W. 1986. Data structures for ray tracing. In L. R. A. Kessener, F. J. Peters, and M. L. P. Lierop (Eds.), *Data Structures for Raster Graphics, Workshop Proceedings*, pp. 57–73. New York: Springer-Verlag.
- Jarosz, W., M. Zwicker, and H. W. Jensen. 2008a. The beam radiance estimate for volumetric photon mapping. *Computer Graphics Forum (Proceedings of Eurographics 2008)* 27(2), 557–66.
- Jarosz, W., M. Zwicker, and H. W. Jensen. 2008b. Irradiance gradients in the presence of participating media and occlusions. *Computer Graphics Forum* 27(4), 1087–96.
- Jarosz, W., N. Carr, and H. Jensen. 2009. Importance sampling spherical harmonics. *Computer Graphics Forum (Proceedings of Eurographics 2009)* 28(2), 577–86.
- Jensen, H. W. 1995. Importance driven path tracing using the photon map. In *Eurographics Rendering Workshop 1995*, pp. 326–35.
- Jensen, H. W. 1996a. Global illumination using photon maps. In X. Pueyo and P. Schröder (Eds.), *Eurographics Rendering Workshop 1996*, pp. 21–30.
- Jensen, H. W. 1996b. Rendering caustics on non-Lambertian surfaces. In *Graphics Interface '96*, pp. 116–21.
- Jensen, H. W. 1997. Rendering caustics on non-Lambertian surfaces. *Computer Graphics Forum* 16(1), 57–64.
- Jensen, H. W. 2001. *Realistic Image Synthesis Using Photon Mapping*. Natick, Massachusetts: A. K. Peters.
- Jensen, H. W., and J. Buhler. 2002. A rapid hierarchical rendering technique for translucent materials. *ACM Transactions on Graphics* 21(3), 576–81.
- Jensen, H. W., and N. Christensen. 1995. Optimizing path tracing using noise reduction filters. *Proceedings of WSCG*, 134–42.
- Jensen, H. W., and P. H. Christensen. 1998. Efficient simulation of light transport in scenes with participating media using photon maps. In *SIGGRAPH '98 Conference Proceedings*, Annual Conference Series, pp. 311–20.
- Jensen, H. W., J. Arvo, M. Fajardo, P. Hanrahan, D. Mitchell, M. Pharr, and P. Shirley. 2001a. State of the art in Monte Carlo ray tracing for realistic image synthesis. In *SIGGRAPH 2001 Course 29*, Los Angeles.
- Jensen, H. W., S. R. Marschner, M. Levoy, and P. Hanrahan. 2001b. A practical model for subsurface light transport. In *Proceedings of ACM SIGGRAPH 2001*, Computer Graphics Proceedings, Annual Conference Series, pp. 511–18.
- Jensen, H. W., J. Arvo, P. Dutré, A. Keller, A. Owen, M. Pharr, and P. Shirley. 2003. Monte Carlo ray tracing. In *SIGGRAPH 2003 Course*, San Diego.

- Jevans, D., and B. Wyvill. 1989. Adaptive voxel subdivision for ray tracing. In *Graphics Interface '89*, pp. 164–172.
- Johnstone, M. S., and P. R. Wilson. 1999. The memory fragmentation problem: solved? *ACM SIGPLAN Notices* 34(3), 26–36.
- Jones, T. 2005. Efficient generation of Poisson-disk sampling patterns. *Journal of Graphics Tools* 11(2), 27–36.
- Kainz, F., R. Bogart, and D. Hess. 2002. OpenEXR Image File Format. www.openexr.com.
- Kajiya, J. T. 1982. Ray tracing parametric patches. In *Computer Graphics (SIGGRAPH 1982 Conference Proceedings)*, pp. 245–54.
- Kajiya, J. T. 1983. New techniques for ray tracing procedurally defined objects. In *Computer Graphics (Proceedings of SIGGRAPH '83)*, 17, 91–102.
- Kajiya, J. T. 1985. Anisotropic reflection models. *Computer Graphics (Proceedings of SIGGRAPH '85)*, 19, 15–21.
- Kajiya, J. T. 1986. The rendering equation. In *Computer Graphics (SIGGRAPH '86 Proceedings)*, 20, 143–50.
- Kajiya, J. T., and T. L. Kay. 1989. Rendering fur with three dimensional textures. *Computer Graphics (Proceedings of SIGGRAPH '89)*, 23, 271–80.
- Kajiya, J., and M. Ullner. 1981. Filtering high quality text for display on raster scan devices. In *Computer Graphics (Proceedings of SIGGRAPH '81)*, pp. 7–15.
- Kajiya, J. T., and B. P. Von Herzen. 1984. Ray tracing volume densities. In *Computer Graphics (Proceedings of SIGGRAPH '84)*, Volume 18, pp. 165–74.
- Kalos, M. H., and P. A. Whitlock. 1986. *Monte Carlo Methods: Volume I: Basics*. New York: Wiley.
- Kalra, D., and A. H. Barr. 1989. Guaranteed ray intersections with implicit surfaces. In *Computer Graphics (Proceedings of SIGGRAPH '89)*, Volume 23, pp. 297–306.
- Kammaje, R. and B. Mora. 2007. A study of restricted BSP trees for ray tracing. In *IEEE Symposium on Interactive Ray Tracing*, pp. 55–62.
- Kaplan, M. R. 1985. The uses of spatial coherence in ray tracing. In *ACM SIGGRAPH Course Notes* 11.
- Kautz, J., and M. McCool. 1999. Interactive rendering with arbitrary BRDFs using separable approximations. In *Proceedings of the 10th Eurographics Workshop on Rendering*. 281–92.
- Kautz, J., P.-P. Sloan, and J. Snyder. 2002. Fast, arbitrary BRDF shading for low-frequency lighting using spherical harmonics. In *13th Eurographics Workshop on Rendering*. 301–08.
- Kay, D. S., and D. P. Greenberg. 1979. Transparency for computer synthesized images. In *Computer Graphics (SIGGRAPH '79 Proceedings)*, Volume 13, pp. 158–64.
- Kay, T., and J. Kajiya. 1986. Ray tracing complex scenes. In *Computer Graphics (SIGGRAPH '86 Proceedings)*, Volume 20, pp. 269–78.
- Kelemen, C., L. Szirmay-Kalos, G. Antal, and F. Csonka. 2002. A simple and robust mutation strategy for the Metropolis light transport algorithm. *Computer Graphics Forum* 21(3), 531–40.
- Keller, A. 1996. Quasi-Monte Carlo radiosity. In X. Pueyo and P. Schröder (Eds.), *Eurographics Rendering Workshop 1996*, pp. 101–10.
- Keller, A. 1997. Instant radiosity. In *Proceedings of SIGGRAPH '97*, Computer Graphics Proceedings, Annual Conference Series, Los Angeles, pp. 49–56.

- Keller, A. 1998. Quasi-Monte Carlo Methods for Photorealistic Image Synthesis. Ph.D. thesis, Shaker Verlag Aachen.
- Keller, A. 2001. *Strictly Deterministic Sampling Methods in Computer Graphics*. *mental images Technical Report*. Also in *SIGGRAPH 2003 Monte Carlo Course Notes*.
- Keller, A., and I. Wald. 2000. Efficient importance sampling techniques for the photon map. In *Proceedings of Vision, Modeling and Visualization 2000*, pp. 271–79.
- Keller, A. 2006. Myths of computer graphics. In *Monte Carlo and Quasi-Monte Carlo Methods 2004*, Springer Berlin Heidelberg, 217–43.
- Kensler, A., and P. Shirley. 2006. Optimizing ray-triangle intersection via automated search. In *IEEE Symposium on Interactive Ray Tracing*, pp. 33–38.
- Kensler, A. 2008. Tree rotations for improving bounding volume hierarchies. In *IEEE Symposium on Interactive Ray Tracing*, pp. 73–76.
- Kensler, A., A. Knoll and P. Shirley. 2008. Better Gradient Noise. *Technical Report UUSCI-2008-001*, SCI Institute, University of Utah.
- King, L. V. 1913. On the scattering and absorption of light in gaseous media, with applications to the intensity of sky radiation. *Philosophical Transactions of the Royal Society of London. Series A. Mathematical and Physical Sciences* 212, 375–433.
- Kirk, D., and J. Arvo. 1988. The ray tracing kernel. In *Proceedings of Ausgraph '88*, pp. 75–82.
- Kirk, D. B., and J. Arvo. 1991. Unbiased sampling techniques for image synthesis. *Computer Graphics (SIGGRAPH '91 Proceedings)*, Volume 25, pp. 153–56.
- Klassen, R. V. 1987. Modeling the effect of the atmosphere on light. *ACM Transactions on Graphics* 6(3), 215–37.
- Klimaszewski, K. S., and T. W. Sederberg. 1997. Faster ray tracing using adaptive grids. *IEEE Computer Graphics and Applications* 17(1), 42–51.
- Knoll, A., Y. Hijazi, C. D. Hansen, I. Wald, and H. Hagen. 2009. Fast ray tracing of arbitrary implicit surfaces with interval and affine arithmetic. *Computer Graphics Forum* 28(1), 26–40.
- Knuth, D. E. 1984. Literate programming. *The Computer Journal* 27, 97–111. Reprinted in D. E. Knuth, *Literate Programming*, Stanford Center for the Study of Language and Information, 1992.
- Knuth, D. E. 1986. *MetaFont: The Program*. Reading, Massachusetts: Addison-Wesley.
- Knuth, D. E. 1993a. *T_EX: The Program*. Reading, Massachusetts: Addison-Wesley.
- Knuth, D. E. 1993b. *The Stanford GraphBase*. New York: ACM Press and Addison-Wesley.
- Kolb, C., D. Mitchell, and P. Hanrahan. 1995. A realistic camera model for computer graphics. *SIGGRAPH '95 Conference Proceedings*, Annual Conference Series, pp. 317–24.
- Kollig, T., and A. Keller. 2000. Efficient bidirectional path tracing by randomized quasi-Monte Carlo integration. In *Monte Carlo and Quasi-Monte Carlo Methods 2000*, pp. 290–305. Berlin: Springer-Verlag.
- Kollig, T., and A. Keller. 2002. Efficient multidimensional sampling. *Computer Graphics Forum (Proceedings of Eurographics 2002)*, Volume 21, pp. 557–63.
- Kollig, T., and A. Keller. 2003. Efficient illumination by high dynamic range images. In *Eurographics Symposium on Rendering: 14th Eurographics Workshop on Rendering*, pp. 45–51.
- Kollig, T., and A. Keller. 2004. Illumination in the presence of weak singularities. In *Proceedings of Monte Carlo and Quasi-Monte Carlo Methods*.

- Kontkanen, J. and T. Aila. 2006. Ambient occlusion for animated characters. In *Rendering Techniques 2006 (Proc. Eurographics Symposium on Rendering)*, 343–48.
- Kontkanen, J. and S. Laine. 2005. Ambient occlusion fields. In *Proceedings of ACM SIGGRAPH 2005 Symposium on Interactive 3D Graphics and Games*, 41–48.
- Kontkanen, J. and S. Laine. 2006. Sampling precomputed volumetric lighting. *Journal of Graphics, GPU, and Game Tools* 11(3), 1–16.
- Kontkanen, J., J. Räsänen, and A. Keller. 2004. Irradiance filtering for monte carlo ray tracing. *Monte Carlo and Quasi-Monte Carlo Methods*, 259–72.
- Kristensen, A., T. Akenine-Möller, and H. W. Jensen. 2005. Precomputed local radiance transfer for real-time lighting design. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2005)* 24(3), 1208–15.
- Křivánek, J., and P. Gautron. 2009. *Practical Global Illumination with Irradiance Caching*. Morgan and Claypool Publishers.
- Křivánek, J., P. Gautron, K. Bouatouch, and S. Pattanaik. 2005a. Improved radiance gradient computation. In *Spring Conference on Computer Graphics*, 155–59.
- Křivánek, J., P. Gautron, S. Pattanaik, and K. Bouatouch. 2005b. Radiance caching for efficient global illumination computation. *IEEE Transactions on Visualization and Computer Graphics* 11(5). 550–61.
- Křivánek, J., P. Gautron, G. Ward, O. Arikan, H. W. Jensen. 2007. Practical global illumination with irradiance caching. *ACM SIGGRAPH Course Notes* 16.
- Křivánek, J., J. Konttinen, S. Pattanaik, K. Bouatouch, and J. Zara. 2006. Fast approximation to spherical harmonic rotation. In *Proceedings of 22nd Spring Conference on Computer Graphics (SCCG2006)*.
- Lacewell, D., B. Burley, S. Boulos, and P. Shirley. 2008. Raytracing prefiltered occlusion for aggregate geometry. In *IEEE Symposium on Interactive Ray Tracing*, pp. 19–26.
- Lafortune, E. 1996. Mathematical Models and Monte Carlo Algorithms for Physically Based Rendering. Ph. D. thesis, Katholieke Universiteit Leuven.
- Lafortune, E., and Y. Willems. 1994. A theoretical framework for physically based rendering. *Computer Graphics Forum* 13(2), 97–107.
- Lafortune, E. P., and Y. D. Willems. 1996. Rendering participating media with bidirectional path tracing. In *Eurographics Rendering Workshop 1996*, pp. 91–100.
- Lafortune, E. P. F., S.-C. Foo, K. E. Torrance, and D. P. Greenberg. 1997. Non-linear approximation of reflectance functions. In *Proceedings of SIGGRAPH '97*, Computer Graphics Proceedings, Annual Conference Series, Los Angeles, pp. 117–26.
- Lagae, A. and P. Dutré. 2005. An efficient ray-quadrilateral intersection test. *Journal of Graphics Tools* 10(4), 23–32.
- Lagae, A. and P. Dutré. 2008a. Compact, fast, and robust grids for ray tracing. In *Computer Graphics Forum (Proceedings of the 19th Eurographics Symposium on Rendering)* 27(4), 1235–1244.
- Lagae, A. and P. Dutré. 2008b. Accelerating ray tracing using constrained tetrahedralizations. In *Computer Graphics Forum (Proceedings of the 19th Eurographics Symposium on Rendering)* 27(4), 1303–12.
- Lagae, E., and P. Dutré. 2008c. A comparison of methods for generating Poisson disk distributions. *Computer Graphics Forum* 27(1), 114–29.

- Lagae, A., S. Lefebvre, G. Drettakis and P. Dutré. 2009. Procedural noise using sparse Gabor convolution. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2009)* 28(3), 54:1–54:10.
- Lam, M. S., E. E. Rothberg, and M. E. Wolf. 1991. The cache performance and optimizations of blocked algorithms. In *Proceedings of the Fourth International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS-IV)*, Palo Alto, California.
- Lambert, J. H. 1760. *Photometry, or, On the Measure and Gradations of Light, Colors, and Shade*. The Illuminating Engineering Society of North America. Translated by David L. DiLaura in 2001.
- Lang, S. 1986. *An Introduction to Linear Algebra*. New York: Springer-Verlag.
- Langlands, A., and T. Mertens. 2007. Noise-free BSSRDF rendering on the cheap. *SIGGRAPH 2007 posters*.
- Lansdale, R. C. 1991. Texture Mapping and Resampling for Computer GLraphics. M.S. thesis, Department of Electrical Engineering, University of Toronto.
- Larson, G. W. 1998. LogLUV encoding for full-gamut, high-dynamic range images. *Journal of Graphics Tools* 3(1), 15–31.
- Larson, G. W., and R. A. Shakespeare. 1998. *Rendering with Radiance: The Art and Science of Lighting Visualization*. San Francisco: Morgan Kaufmann.
- Lauterbach, C., M. Garland, S. Sengupta, D. Luebke, and D. Manocha. 2009. Fast BVH construction on GPUs. *Computer Graphics Forum (Eurographics 2009 Conference Proceedings)* 28(2).
- Lawrence, J., S. Rusinkiewicz, and R. Ramamoorthi. 2004. Efficient BRDF importance sampling using a factored representation. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2004)* 23(3), 496–505.
- Lawrence, J., S. Rusinkiewicz, and R. Ramamoorthi. 2005. Adaptive numerical cumulative distribution functions for efficient importance sampling. *Rendering Techniques 2005: 16th Eurographics Workshop on Rendering*, 11–20.
- Lee, M. E., R. A. Redner, and S. P. Uselton. 1985. Statistically optimized sampling for distributed ray tracing. In *Computer Graphics (Proceedings of SIGGRAPH '85)*, Volume 19, pp. 61–67.
- Lee, M., and R. Redner. 1990. A note on the use of nonlinear filtering in computer graphics. *IEEE Computer Graphics and Applications* 10(3), 23–29.
- Legakis, J. 1998. Fast multi-layer fog. *SIGGRAPH '98 Sketch*.
- Lehtinen, J. 2004. Foundations of Precomputed Radiance Transfer. M.S. thesis, Helsinki University of Technology.
- Lehtinen, J. 2007. A framework for precomputed and captured light transport. *ACM Transactions on Graphics* 26(4), 13:1–13:22.
- Lehtinen, J. and J. Kautz. 2003. Matrix radiance transfer. In *Proceedings of the 2003 Symposium on Interactive 3D Graphics*, 59–64.
- Lehtinen, J., M. Zwicker, E. Turquin, J. Kontkanen, F. Durand, F. Sillion, and T. Aila. 2008. A meshless hierarchical representation for light transport. *ACM Transactions on Graphics* 27(3), 1–9.
- Levine, J. R., T. Mason, and D. Brown. 1992. *lex & yacc*. O'Reilly & Associates.

- Levoy, M. 1988. Display of surfaces from volume data. *IEEE Computer Graphics and Applications* 8(3), 29–37.
- Levoy, M. 1990a. Efficient ray tracing of volume data. *ACM Transactions on Graphics* 9(3), 245–61.
- Levoy, M. 1990b. A hybrid ray tracer for rendering polygon and volume data. *IEEE Computer Graphics and Applications* 10(2), 33–40.
- Levoy, M., and P. M. Hanrahan. 1996. Light field rendering. In *Proceedings of SIGGRAPH '96*, Computer Graphics Proceedings, Annual Conference Series, pp. 31–42.
- Levoy, M., and T. Whitted. 1985. *The Use of Points as a Display Primitive*, Technical Report 85-022. Computer Science Department, University of North Carolina at Chapel Hill.
- Lewis, J.-P. 1989. Algorithms for solid noise synthesis. In *Computer Graphics (Proceedings of SIGGRAPH '89)*, Volume 23, pp. 263–70.
- Lext, J., U. Assarsson, and T. Möller. 2001. A benchmark for animated ray tracing. *IEEE Computer Graphics and Applications* 21(2), 22–30.
- Li, K., F. Pellacini, and K. Torrance. 2005. A hybrid Monte Carlo method for accurate and efficient subsurface scattering. In *Rendering Techniques (Proceedings of the Eurographics Rendering Symposium)*, 283–90.
- Li, X., W. Wang, R. R. Martin, and A. Bowyer. 2003. Using low-discrepancy sequences and the Crofton formula to compute surface areas of geometric models. *Computer Aided Design* 35(9), 771–82.
- Liu, J. S. 2001. *Monte Carlo Strategies in Scientific Computing*. New York: Springer-Verlag.
- Liu, X., P.-P. Sloan, H.-Y. Shum, and J. Snyder. 2004. All-frequency precomputed radiance transfer for glossy objects. In *Rendering Techniques 2004 (Proceedings of the Eurographics Symposium on Rendering 2004)*, 337–44.
- Logie, J. R., and J. W. Patterson. 1994. Inverse displacement mapping in the general case. *Computer Graphics Forum* 14(5), 261–73.
- Lokovic, T., and E. Veach. 2000. Deep shadow maps. In *Proceedings of ACM SIGGRAPH 2000*, Computer Graphics Proceedings, Annual Conference Series, pp. 385–92.
- Lommel, E. 1889. Die Photometrie der diffusen Zurückwerfung. *Annalen der Physik* 36, 473–502.
- Loop, C. 1987. Smooth Subdivision Surfaces Based on Triangles. M.S. thesis, University of Utah.
- Lu, R., J. J. Koenderink, and A. M. L. Kappers. 1999. Specularities on surfaces with tangential hairs or grooves. *Computer Vision and Image Understanding* 78, 320–35.
- Lukaszewski, A. 2001. Exploiting coherence of shadow rays. In *AFRIGRAPH 2001*, pp. 147–150. ACM SIGGRAPH.
- MacDonald, J. D., and K. S. Booth. 1990. Heuristics for ray tracing using space subdivision. *The Visual Computer* 6(3), 153–66.
- Machiraju, R., and R. Yagel. 1996. Reconstruction error characterization and control: A sampling theory approach. *IEEE Transactions on Visualization and Computer Graphics* 2(4).
- Mahajan, D., Y.-T. Tseng, and R. Ramamoorthi. 2008. An analysis of the in-out BRDF factorization for view-dependent relighting. *Computer Graphics Forum (Proceedings of Eurographics)* 27(4), 1137–45.

- Mahovsky, J. 2005. Ray Tracing with Reduced-Precision Bounding Volume Hierarchies. Ph.D. thesis, University of Calgary.
- Malacara, D. 2002. *Color Vision and Colorimetry: Theory and Applications*. SPIE—The International Society for Optical Engineering.
- Mann, S., N. Litke, and T. DeRose. 1997. A Coordinate Free Geometry ADT. Research Report CS-97-15, Computer Science Department, University of Waterloo. Available at <ftp://cs-archive.uwaterloo.ca/cs-archive/CS-97-15/>.
- Mansson, E., J. Munkberg, and T. Akenine-Möller. 2007. Deep coherent ray tracing. *Proceedings of IEEE Symposium on Interactive Ray Tracing*, 79–85.
- Marschner, S. 1998. Inverse Rendering for Computer Graphics. Ph.D. thesis, Cornell University.
- Marschner, S. R., H. W. Jensen, M. Cammarano, S. Worley, and P. Hanrahan. 2003. Light scattering from human hair fibers. *ACM Transactions on Graphics* 22(3), 780–91.
- Marschner, S. R., and R. J. Lobb. 1994. An evaluation of reconstruction filters for volume rendering. In *Proceedings of Visualization '94*, Washington, D.C., pp. 100–107.
- Marschner, S., S. Westin, A. Arbree, and J. Moon. 2005. Measuring and modeling the appearance of finished wood. In *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2005)* 24(3), 727–34.
- Marschner, S. R., S. H. Westin, E. P. F. Lafortune, K. E. Torrance, and D. P. Greenberg. 1999. Image-based BRDF measurement including human skin. In *Eurographics Rendering Workshop 1999*, Granada, Spain: Springer Wien/Eurographics.
- Martin, W., E. Cohen, R. Fish, and P. S. Shirley. 2000. Practical ray tracing of trimmed NURBS surfaces. *Journal of Graphics Tools* 5(1), 27–52.
- Matusik, W., H. Pfister, M. Brand, and L. McMillan. 2003a. Efficient isotropic BRDF measurement. *Proceedings of the 14th Eurographics Workshop on Rendering*. 241–47.
- Matusik, W., H. Pfister, M. Brand, and L. McMillan. 2003b. A data-driven reflectance model. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2003)* 22(3), 759–69.
- Max, N. L. 1986. Atmospheric illumination and shadows. In *Computer Graphics (Proceedings of SIGGRAPH '86)*, Volume 20, pp. 117–24.
- Max, N. L. 1988. Horizon mapping: shadows for bump-mapped surfaces. *The Visual Computer* 4(2), 109–17.
- Max, N. L. 1995. Optical models for direct volume rendering. *IEEE Transactions on Visualization and Computer Graphics* 1(2), 99–108.
- McCluney, W. R. 1994. *Introduction to Radiometry and Photometry*. Boston: Artech House.
- McCormack, J., R. Perry, K. I. Farkas, and N. P. Jupp. 1999. Feline: fast elliptical lines for anisotropic texture mapping. In *Proceedings of SIGGRAPH '99*, Computer Graphics Proceedings, Annual Conference Series, Los Angeles, pp. 243–250.
- Meijering, E. 2002. A chronology of interpolation: from ancient astronomy to modern signal and image processing. *Proceedings of the IEEE* 90(3), 319–42.
- Meijering, E. H. W., W. J. Niessen, J. P. W. Pluim, and M. A. Viergever. 1999. Quantitative comparison of sinc-approximating kernels for medical image interpolation. In C. Taylor and A. Colchester (Eds.), *Medical Image Computing and Computer-Assisted Intervention—MICCAI 1999*, pp. 210–17. Berlin: Springer-Verlag.

- Méndez-Feliu, À., and M. Sbert. 2009. From obscurances to ambient occlusion: a survey. *The Visual Computer* 25(2), 181–96.
- Metropolis, N., A. Rosenbluth, M. Rosenbluth, A. Teller, and E. Teller. 1953. Equation of state calculations by fast computing machines. *Journal of Chemical Physics* 21(6), 1087–92.
- Meyer, G. W., and D. P. Greenberg. 1980. Perceptual color spaces for computer graphics. In *Computer Graphics (Proceedings of SIGGRAPH '80)*, Volume 14, Seattle, Washington, pp. 254–261.
- Meyer, G. W., H. E. Rushmeier, M. F. Cohen, D. P. Greenberg, and K. E. Torrance. 1986. An experimental evaluation of computer graphics imagery. *ACM Transactions on Graphics* 5(1), 30–50.
- Mikkelsen, M. 2008. Simulation of Wrinkled Surfaces Revisited. M.S. thesis, University of Copenhagen.
- Miller, G. S., and C. R. Hoffman. 1984. Illumination and reflection maps: simulated objects in simulated and real environments. *Course Notes for Advanced Computer Graphics Animation, SIGGRAPH '84*.
- Miller, G. 1994. Efficient algorithms for local and global accessibility shading. In *Proceedings of SIGGRAPH '94*, Computer Graphics Proceedings, Annual Conference Series, pp. 319–26.
- Mitchell, D. P. 1987. Generating antialiased images at low sampling densities. *Computer Graphics (SIGGRAPH '87 Proceedings)*, Volume 21, pp. 65–72.
- Mitchell, D. P. 1990. Robust ray intersection with interval arithmetic. In *Graphics Interface '90*, pp. 68–74.
- Mitchell, D. P. 1991. Spectrally optimal sampling for distributed ray tracing. *Computer Graphics (SIGGRAPH '91 Proceedings)*, Volume 25, pp. 157–64.
- Mitchell, D. P. 1992. Ray tracing and irregularities of distribution. In *Third Eurographics Workshop on Rendering*, Bristol, United Kingdom, pp. 61–69.
- Mitchell, D. P. 1996a. Software interface for sampling routines. Personal communication.
- Mitchell, D. P. 1996b. Consequences of stratified sampling in graphics. In *Proceedings of SIGGRAPH '96*, Computer Graphics Proceedings, Annual Conference Series, New Orleans, Louisiana, pp. 277–80.
- Mitchell, D. P., and P. Hanrahan. 1992. Illumination from curved reflectors. In *Computer Graphics (Proceedings of SIGGRAPH '92)*, Volume 26, pp. 283–91.
- Mitchell, D. P., and A. N. Netravali. 1988. Reconstruction filters in computer graphics. *Computer Graphics (SIGGRAPH '88 Proceedings)*, Volume 22, pp. 221–28.
- Möller, T., R. Machiraju, K. Mueller, and R. Yagel. 1997. Evaluation and design of filters using a Taylor series expansion. *IEEE Transactions on Visualization and Computer Graphics* 3(2), 184–99.
- Möller, T., and B. Trumbore. 1997. Fast, minimum storage ray–triangle intersection. *Journal of Graphics Tools* 2(1), 21–28.
- Moon, J., and S. Marschner. 2006. Simulating multiple scattering in hair using a photon mapping approach. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2006)* 25(3), 1067–74.
- Moon, J., B. Walter, and S. Marschner. 2007. Rendering discrete random media using precomputed scattering solutions. *Rendering Techniques 2007: 18th Eurographics Workshop on Rendering*, 231–42.

- Moon, J., B. Walter, and S. Marschner. 2008. Efficient multiple scattering in hair using spherical harmonics. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2008)* 27(3), 31:1–31:7.
- Moon, P., and D. E. Spencer. 1936. *The Scientific Basis of Illuminating Engineering*. New York: McGraw-Hill.
- Moon, P., and D. E. Spencer 1948. *Lighting Design*. Reading, Massachusetts: Addison-Wesley.
- Moore, R. E. 1966. *Interval Analysis*. Englewood Cliffs, New Jersey: Prentice Hall.
- Moravec, H. 1981. 3D graphics and the wave theory. In *Computer Graphics*, Volume 15, pp. 289–96.
- Motwani, R., and P. Raghavan. 1995. *Randomized Algorithms*. Cambridge, U.K.: Cambridge University Press.
- Müller, K., T. Techmann, and D. Fellner. 2003. Adaptive ray tracing of subdivision surfaces. *Computer Graphics Forum* 22(3), 553–62.
- Müller, G., J. Meseth, M. Sattler, R. Sarlette and R. Klein. 2005. Acquisition, synthesis and rendering of bidirectional texture functions. *Computer Graphics Forum (Eurographics State of the Art Report)* 24(1), 83–109.
- Musgrave, K. 1992. A panoramic virtual screen for ray tracing. In D. Kirk (Ed.), *Graphics Gems III*, pp. 288–94. San Diego: Academic Press.
- Narasimhan, S., M. Gupta, C. Donner, R. Ramamoorthi, S. Nayar, and H. W. Jensen. 2006. Acquiring scattering properties of participating media by dilution. *ACM Transactions on Graphics* 25(3), 1003–12.
- Nayar, S. K., K. Ikeuchi, and T. Kanade. 1991. Surface reflection: physical and geometrical perspectives. *IEEE Transactions on Pattern Analysis and Machine Intelligence* 17(7), 611–34.
- Naylor, B. 1993. Constructing good partition trees. In *Graphics Interface '93*, pp. 181–91.
- Neulander, I. 2009. Smoother Subsurface Scattering. *SIGGRAPH Talks*.
- Neyret, F. 1996. Synthesizing verdant landscapes using volumetric textures. In *Eurographics Rendering Workshop 1996*, pp. 215–24.
- Neyret, F. 1998. Modeling, animating, and rendering complex scenes using volumetric textures. *IEEE Transactions on Visualization and Computer Graphics* 4(1), 55–70.
- Nicodemus, F., J. Richmond, J. Hsia, I. Ginsburg, and T. Limperis. 1977. *Geometrical Considerations and Nomenclature for RLeffectance*. NBS Monograph 160, Washington, D. C.: National Bureau of Standards, U.S. Department of Commerce.
- Nichols, G., and C. Wyman. 2009. Multiresolution splatting for indirect illumination. *ACM Symposium on Interactive 3D Graphics and Games*, 83–90.
- Niederreiter, H. 1992. *Random Number Generation and Quasi-Monte Carlo Methods*. Philadelphia: Society for Industrial and Applied Mathematics.
- Nijasure, M., S. Pattanaik, V. Goel. 2005. Real-time global illumination on GPU. *Journal of Graphics Tools* 10(2), 55–71.
- Nimeroff, J., E. Simoncelli, and J. Dorsey. 1994. Efficient re-rendering of naturally illuminated environments. In *Fifth Eurographics Workshop on Rendering*, 359–73.
- Nishita, T., and E. Nakamae. 1986. Continuous tone representation of three-dimensional objects illuminated by sky light. In *Computer Graphics (Proceedings of SIGGRAPH '86)*, Volume 20, pp. 125–32.

- Nishita, T., Y. Miyawaki, and E. Nakamae. 1987. A shading model for atmospheric scattering considering luminous intensity distribution of light sources. In *Computer Graphics (Proceedings of SIGGRAPH '87)*, Volume 21, pp. 303–10.
- Ngan, A., F. Durand, and W. Matusik. 2005. Experimental analysis of BRDF models. *Rendering Techniques 2005: 16th Eurographics Workshop on Rendering*, 117–26.
- Ng, R., R. Ramamoorthi, and P. Hanrahan. 2003. All-frequency shadows using non-linear wavelet lighting approximation. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2003)* 22(3), 376–81.
- Ng, R., R. Ramamoorthi, and P. Hanrahan. 2004. Triple product wavelet integrals for all-frequency relighting. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2004)* 23(3), 477–87.
- Norton, A., A. P. Rockwood, and P. T. Skolmoski. 1982. Clamping: a method of antialiasing textured surfaces by bandwidth limiting in object space. In *Computer Graphics (Proceedings of SIGGRAPH '82)*, Volume 16, pp. 1–8.
- Ökten, G., and M. Shah. 2008. *Random and Deterministic Digit-Scrambling of the Halton Sequence*, unpublished manuscript.
- Ooi, B. C., K. McDonell, and R. Sacks-Davis. 1987. Spatial kd-tree: a data structure for geographic databases. In *Proceedings of the IEEE COMPSAC Conference*.
- Oren, M., and S. K. Nayar. 1994. Generalization of Lambert's reflectance model. *Proceedings of SIGGRAPH '94, Computer Graphics Proceedings, Annual Conference Series*, pp. 239–46. New York: ACM Press.
- Overbeck, R., C. Donner, and R. Ramamoorthi. 2009. Adaptive wavelet rendering. *ACM Transactions on Graphics (Proceedings of ACM SIGGRAPH Asia 2009)* 28(5).
- Owen, A. B. 1998. Latin supercube sampling for very high-dimensional simulations. *Modeling and Computer Simulation* 8(1), 71–102.
- Owen, A., and S. Tribble. 2005. A quasi-Monte Carlo Metropolis algorithm. *Proceedings of the National Academy of Sciences* 102(25), 8844–49.
- Parker, S., S. Boulos, J. Bigler, and A. Robison. 2007. RTSL: a ray tracing shading language. *Proceedings of IEEE Symposium on Interactive Ray Tracing*.
- Parker, S., W. Martin, P.-P. J. Sloan, P. S. Shirley, B. Smits, and C. Hansen. 1999. Interactive ray tracing. In *1999 ACM Symposium on Interactive 3D Graphics*, pp. 119–26.
- Patmore, C. 1993. Illumination of dense foliage models. In *Fourth Eurographics Workshop on Rendering*, pp. 63–72.
- Patney, A., M. S. Ebeida, and J. D. Owens. 2009. Parallel view-dependent tessellation of Catmull–Clark subdivision surfaces. In *Proceedings of High Performance Graphics*, 99–108.
- Pattanaik, S. N., and S. P. Mudur. 1995. Adjoint equations and random walks for illumination computation. *ACM Transactions on Graphics* 14(1), 77–102.
- Patterson, D., and J. Hennessy. 2006. *Computer Architecture: A Quantitative Approach*. San Francisco: Morgan Kaufmann.
- Patterson, J. W., S. G. Hoggar, and J. R. Logie. 1991. Inverse displacement mapping. *Computer Graphics Forum* 10(2), 129–39.
- Pauly, M. 1999. Robust Monte Carlo Methods for Photorealistic Rendering of Volumetric Effects. Master's thesis, Universität Kaiserslautern.

- Pauly, M., T. Kollig, and A. Keller. 2000. Metropolis light transport for participating media. In *Rendering Techniques 2000: 11th Eurographics Workshop on Rendering*, pp. 11–22.
- Peachey, D. R. 1985. Solid texturing of complex surfaces. *Computer Graphics (SIGGRAPH '85 Proceedings)*, Volume 19, pp. 279–86.
- Peachey, D. R. 1990. Texture on demand. Pixar Technical Memo #217. Available from <http://graphics.pixar.com/library/TOD/>.
- Pearce, A. 1991. A recursive shadow voxel cache for ray tracing. In J. Arvo (Ed.), *Graphics Gems II*, pp. 273–74. San Diego: Academic Press.
- Peercy, M. S. 1993. Linear color representations for full spectral rendering. *Computer Graphics (SIGGRAPH '93 Proceedings)*, Volume 27, pp. 191–98.
- Peercy, M. S., M. Olano, J. Airey, and P. J. Ungar. 2000. Interactive multi-pass programmable shading. In *Proceedings of ACM SIGGRAPH 2000*, Computer Graphics Proceedings, Annual Conference Series, pp. 425–32.
- Peers, P., K. vom Berge, W. Matusik, R. Ramamoorthi, J. Lawrence, S. Rusinkiewicz, and P. Dutré. 2006. A compact factored representation of heterogeneous subsurface scattering. *ACM Transactions on Graphics* 25(3), 746–53.
- Pegoraro, V., and S. Parker. 2009. An analytical solution to single scattering in homogeneous participating media. *Computer Graphics Forum (Proceedings of Eurographics)* 28(2), 329–35.
- Pegoraro, V., M. Schott, and S. Parker. 2009. An analytical approach to single scattering for anisotropic media and light distributions. In *Proceedings of Graphics Interface 2009*, 71–77.
- Pegoraro, V., C. Brownlee, P. Shirley, and S. Parker. 2008a. Towards interactive global illumination effects via sequential Monte Carlo adaptation. *IEEE Symposium on Interactive Ray Tracing*, pp. 107–14.
- Pegoraro, V., I. Wald, and S. Parker. 2008b. Sequential Monte Carlo adaptation in low-anisotropy participating media. *Computer Graphics Forum (Proceedings of the Eurographics Symposium on Rendering)* 27(4), 1097–1104.
- Pellacini, F., K. Vidimče, A. Lefohn, A. Mohr, M. Leone, and J. Warren. 2005. LPICS: a hybrid hardware-accelerated relighting engine for computer cinematography. *ACM Transactions on Graphics* 24(3), 464–70.
- Perlin, K. 1985a. An image synthesizer. In *Computer Graphics (SIGGRAPH '85 Proceedings)*, Volume 19, pp. 287–96.
- Perlin, K. 1985b. State of the art in image synthesis. *SIGGRAPH Course Notes* 11.
- Perlin, K. 2002. Improving noise. *ACM Transactions on Graphics* 21(3), 681–82.
- Perlin, K., and E. M. Hoffert. 1989. Hypertexture. In *Computer Graphics (Proceedings of SIGGRAPH '89)*, Volume 23, pp. 253–62.
- Peter, I., and G. Pietrek. 1998. Importance driven construction of photon maps. In *Eurographics Rendering Workshop 1998*, pp. 269–80.
- Pfister, H., M. Zwicker, J. van Baar, and M. Gross. 2000. Surfels: Surface elements as rendering primitives. In *Proceedings of ACM SIGGRAPH 2000*, Computer Graphics Proceedings, Annual Conference Series, pp. 335–42.
- Pharr, M., and P. Hanrahan. 1996. Geometry caching for ray-tracing displacement maps. In *Eurographics Rendering Workshop 1996*, pp. 31–40.

- Pharr, M., and P. M. Hanrahan. 2000. Monte Carlo evaluation of non-linear scattering equations for subsurface reflection. In *Proceedings of ACM SIGGRAPH 2000*, Computer Graphics Proceedings, Annual Conference Series, pp. 75–84.
- Pharr, M., C. Kolb, R. Gershbein, and P. M. Hanrahan. 1997. Rendering complex scenes with memory-coherent ray tracing. In *Proceedings of SIGGRAPH '97*, Computer Graphics Proceedings, Annual Conference Series, pp. 101–08.
- Phong, B.-T. 1975. Illumination for computer generated pictures. *Communications of the ACM* 18(6), 311–17.
- Phong, B.-T., and F. C. Crow. 1975. Improved rendition of polygonal models of curved surfaces. In *Proceedings of the 2nd USA–Japan Computer Conference*.
- Pixar Animation Studios. 2000. The RenderMan Interface. Version 3.2.
- Popov, S., J. Gunther, H. P. Seidel, and P. Slusallek. 2006. Experiences with streaming construction of SAH kd-trees. In *IEEE Symposium on Interactive Ray Tracing*, pp. 89–94.
- Popov, S., R. Dimov, I. Georgiev, and P. Slusallek. 2009. Object partitioning considered harmful: space subdivision for BVHs. *Proceedings of High Performance Graphics 2009*, pp. 15–22.
- Porumbescu, S., B. Budge, L. Feng, and K. Joy. 2005. Shell maps. In *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2005)* 24(3), 626–33.
- Potmesil, M., and I. Chakravarty. 1981. A lens and aperture camera model for synthetic image generation. In *Computer Graphics (Proceedings of SIGGRAPH '81)*, Volume 15, pp. 297–305.
- Potmesil, M., and I. Chakravarty. 1982. Synthetic image generation with a lens and aperture camera model. *ACM Transactions on Graphics* 1(2), 85–108.
- Potmesil, M., and I. Chakravarty. 1983. Modeling motion blur in computer-generated images. In *Computer Graphics (Proceedings of SIGGRAPH 83)*, Volume 17, Detroit, Michigan, pp. 389–99.
- Poulin, P., and A. Fournier. 1990. A model for anisotropic reflection. In *Computer Graphics (Proceedings of SIGGRAPH '90)*, Volume 24, pp. 273–82.
- Poynton, C. 2002a. Frequently-Asked Questions About Color. www.poynton.com/ColorFAQ.html.
- Poynton, C. 2002b. Frequently-Asked Questions About Gamma. www.poynton.com/GammaFAQ.html.
- Preetham, A. J., P. S. Shirley, and B. E. Smits. 1999. A practical analytic model for daylight. In *Proceedings of SIGGRAPH '99*, Computer Graphics Proceedings, Annual Conference Series, pp. 91–100.
- Preisendorfer, R. W. 1965. *Radiative Transfer on Discrete Spaces*. Oxford: Pergamon Press.
- Preisendorfer, R. W. 1976. *Hydrologic Optics*. Honolulu, Hawaii: U.S. Department of Commerce, National Oceanic and Atmospheric Administration.
- Press, W. H., S. A. Teukolsky, W. T. Vetterling, and B. P. Flannery. 1992. *Numerical Recipes in C: The Art of Scientific Computing* (2nd ed.). Cambridge: Cambridge University Press.
- Prusinkiewicz, P. 1986. Graphical applications of L-systems. In *Graphics Interface '86*, pp. 247–53.
- Prusinkiewicz, P., M. James, and R. Mech. 1994. Synthetic topiary. In *Proceedings of SIGGRAPH '94*, Computer Graphics Proceedings, Annual Conference Series, pp. 351–58.

- Prusinkiewicz, P., L. Mündermann, R. Karwowski, and B. Lane. 2001. The use of positional information in the modeling of plants. In *Proceedings of ACM SIGGRAPH 2001*, Computer Graphics Proceedings, Annual Conference Series, pp. 289–300.
- Purcell, T. J., I. Buck, W. R. Mark, and P. Hanrahan. 2002. Ray tracing on programmable graphics hardware. *ACM Transactions on Graphics* 21(3), 703–12.
- Purcell, T. J., C. Donner, M. Cammarano, H. W. Jensen, and P. Hanrahan. 2003. Photon mapping on programmable graphics hardware. In *Graphics Hardware 2003*, pp. 41–50.
- Purgathofer, W. 1987. A statistical method for adaptive stochastic sampling. *Computers & Graphics* 11(2), 157–62.
- Ragan-Kelley, J., C. Kilpatrick, B. Smith, D. Epps, P. Green, C. Hery, and F. Durand. 2007. The Lightspeed automatic interactive lighting preview system. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2007)* 26(3), 25:1–25:11.
- Ramamoorthi, R. 2002. A Signal-Processing Framework for Forward and Inverse Rendering. Ph.D. thesis, Stanford University.
- Ramamoorthi, R. 2007. Precomputation-based rendering. In *Foundations and Trends in Computer Graphics and Vision* 3(4), 281–369.
- Ramamoorthi, R., and A. Barr. 1997. Fast construction of accurate quaternion splines. In *Proceedings of SIGGRAPH '97*, Computer Graphics Proceedings, Annual Conference Series, Los Angeles, pp. 287–92.
- Ramamoorthi, R., and P. Hanrahan. 2001a. An efficient representation for irradiance environment maps. In *Proceedings of ACM SIGGRAPH 2001*, Computer Graphics Proceedings, Annual Conference Series, pp. 497–500.
- Ramamoorthi, R., and P. Hanrahan. 2001b. On the relationship between radiance and irradiance: determining the illumination from images of a convex Lambertian object. *Journal of the Optical Society of America (JOSA A)* 10, 2448–59.
- Ramamoorthi, R., and P. Hanrahan. 2004. A signal-processing framework for reflection. *ACM Transactions on Graphics* 23(4), 1004–42.
- Ramasubramanian, M., S. N. Pattanaik, and D. P. Greenberg. 1999. A perceptually based physical error metric for realistic image synthesis. In *Proceedings of SIGGRAPH '99*, Computer Graphics Proceedings, Annual Conference Series, Los Angeles, pp. 73–82.
- Raso, M., and A. Fournier. 1991. A piecewise polynomial approach to shading using spectral distributions. In *Graphics Interface '91*, pp. 40–46. Canadian Information Processing Society.
- Reeves, W. T., D. H. Salesin, and R. L. Cook. 1987. Rendering antialiased shadows with depth maps. In *Computer Graphics (Proceedings of SIGGRAPH '87)*, Volume 21, pp. 283–91.
- Reichert, M. C. 1992. A Two-Pass Radiosity Method Driven by Lights and Viewer Position. Master's thesis, Cornell University.
- Reinhard, E., G. Ward, S. Pattanaik, and P. Debevec. 2005. *High Dynamic Range Imaging: Acquisition, Display, and Image-Based Lighting*. Morgan Kaufmann.
- Ren, Z., R. Wang, J. Snyder, K. Zhou, X. Liu, B. Sun, P.-P. Sloan, H. Bao, Q. Peng, and B. Guo. 2006. Real-time soft shadows in dynamic scenes using spherical harmonic exponentiation. *ACM Transactions on Graphics* 25(3), 977–86.
- Ren, Z., K. Zhou, S. Lin, and B. Guo. 2008. Gradient-based interpolation and sampling for real-time rendering of inhomogeneous, single-scattering media. *Computer Graphics Forum (Proceedings of Pacific Graphics 2008)* 27(7), 1945–53.

- Reshetov, A., A. Soupikov, and J. Hurley. 2005. Multi-level ray tracing algorithm. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2005)* 24(3), 1176–85.
- Reshetov, A. 2007. Faster ray packets—triangle intersection through vertex culling. In *Proceedings of IEEE Symposium on Interactive Ray Tracing*, 105–12.
- Rogers, D. F., and J. A. Adams. 1990. *Mathematical Elements for Computer Graphics*. New York: McGraw–Hill.
- Ross, S. M. 2002. *Introduction to Probability Models* (8th ed.). San Diego: Academic Press.
- Roth, S. D. 1982. Ray casting for modeling solids. *Computer Graphics and Image Processing* 18, 109–44.
- Roth, S. H., P. Diezi, and M. Gross. 2001. Ray tracing triangular Bézier patches. In *Computer Graphics Forum (Eurographics 2001 Conference Proceedings)* 20(3), pp. 422–30.
- Rougeron, G., and B. Péroche. 1997. An adaptive representation of spectral data for reflectance computations. In *Eurographics Rendering Workshop 1997*, pp. 126–38.
- Rougeron, G., and B. Péroche. 1998. Color fidelity in computer graphics: a survey. *Computer Graphics Forum* 17(1), 3–16.
- Rousselle, F., P. Clarberg, L. Leblank, V. Ostromoukhov, and P. Poulin. 2008. Efficient product sampling using hierarchical thresholding. *The Visual Computer (Proceedings of CGI 2008)* 24(7–9), 465–74.
- Rubin, S. M., and T. Whitted. 1980. A 3-dimensional representation for fast rendering of complex scenes. *Computer Graphics* 14(3), 110–16.
- Ruckert, M. 2005. *Understanding MP3*. Wiesbaden, Germany: GWV-Vieweg.
- Rushmeier, H. E. 1988. Realistic Image Synthesis for Scenes with Radiatively Participating Media. Ph.D. thesis, Cornell University.
- Rushmeier, H. E., and K. E. Torrance. 1987. The zonal method for calculating light intensities in the presence of a participating medium. In *Computer Graphics (Proceedings of SIGGRAPH '87)*, Volume 21, pp. 293–302.
- Rushmeier, H. E., and G. J. Ward. 1994. Energy preserving non-linear filters. In *Proceedings of SIGGRAPH '94*, Computer Graphics Proceedings, Annual Conference Series, pp. 131–38.
- Rushmeier, H., C. Patterson, and A. Veerasamy. 1993. Geometric simplification for indirect illumination calculations. In *Graphics Interface '93*, pp. 227–36.
- Rusinkiewicz, S. 1998. A new change of variables for efficient BRDF representation. *Proceedings of the Eurographics Rendering Workshop*, 11–23.
- Rusinkiewicz, S., and M. Levoy. 2000. Qsplat: A multiresolution point rendering system for large meshes. In *Proceedings of ACM SIGGRAPH 2000*, Computer Graphics Proceedings, Annual Conference Series, pp. 343–52.
- Saito, T., and T. Takahashi. 1990. Comprehensible rendering of 3-D shapes. In *Computer Graphics (Proceedings of SIGGRAPH '90)*, Volume 24, pp. 197–206.
- Samet, H. 1990. *The Design and Analysis of Spatial Data Structures*. Reading, Massachusetts: Addison-Wesley.
- Sattler, M., R. Sarlette, and R. Klein. 2003. Efficient and realistic visualization of cloth. *Eurographics Symposium on Rendering: 14th Eurographics Workshop on Rendering*, 167–78.
- Schaufler, G., and H. W. Jensen. 2000. Ray tracing point sampled geometry. In *Rendering Techniques 2000: 11th Eurographics Workshop on Rendering*, pp. 319–28.

- Schilling, A. 1997. Toward real-time photorealistic rendering: challenges and solutions. In *1997 SIGGRAPH/Eurographics Workshop on Graphics Hardware*, pp. 7–16.
- Schilling, A. 2001. Antialiasing of environment maps. *Computer Graphics Forum* 20(1), 5–11.
- Schlick, C. 1993. A customizable reflectance model for everyday rendering. In *Fourth Eurographics Workshop on Rendering*, Paris, France, pp. 73–84.
- Schmidt, C. M., and B. Budge. 2002. Simple nested dielectrics in ray traced images. *Journal of Graphics Tools* 7(2), 1–8.
- Schneider, P. J., and D. H. Eberly. 2003. *Geometric Tools for Computer Graphics*. San Francisco: Morgan Kaufmann.
- Schregle, R. 2003. Bias compensation for photon maps. *Computer Graphics Forum* 22(4), 729–42.
- Schuster, A. 1905. Radiation through a foggy atmosphere. *Astrophysical Journal* 21(1), 1–22.
- Schwarzschild, K. 1906. On the equilibrium of the sun's atmosphere (Nachrichten von der Königlichen Gesellschaft der Wissenschaften zu Göttingen). *Göttinger Nachrichten* 195, 41–53.
- Segovia, B., J. C. Iehl, R. Mitanchey, and B. Péroche. 2006. Bidirectional instant radiosity. *Rendering Techniques 2006: 17th Eurographics Workshop on Rendering*, 389–98.
- Segovia, B., J. C. Iehl, and B. Péroche. 2007. Metropolis instant radiosity. *Computer Graphics Forum* 26(3), 425–34.
- Séquin, C. H., and E. K. Smyrl. 1989. Parameterized ray tracing. In *Computer Graphics (Proceedings of SIGGRAPH '89)*, Volume 23, pp. 307–14.
- Shade, J., S. J. Gortler, L. W. He, and R. Szeliski. 1998. Layered depth images. In *Proceedings of SIGGRAPH 98*, Computer Graphics Proceedings, Annual Conference Series, pp. 231–42.
- Shevtsov, M., A. Soupikov, and A. Kapustin. 2007a. Ray–triangle intersection algorithm for modern CPU architectures. In *Proceedings of GraphiCon 2007*, pp. 33–39.
- Shevtsov, M., A. Soupikov, and A. Kapustin. 2007b. Highly parallel fast kd-tree construction for interactive ray tracing of dynamic scenes. In *Computer Graphics Forum: Proceedings of Eurographics 2007* 26(3). pp. 395–404.
- Shinya, M. 1993. Spatial anti-aliasing for animation sequences with spatio-temporal filtering. In *Proceedings of SIGGRAPH '93*, Computer Graphics Proceedings, Annual Conference Series, pp. 289–96.
- Shinya, M., T. Takahashi, and S. Naito. 1987. Principles and applications of pencil tracing. In *Computer Graphics (Proceedings of SIGGRAPH '87)*, Volume 21, pp. 45–54.
- Shirley, P. 1990. Physically Based Lighting Calculations for Computer Graphics. Ph. D. thesis, Department of Computer Science, University of Illinois, Urbana–Champaign.
- Shirley, P. 1991. Discrepancy as a quality measure for sample distributions. *Eurographics '91*, pp. 183–194.
- Shirley, P. 1992. Nonuniform random point sets via warping. In D. Kirk (Ed.), *Graphics Gems III*, pp. 80–83. San Diego: Academic Press.
- Shirley, P., and K. Chiu. 1997. A low distortion map between disk and square. *Journal of Graphics Tools* 2(3), 45–52.
- Shirley, P., and R. K. Morley. 2008. *Realistic Ray Tracing*. Natick, Massachusetts: A. K. Peters.
- Shirley, P., B. Wade, P. Hubbard, D. Zareski, B. Walter, and D. P. Greenberg. 1995. Global illumination via density estimation. In *Eurographics Rendering Workshop 1995*, pp. 219–31.

- Shirley, P., C. Y. Wang, and K. Zimmerman. 1996. Monte Carlo techniques for direct lighting calculations. *ACM Transactions on Graphics* 15(1), 1–36.
- Shoemake, K. 1985. Animating rotation with quaternion curves, *Computer Graphics (SIGGRAPH '85 Proceedings)*, Volume 19, pp. 245–54.
- Shoemake, K. 1991. Quaternions and 4x4 matrices. In J. Arvo (Ed.), *Graphics Gems II*, pp. 351–54. San Diego: Academic Press.
- Shoemake, K. 1994a. Polar matrix decomposition. In P. Heckbert (Ed.), *Graphics Gems IV*, pp. 207–21. San Diego: Academic Press.
- Shoemake, K. 1994b. Euler angle conversion. In P. Heckbert (Ed.), *Graphics Gems IV*, pp. 222–29. San Diego: Academic Press.
- Shoemake, K., and T. Duff. 1992. Matrix animation and polar decomposition. In *Graphics Interface '92*, pp. 258–64.
- Sillion, F., and C. Puech. 1994. *Radiosity and Global Illumination*. San Francisco: Morgan Kaufmann.
- Sims, K. 1991. Artificial evolution for computer graphics. In *Computer Graphics (Proceedings of SIGGRAPH '91)*, Volume 25, pp. 319–28.
- Sloan, P.-P. 2008. Stupid spherical harmonics (SH) tricks. *Game Developers Conference 2008*.
- Sloan, P.-P., J. Kautz, and J. Snyder. 2002. Precomputed radiance transfer for real-time rendering in dynamic, low-frequency lighting environments. *ACM Transactions on Graphics* 21(3), 527–36.
- Sloan, P.-P., J. Hall, J. Hart, and J. Snyder. 2003a. Clustered principal components for precomputed radiance transfer. *ACM Transactions on Graphics* 22(3), 382–91.
- Sloan, P.-P., X. Liu, H.-Y. Shum, and J. Snyder. 2003b. Bi-scale radiance transfer. *ACM Transactions on Graphics* 22(3), 370–75.
- Sloan, P.-P., B. Luna, and J. Snyder. 2005. Local, deformable precomputed radiance transfer. *ACM Transactions on Graphics* 24(3), 1216–24.
- Slusallek, P. 1996. Vision—An Architecture for Physically-Based Rendering. Ph.D. thesis, University of Erlangen.
- Slusallek, P., and H.-P. Seidel. 1995. Vision—an architecture for global illumination calculations. *IEEE Transactions on Visualization and Computer Graphics* 1(1), 77–96.
- Slusallek, P., and H.-P. Seidel. 1996. Towards an open rendering kernel for image synthesis. In *Eurographics Rendering Workshop 1996*, pp. 51–60.
- Smith, A. R. 1984. Plants, fractals and formal languages. In *Computer Graphics (Proceedings of SIGGRAPH '84)*, Volume 18, pp. 1–10.
- Smith, A. R. 1995. A Pixel Is Not a Little Square, a Pixel Is Not a Little Square, a Pixel is Not a Little Square! (and a Voxel Is Not a Little Cube). Microsoft Technical Memo 6, www.alvyray.com.
- Smith, J. O. 2002. Digital audio resampling home page. www-ccrma.stanford.edu/~jos/resample/.
- Smits, B. 1998. Efficiency issues for ray tracing. *Journal of Graphics Tools* 3(2), 1–14.
- Smits, B. 1999. An RGB-to-spectrum conversion for reflectances. *Journal of Graphics Tools* 4(4), 11–22.
- Smits, B., P. S. Shirley, and M. M. Stark. 2000. Direct ray tracing of displacement mapped triangles. In *Rendering Techniques 2000: 11th Eurographics Workshop on Rendering*, pp. 307–18.

- Snyder, J. 2006. *Code Generation and Factoring for Fast Evaluation of Low-order Spherical Harmonic Products and Squares*. Microsoft Research Technical Report, MSR-TR-2006-53.
- Snyder, J. M., and A. H. Barr. 1987. Ray tracing complex models containing surface tessellations. *Computer Graphics (SIGGRAPH '87 Proceedings)*, Volume 21, pp. 119–28.
- Soupikov, A., M. Shevtsov, and A. Kapustin. 2008. Improving kd-tree quality at a reasonable construction cost. In *IEEE Symposium on Interactive Ray Tracing*, pp. 67–72.
- Spanier, J., and E. M. Gelbard. 1969. *Monte Carlo Principles and Neutron Transport Problems*. Reading, Massachusetts: Addison-Wesley.
- Spencer, B., and M. Jones. 2009a. Hierarchical photon mapping. *IEEE Transactions on Visualization and Computer Graphics* 15(1), 49–61.
- Spencer, B., and M. W. Jones. 2009b. Into the blue: better caustics through photon relaxation. *Computer Graphics Forum (Proceedings of Eurographics 2009)* 28(2).
- Stam, J. 1995. Multiple scattering as a diffusion process. In *Rendering Techniques (Proceedings of the Eurographics Rendering Workshop)*, 41–50.
- Stam, J. 1998. Exact evaluation of Catmull-Clark subdivision surfaces at arbitrary parameter values. In *Proceedings of SIGGRAPH '98*, Computer Graphics Proceedings, Annual Conference Series, pp. 395–404.
- Stam, J. 1999. Diffraction shaders. In *Proceedings of SIGGRAPH '99*, Computer Graphics Proceedings, Annual Conference Series, pp. 101–10.
- Stam, J. 2001. An illumination model for a skin layer bounded by rough surfaces. In *Rendering Techniques 2001: 12th Eurographics Workshop on Rendering*, pp. 39–52.
- Stam, J., and C. Loop. 2003. Quad/triangle subdivision. *Computer Graphics Forum* 22(1), 79–85.
- Stark, M., J. Arvo, and B. Smits. 2005. Barycentric parameterizations for isotropic BRDFs. *IEEE Transactions on Visualization and Computer Graphics* 11(2), 126–38.
- Steigleder, M., and M. McCool. 2003. Generalized stratified sampling using the Hilbert curve. *Journal of Graphics Tools* 8(3), 41–47.
- Steinhurst, J., G. Coombe, and A. Lastra. 2005. Reordering for cache conscious photon mapping. *Proceedings of Graphics Interface 2005*, 97–104.
- Stephenson, I. 2006. Improving motion blur: shutter efficiency and temporal sampling. *Journal of Graphics Tools* 12(1), 9–15.
- Stich, M., H. Friedrich, and A. Dietrich. 2009. Spatial splits in bounding volume hierarchies. *Proceedings of High Performance Graphics 2009*, pp. 7–14.
- Stockmar, A. 1986. *Proposal for a data format for exchange of luminaire data (interior, exterior, and/or road lighting luminaires) under the operating systems MS-DOS 2.x/3.xx under condition of unequivocal coordination between luminaire and data set*.
- Stolfi, J. 1991. *Oriented Projective Geometry*. San Diego: Academic Press.
- Stroustrup, B. 1997. *The C++ Programming Language*. Reading, Massachusetts: Addison-Wesley.
- Stürzlinger, W. 1998. Ray tracing triangular trimmed free-form surfaces. *IEEE Transactions on Visualization and Computer Graphics* 4(3), 202–14.
- Subr, K. and J. Arvo. 2007. Steerable importance sampling. *IEEE Symposium on Interactive Ray Tracing*, pp. 133–40.
- Suffern, K. 2007. *Ray Tracing from the Ground Up*. Natick, Massachusetts: A. K. Peters.

- Sun, B., R. Ramamoorthi, S. Narasimhan, and S. Nayar. 2005. A practical analytic single scattering model for real time rendering. *ACM Transactions on Graphics* 24(3), 1040–49.
- Sun, B., K. Sunkavalli, R. Ramamoorthi, P. Belhumeur, and S. Nayar. 2007. Time-varying BRDFs. *IEEE Transactions on Visualization and Computer Graphics* 13(3), 595–609.
- Sun, Y., F. D. Fracchia, M. S. Drew, and T. W. Calvert. 2001. A spectrally based framework for realistic image synthesis. *The Visual Computer* 17(7), 429–44.
- Sung, K., and P. Shirley. 1992. Ray tracing with the BSP tree. In D. Kirk (Ed.), *Graphics Gems III*, pp. 271–274. San Diego: Academic Press.
- Sung, K., J. Craighead, C. Wang, S. Bakshi, A. Pearce, and A. Woo. 1998. Design and implementation of the Maya renderer. In *Pacific Graphics '98*.
- Sutherland, I. E. 1963. Sketchpad—a man-machine graphical communication system. In *Proceedings of the Spring Joint Computer Conference (AFIPS)*, pp. 328–46.
- Suykens, F., and Y. Willems. 2000a. Adaptive filtering for progressive Monte Carlo image rendering. In *Proceedings of WSCG 2000 Conference*.
- Suykens, F., and Y. Willems. 2000b. Density control for photon maps. In *Rendering Techniques 2000: 11th Eurographics Workshop on Rendering*, pp. 23–34.
- Suykens, F., and Y. Willems. 2001. Path differentials and applications. In *Rendering Techniques 2001: 12th Eurographics Workshop on Rendering*, pp. 257–68.
- Szirmay-Kalos, L., and G. Márton. 1998. Worst-case versus average case complexity of ray-shooting. *Computing* 61(2), 103–31.
- Szirmay-Kalos, L., M. Sbert, and T. Umenhoffer. 2005. Real-time multiple scattering in participating media with illumination networks. *Rendering Techniques 2005: 16th Eurographics Workshop on Rendering*, 277–82.
- Tabellion, E., and A. Lamorlette. 2004. An approximate global illumination system for computer generated films. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2004)* 23(3), 469–76.
- Talbot, J., D. Cline, and P. Egbert. 2005. Importance resampling for global illumination. *Rendering Techniques 2005: 16th Eurographics Workshop on Rendering*, 139–46.
- Tannenbaum, D. C., P. Tannenbaum, and M. J. Wozny. 1994. Polarization and birefringency considerations in rendering. In *Proceedings of SIGGRAPH '94*, Computer Graphics Proceedings, Annual Conference Series, pp. 221–22.
- Teo, P., E. Simoncelli, and D. Heeger. 1997. *Efficient Linear Rendering for Interactive Lighting Design*. Department of Computer Science Technical Report, Stanford University, Report No. CS-TN-97-60.
- Theußl, T., H. Hauser, and E. Gröller. 2000. Mastering windows: improving reconstruction. In *Proceedings of the 2000 IEEE Symposium on Volume Visualization*, pp. 101–8. New York: ACM Press.
- Toksvig, M. 2005. Mipmapping normal maps. *Journal of Graphics Tools* 10(3), 65–71.
- Tong, X., J. Wang, S. Lin, B. Guo, and H. Y. Shum. 2005. Modeling and rendering of quasi-homogeneous materials. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2005)* 24(3), 1054–61.
- Torrance, K. E., and E. M. Sparrow. 1967. Theory for off-specular reflection from roughened surfaces. *Journal of the Optical Society of America* 57(9), 1105–14.

- Tregenza, P. R. 1983. The Monte Carlo method in lighting calculations. *Lighting Research and Technology* 15(4), 163–70.
- Trumbore, B., W. Lytle, and D. P. Greenberg. 1993. A testbed for image synthesis. In *Developing Large-Scale Graphics Software Toolkits*, SIGGRAPH '93 Course Notes, Volume 3, pp. 4–7–4–19.
- Truong, D. N., F. Bodin, and A. Seznec. 1998. Improving cache behavior of dynamically allocated data structures. In *IEEE PACT*, pp. 322–29.
- Tsakok, J. 2009. Faster incoherent rays: multi-BVH ray stream tracing. *Proceedings of High Performance Graphics 2009*, pp. 151–58.
- Tumblin, J., and H. E. Rushmeier. 1993. Tone reproduction for realistic images. *IEEE Computer Graphics and Applications* 13(6), 42–48.
- Turk, G. 1991. Generating textures for arbitrary surfaces using reaction-diffusion. In *Computer Graphics (Proceedings of SIGGRAPH '91)*, Volume 25, pp. 289–98.
- Turkowski, K. 1990a. *The Differential Geometry of Parametric Primitives*. Technical Note, Advanced Technology Group, Apple Computer.
- Turkowski, K. 1990b. Filters for common resampling tasks. In A. S. Glassner (Ed.), *Graphics Gems I*, pp. 147–65. San Diego: Academic Press.
- Turkowski, K. 1990c. Properties of surface-normal transformations. In A. S. Glassner (Ed.), *Graphics Gems I*, pp. 539–47. San Diego: Academic Press.
- Turkowski, K. 1993. The differential geometry of texture-mapping and shading. Technical Note, Advanced Technology Group, Apple Computer.
- Unser, M. 2000. Sampling—50 years after Shannon. *Proceedings of the IEEE* 88(4), 569–87.
- Upstill, S. 1989. *The RenderMan Companion*. Reading, Massachusetts: Addison-Wesley.
- van de Hulst, H. C. 1980. *Multiple Light Scattering*. New York: Academic Press.
- van de Hulst, H. C. 1981. *Light Scattering by Small Particles*. New York: Dover Publications. Originally published by John Wiley & Sons, 1957.
- Van Horn, B., and G. Turk. 2008. Antialiasing procedural shaders with reduction maps *IEEE Transactions on Visualization and Computer Graphics* 14(3), 539–50.
- van Wijk, J. J. 1991. Spot noise-texture synthesis for data visualization. In *Computer Graphics (Proceedings of SIGGRAPH '91)*, Volume 25, pp. 309–18.
- Veach, E. 1996. Non-symmetric scattering in light transport algorithms. In X. Pueyo and P. Schröder (Eds.), *Eurographics Rendering Workshop 1996*. Wien: Springer.
- Veach, E. 1997. Robust Monte Carlo Methods for Light Transport Simulation. Ph. D. thesis, Stanford University.
- Veach, E., and L. Guibas. 1994. Bidirectional estimators for light transport. In *Fifth Eurographics Workshop on Rendering*, Darmstadt, Germany, pp. 147–62.
- Veach, E., and L. J. Guibas. 1995. Optimally combining sampling techniques for Monte Carlo rendering. In *Computer Graphics (SIGGRAPH '95 Proceedings)*, pp. 419–28.
- Veach, E., and L. J. Guibas. 1997. Metropolis light transport. In *Computer Graphics (SIGGRAPH '97 Proceedings)*, pp. 65–76.
- Verbeck, C. P., and D. P. Greenberg. 1984. A comprehensive light source description for computer graphics. *IEEE Computer Graphics and Applications* 4(7), 66–75.

- Wald, I. 2007. On fast construction of SAH-based bounding volume hierarchies. In *IEEE Symposium on Interactive Ray Tracing*, pp. 33–40.
- Wald, I., and V. Havran. 2006. On building fast kd-trees for ray tracing and on doing that in $O(n \log n)$. In *IEEE Symposium on Interactive Ray Tracing*, pp. 61–69.
- Wald, I., P. Slusallek, and C. Benthin. 2001b. Interactive distributed ray tracing of highly complex models. In *Rendering Techniques 2001: 12th Eurographics Workshop on Rendering*, pp. 277–88.
- Wald, I., T. Kollig, C. Benthin, A. Keller, and P. Slusallek. 2002. Interactive global illumination using fast ray tracing. In *Rendering Techniques 2002: 13th Eurographics Workshop on Rendering*, pp. 15–24.
- Wald, I., C. Benthin, and P. Slusallek. 2003. Interactive global illumination in complex and highly occluded environments. In *Eurographics Symposium on Rendering: 14th Eurographics Workshop on Rendering*, pp. 74–81.
- Wald, I., J. Günther, and P. Slusallek. 2004. Balancing considered harmful—faster photon mapping using the voxel volume heuristic. *Computer Graphics Forum (Proceedings of Eurographics 2004)* 23(3), 595–603.
- Wald, I., S. Boulos, and P. Shirley. 2007. Ray tracing deformable scenes using dynamic bounding volume hierarchies. *ACM Transactions on Graphics* 26(1).
- Wald, I., P. Slusallek, C. Benthin, and M. Wagner. 2001a. Interactive rendering with coherent ray tracing. *Computer Graphics Forum* 20(3), 153–64.
- Wallis, B. 1990. Forms, vectors, and transforms. In A. S. Glassner (Ed.), *Graphics Gems I*, pp. 533–538. San Diego: Academic Press.
- Walter, B., A. Arbree, K. Bala, D. Greenberg. 2006. Multidimensional lightcuts. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2006)* 25(3), 1081–88.
- Walter, B., S. Fernandez, A. Arbree, K. Bala, M. Donikian, D. Greenberg. 2005. Lightcuts: a scalable approach to illumination. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2005)* 24(3), 1098–1107.
- Walter, B., P. M. Hubbard, P. Shirley, and D. F. Greenberg. 1997. Global illumination using local linear density estimation. *ACM Transactions on Graphics* 16(3), 217–59.
- Walter, B., S. N. Pattanaik, and D. P. Greenberg. 2002. Using perceptual texture masking for efficient image synthesis. *Computer Graphics Forum* 21(3), 393–99.
- Walter, B., S. Marschner, H. Li, and K. Torrance. 2007. Microfacet models for refraction through rough surfaces. In *Rendering Techniques 2007 (Proc. Eurographics Symposium on Rendering)*, 195–206.
- Walter, B., K. Bala, M. Kilbarni, and K. Pingali. 2008. Fast agglomerative clustering for rendering. In *IEEE Symposium on Interactive Ray Tracing*, pp. 81–86.
- Wandell, B. 1995. *Foundations of Vision*. Sinauer Associates.
- Wang, J., S. Zhao, X. Tong, J. Snyder, and B. Guo. 2008a. Modeling anisotropic surface reflectance with example-based microfacet synthesis. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2008)* 27(3), 41:1–41:9.
- Wang, J., S. Zhao, X. Tong, S. Lin, Z. Lin, Y. Dong, B. Guo, and H. Y. Shum. 2008b. Modeling and rendering of heterogeneous translucent materials using the diffusion equation. *ACM Transactions on Graphics* 27(1), 9:1–9:18.
- Wang, R., and O. Åkerlund. 2009. Bidirectional importance sampling for unstructured illumination. *Computer Graphics Forum (Proceedings of Eurographics 2009)* 28(2), 269–78.

- Wang, R., J. Tran, and D. Luebke. 2004. All-frequency relighting of non-diffuse objects using separable BRDF approximation. In *Rendering Techniques 2004 (Proceedings of the Eurographics Symposium on Rendering)*, 345–54.
- Wang, R., J. Tran, and D. Luebke. 2005. All-frequency interactive relighting of translucent objects with single and multiple scattering. *ACM Transactions on Graphics* 24(3), 1202–07.
- Wang, R., R. Ng, D. Luebke, and G. Humphreys. 2006a. Efficient wavelet rotation for environment map rendering. In *Eurographics Symposium on Rendering*, 173–82.
- Wang, R., J. Tran, and D. Luebke. 2006b. All-frequency relighting of glossy objects. *ACM Transactions on Graphics* 25(2), 293–318.
- Wang, X. C., J. Maillot, E. L. Fiume, V. Ng-Thow-Hing, A. Woo, and S. Bakshi. 2000. Feature-based displacement mapping. In *Rendering Techniques 2000: 11th Eurographics Workshop on Rendering*, pp. 257–68.
- Ward, G. 1991a. Adaptive shadow testing for ray tracing. In *Second Eurographics Workshop on Rendering*.
- Ward, G. 1991b. Real pixels. In J. Arvo (Ed.), *Graphics Gems II*, pp. 80–83. San Diego: Academic Press.
- Ward, G. J. 1992. Measuring and modeling anisotropic reflection. *Computer Graphics (SIGGRAPH '92 Proceedings)*, Volume 26, pp. 265–72.
- Ward, G. J. 1994a. A contrast-based scalefactor for luminance display. In P. Heckbert (Ed.), *Graphics Gems IV*, pp. 415–421. Boston: Academic Press.
- Ward, G. J. 1994b. The Radiance lighting simulation and rendering system. *Proceedings of SIGGRAPH '94*, pp. 459–72.
- Ward, G. and E. Eydelberg-Vileshin. 2002. Picture perfect RGB rendering using spectral prefiltering and sharp color primaries. In *The Proceedings of 13th Eurographics Workshop on Rendering*, Pisa, Italy, pp. 117–24.
- Ward, G. J., and P. Heckbert. 1992. Irradiance gradients. In *Third Eurographics Workshop on Rendering*, Bristol, United Kingdom, pp. 85–98.
- Ward, G. J., F. M. Rubinstein, and R. D. Clear. 1988. A ray tracing solution for diffuse interreflection. *Computer Graphics (SIGGRAPH '88 Proceedings)*, Volume 22, pp. 85–92.
- Warn, D. R. 1983. Lighting controls for synthetic images. In *Computer Graphics (Proceedings of SIGGRAPH 83)*, Volume 17, pp. 13–21.
- Warren, H. 2006. *Hacker's Delight*. Reading, Massachusetts: Addison-Wesley.
- Warren, J. 2002. *Subdivision Methods for Geometric Design: A Constructive Approach*. San Francisco: Morgan Kaufmann.
- Watt, A., and M. Watt. 1992. *Advanced Animation and Rendering Techniques*. New York: Addison-Wesley.
- Weber, M., M. Milch, K. Myszkowski, K. Dmitriev, P. Rokita, and H.-P. Seidel. 2004. Spatio-temporal photon density estimation using bilateral filtering. *Proceedings of Computer Graphics International, 2004*, 120–27.
- Weghorst, H., G. Hooper, and D. P. Greenberg. 1984. Improved computational methods for ray tracing. *ACM Transactions on Graphics* 3(1), 52–69.
- Wei, L.-Y. 2008. Parallel Poisson disk sampling. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2008)* 27(3), 20:1–20:10.

- Wei, L.-Y., S. Lefebvre, V. Kwatra, and G. Turk. 2009. State of the art in example-based texture synthesis. In *Eurographics 2009, State of the Art Report*.
- Weistroffer, R. P., K. Walcott, G. Humphreys, and J. Lawrence. 2007. Efficient basis decomposition for scattered reflectance data. *Eurographics Symposium on Rendering*, 207–18.
- Westin, S., J. Arvo, and K. Torrance. 1992. Predicting reflectance functions from complex surfaces. *Computer Graphics* 26(2), 255–64.
- Weyrich, T., P. Peers, W. Matusik, and S. Rusinkiewicz. 2009. Fabricating microgeometry for custom surface reflectance *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2008)* 28(3), 32:1–32:6.
- Whitted, T. 1980. An improved illumination model for shaded display. *Communications of the ACM* 23(6), 343–49.
- Wilkie, A., A. Weidlich, C. Larboulette, and W. Purgathofer. 2006. A reflectance model for diffuse fluorescent surfaces. In *Proceedings of GRAPHITE*, 321–31.
- Williams, L. 1978. Casting curved shadows on curved surfaces. In *Computer Graphics (Proceedings of SIGGRAPH '78)*, Volume 12, pp. 270–74.
- Williams, L. 1983. Pyramidal parametrics. In *Computer Graphics (SIGGRAPH '83 Proceedings)*, Volume 17, pp. 1–11.
- Williams, A., S. Barrus, R. K. Morley, and P. Shirley. 2005. An efficient and robust ray–box intersection algorithm. *Journal of Graphics, GPU, and Game Tools* 10(4), pp. 49–54.
- Wilson, P. R., M. S. Johnstone, M. Neely, and D. Boles. 1995. Dynamic storage allocation: a survey and critical review. In *Proceedings International Workshop on Memory Management*, Kinross, Scotland.
- Witkin, A., and M. Kass. 1991. Reaction-diffusion textures. In *Computer Graphics (Proceedings of SIGGRAPH '91)*, Volume 25, pp. 299–308.
- Wolff, L. B., and D. J. Kurlander. 1990. Ray tracing with polarization parameters. *IEEE Computer Graphics and Applications* 10(6), 44–55.
- Wong, T.-T., W.-S. Luk, and P.-A. Heng. 1997. Sampling with Hammersley and Halton points. *Journal of Graphics Tools* 2(2), 9–24.
- Woo, A., and J. Amanatides. 1990. Voxel occlusion testing: a shadow determination accelerator for ray tracing. In *Graphics Interface '90*, pp. 213–20.
- Woo, M., J. Neider, T. Davis, D. Shreiner, and the OpenGL Architecture Review Board. 1999. *The OpenGL Programming Guide*. Reading, Massachusetts: Addison-Wesley.
- Woop, S., G. Marmitt, and P. Slusallek. 2006. B-kd trees for hardware accelerated ray tracing of dynamic scenes. In *Graphics Hardware 2006: Eurographics Symposium Proceedings*, Vienna, Austria, pp. 67–76.
- Worley, S. P. 1996. A cellular texture basis function. In *Proceedings of SIGGRAPH '96*, Computer Graphics Proceedings, Annual Conference Series, New Orleans, Louisiana, pp. 291–94.
- Wyman, D., M. Patterson, and B. Wilson. 1989. Similarity relations for anisotropic scattering in Monte Carlo simulations of deeply penetrating neutral particles. *Journal of Computational Physics* 81, 137–50.
- Wyvill, B., and G. Wyvill. 1989. Field functions for implicit surfaces. *The Visual Computer* 5(1/2), 75–82.

- Xu, R., and S. Pattanaik. 2005. Non-iterative, robust Monte Carlo noise reduction. *IEEE Computer Graphics and Applications* 25(2), 31–35.
- Yanovitskij, E. G. 1997. *Light Scattering in Inhomogeneous Atmospheres*. Berlin: Springer-Verlag.
- Yellot, J. I. 1983. Spectral consequences of photoreceptor sampling in the Rhesus retina. *Science* 221, 382–85.
- Yoon, S.-E. and P. Lindstrom. 2006. Mesh layouts for block-based caches. *IEEE Transactions on Visualization and Computer Graphics*, 12(5), 1213–20.
- Yoon, S.-E. and D. Manocha. 2006. Cache-efficient layouts of bounding volume hierarchies. In *Computer Graphics Forum: Proceedings of Eurographics 2006* 25(3), 507–16.
- Yoon, S.-E., P. Lindstrom, V. Pascucci, and D. Manocha. 2005. Cache-oblivious mesh layouts. In *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2005)* 24(3), 886–93.
- Yoon, S.-E., C. Lauterbach, and D. Manocha. 2006. R-LODs: fast LOD-based ray tracing of massive models. *The Visual Computer* 22(9–11), 772–84.
- Zachmann, G. 2002. Minimal hierarchical collision detection. *Proceedings of the ACM Symposium on Virtual Reality Software and Technology*, pp. 121–28.
- Zeller, A. and R. Hildebrandt. 2002. Simplifying and isolating failure-inducing input. *IEEE Transactions on Software Engineering*, 28(2), 183–200.
- Zhou, K., Y. Hu, S. Lin, B. Guo, and H.-Y. Shum. 2006. Precomputed shadow fields for dynamic scenes. *ACM Transactions on Graphics* 24(3), 1196–1201.
- Zhou, K., Q. Hou, R. Wang, and B. Guo. 2008. Real-time kd-tree construction on graphics hardware. *ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia)* 27(5), 126:1–126:11.
- Zhukov, S., A. Iones, and G. Kronin. 1998. An ambient light illumination model. In *Eurographics Rendering Workshop 1998*, pp. 45–55.
- Zickler, T., S. Enrique, R. Ramamoorthi, and P. Belhumeur. 2005. Reflectance sharing: image-based rendering from a sparse set of images. *Rendering Techniques 2005 (Proceedings of Eurographics Symposium on Rendering)*, 253–65.
- Zimmerman, K. 1995. Direct lighting models for ray tracing with cylindrical lamps. In *Graphics Gems V*, pp. 285–89. San Diego: Academic Press.
- Zinke, A., C. Yuksel, A. Weber, and J. Keyser. 2008. Dual scattering approximation for fast multiple scattering in hair. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2008)* 27(3), 32:1–32:10.
- Zorin, D., P. Schröder, T. DeRose, L. Kobbelt, A. Levin, and W. Sweldens. 2000. *Subdivision for Modeling and Animation*. SIGGRAPH 2000 Course Notes.
- Zuniga, M. and J. Uhlmann. 2006. Ray queries with wide object isolation and the S-tree. *Journal of Graphics, GPU, and Game Tools* 11(3), 27–45.