

CURRICULUM VITA

DONALD GEMAN
Professor, Department of
Applied Mathematics and Statistics
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Affiliations

Institute for Computational Medicine, JHU
Center for Imaging Science, JHU
Ecole Normale Superieure, Cachan, France
INRIA, France

Research Areas

Computational Vision

Scene interpretation
Image retrieval

Bioinformatics

Molecular cancer diagnosis
Modeling gene and protein networks

Statistical Learning

Small-sample learning
Hierarchical testing designs

Education

Columbia University, New York, NY, 1961-1963
University of Illinois, Urbana, IL, 1963-1965
B.A. in English Literature
Northwestern University, Evanston, IL, 1966-1970
Ph.D. in Mathematics
Supervisor: Michael Marcus
Dissertation title: "Horizontal-window conditioning and the zeros of stationary processes"

Employment

Johns Hopkins University, Department of Applied Mathematics and Statistics
Professor, 2001-present

University of Massachusetts, Department of Mathematics and Statistics
Assistant and Associate Professor, 1970-1980
Professor and Distinguished Professor, 1981-2001

Visiting Positions

Department of Statistics, University of North Carolina, Chapel Hill, Fall, 1976 - Spring, 1977.

Division of Applied Mathematics, Brown University, Providence, R.I., Spring, 1984.

Departement de Mathematique, Universite de Paris-Sud, Orsay, France, May-June, 1986.

Universite Clermont-Ferrand, Ecole d'Ete de Probabilite de Saint-Flour, France, August-September, 1988.

Division of Applied Mathematics, Brown University, Providence, R.I., 1991 - 1993.

Forschungsinstitut fur Mathematik, ETH, Zurich, Switzerland, May-July, 1993.

Newton Institute for Mathematical Sciences, Cambridge, England, August, 1993.

Departement de Physique, Universite de Cergy, Cergy-Pontoise, France, June, 1996.

Institut National de Recherche en Informatique et en Automatique (INRIA), Paris, France, periodic visits, 1990-present.

Departement de Mathematiques Appliquees, Ecole Polytechnique, Palaiseau, France, September-November, 1997-99.

Department of Statistics, University of Chicago, April-May, 2000.

Centre de Mathematiques et Leurs Applications, ENS-Cachan, France, June, 1997; 1999-2000; Spring, 2001-2009.

Honors

ISI Highly Cited Researcher List (Top 100 in Engineering)

Distinguished University Professor at the University of Massachusetts

Fellow, Institute of Mathematical Statistics

Plenary or Keynote Speaker: ICIP, Lausanne, Switzerland, 1996; Annual NESS Meeting, Univ. of Connecticut, 1999; Annual French Statistical Society Meeting, Nantes, France, 2001; Biannual EMMCVPR, Sophia Antipolis, France, 2001; MAA Meeting, Baltimore, MD, 2003; ACIVS, Brussels,

Belgium, 2004; Snowbird Learning Workshop, Snowbird, UT, 2006; International Symposium on Information Theory (ISIT06), Seattle, WA, 2006; Norwegian Society for Image Processing and Pattern Recognition, Oslo, Norway, 2006; Multimedia Image Retrieval (MIR'06), Santa Barbara, 2006.

Professional Societies

Institute of Mathematical Statistics

Institute of Electrical and Electronics Engineers

American Mathematical Society

Society for Industrial and Applied Mathematics, Chair, SIAM Imaging Science Activity Group (2005-2007)

Doctoral Students

Carmen Acuna, *Parameter estimation for stochastic texture models*, Univ. of Mass., 1988.

Chengda Yang, *Stochastic methods for image restoration*, Univ. of Mass., 1991.

Keith Hartt, *Bayesian estimation of surface information from radar images*, Univ. of Mass., 1993.

Bruno Jedynak, *Stochastic models and deterministic methods for finding roads in remotely-sensed images*, Univ. de Paris - Sud, 1995.

Decheng Wang, *Stochastic modeling of magnetic resonance images with applications to tissue classification*, Univ. of Mass., 1996.

Kenneth Wilder, *Decision tree algorithms for handwritten digit recognition*, Univ. of Mass., 1998.

Chunming Li, *Classification by active testing with applications to imaging and change detection*, Univ. of Mass., 1998.

Francois Fleuret, *Hierarchical face detection by statistical learning*, Univ. de Paris VI, 2000.

Alexey Koloydenko, Univ. of Mass., *Modeling natural microimage statistics*, Univ. of Mass., 2000.

Franck Jung, *Reconnaissance d'objets par focalisation et detection de changements*, Ecole Polytechnique, 2001.

Hichem Sahbi, *Support vector machines for hierarchical face detection*, Universite de Versailles, 2003.

Christian d'Avignon, *Applying machine learning to biomedical data: the small-sample and*

interpretability dilemmas, Johns Hopkins University, 2004.

Xiaodong Fan, *Learning a hierarchy of classifiers for multi-class shape detection*, Johns Hopkins University, 2006.

Sachin Gangaputra, *Invariant coarse-to-fine object detection and tracking*, Johns Hopkins University, 2006.

Mary Lin, *Rank-based methods for statistical analysis of gene expression microarray data*, Johns Hopkins University, 2008.

Francisco Sanchez, Johns Hopkins University, in progress

Kan Jiang, Johns Hopkins University, in progress

Erdem Yoruk, Johns Hopkins University, in progress

Ting Li, Johns Hopkins University, in progress

Bahman Afsari, Johns Hopkins University, in progress

David Simcha, Johns Hopkins University, in progress

Patents

K. Manbeck, C. Yang, D. Geman, and S. Geman. Cadence Editing. US 6,542,199, 2003.

K. Manbeck, C. Yang, D. Geman, and S. Geman. Video Field Labeling. US 6,624,844, 2003.

C. Yang, K. Manbeck, S. Geman, D. Geman. Format Conversion. US 7,064,792, 2006.

K. Manbeck, J. Cassidy, S. Geman, D. Geman, and D. McClure. High Resolution Color Conforming. US 7,113,223, 2006.

K. Manbeck, D. Geman, S. Geman, and M. Orton. Automated Color Control in Film-to-Digital Transfer. US 7,068,838, 2006.

Selected Talks

Multimedia Image Retrieval (MIR'06), Santa Barbara, October 26, 2006 (Keynote Address)

Annual Meeting, "Norwegian Society for Image Processing and Pattern Recognition," Oslo, Norway, September 7, 2006 (Keynote Address)

International Symposium on Information Theory (ISIT06), Seattle, WA, July 14, 2006 (Plenary)

Speaker)

"Visual Learning and Recognition Workshop," IMA, Minneapolis, MN, May 23, 2006 (Organizer)

Snowbird Learning Conference, Snowbird, Utah, April 5, 2006 (Invited Talk)

Stochastic Systems Conference, Notre Dame University, March 25, 2006.

Distinguished Lecture Series, Scientific Computing and Imaging Institute (SCI), University of Utah, Salt Lake City, March 17, 2006.

Audio- and Video-Based Biometric Person Authentication (AVBPA 2005), Rye, New York, July 21-22, 2005.

"Statistical Analysis of Postgenomic Data," Institut National Agronomique Paris, April 21-22, 2005.

Workshop on "Pattern Classification, Learning and Object Recognition," MSRI, Berkeley, March 21-25, 2005.

Introductory Workshop, "Mathematical, Computational and Statistical Aspects of Image Analysis," MSRI, Berkeley, Jan.24-28, 2005.

Workshop on Object Recognition, Taromina, Sicily, October 10-12, 2004.

Advanced Concepts for Intelligent Vision Systems, ACIVS04, Brussels, Belgium, Aug.31 - Sept. 3, 2004 (Plenary Speaker)

Meeting of the Mathematical Association of America, Baltimore, MD, Nov. 7-8, 2003 (Invited Speaker).

Computational Sciences Lecture Series: "Computational Vision and Image Analysis," University of Wisconsin, Madison, WI, October 30, 2003.

"Mathematics Day", Institute of Mathematics, Academia Sinica, Taipei, Taiwan, September 3, 2003.

DIMACS Workshop on "Complexity and Inference", Rutgers University, N.J., June 3, 2003.

EURANDOM Workshop on "Statistical Learning in Classification and Model Selection", Eindhoven, Netherlands, Jan. 18, 2003.

SIAM Minisymposium on "Mathematical Problems in Image Analysis," Joint Mathematics Meetings, Baltimore, MD, Jan. 16, 2003.

"Distinguished Seminar Series on Vision," University of Maryland, Oct. 16, 2002.

SIAM 50th Anniversary and 2002 Annual Meeting, Minitutorial: "Statistical Methods and Learning in

Computer Vision," Philadelphia, July 9, 2002.

International Workshop on "Energy Minimization Methods in Computer Vision and Pattern Recognition," Sophia Antipolis, France, Sept. 5, 2001 (Plenary Speaker)

XXXIII Journées de Statistique (Annual Meeting, French Statistical Society), Nantes, France, May 14, 2001 (Keynote Address)

MSRI Workshop: "Nonlinear Estimation and Classification," Mathematical Sciences Research Institute, Berkeley, March 26, 2001.

IMA Workshop: "Image Analysis and High Level Vision," Institute of Mathematics and its Applications, Minneapolis, November 13, 2000.

Summer Seminar Series, Center for Language and Speech Processing, Johns Hopkins University, August 2, 2000.

Colloquium on Signal and Image Processing, Ecole Polytechnique, November 22, 1999.

Euroconference on "Computer Vision and Speech Recognition: Statistical Foundations and Applications," Anogia, Crete, July 4-8, 1999.

CVPR Workshop on "Statistical and Computational Theories of Vision," Fort Collins, CO, June 22, 1999.

The Thirteenth New England Statistics Symposium, University of Connecticut, April 24, 1999. (Plenary Speaker).

"Birck Distinguished Lecture," School of Electrical and Computer Engineering, Purdue University, March 29, 1999.

CIRM Conference on "Information Theory, Statistics and Image Analysis," Luminy, France, December 7-11, 1998.

Symposium on "Questions Mathématiques en Traitement du Signal et de l'Image," Institut Henri Poincaré, December, 1998.

Annual SPIE Meeting, Session on "Bayesian Inference for Inverse Problems," San Diego, July 19-24, 1998.

1998 Lukacs Symposium on "Statistics for the 21'st Century," Bowling Green University, April 24-26, 1998.

Workshop on "Machine Learning and Computer Vision," Newton Institute for Mathematical Sciences, Cambridge, England, Oct. 6-10, 1997.

NATO ASI Symposium on "Face Recognition: From Theory to Applications", Stirling, UK, June 23-July 4, 1997.

"Object Recognition and Sequential Testing" (Lecture Series), Ecole Normale Supérieure de Cachan, June, 1997.

Second Seminar on "Stochastic Analysis, Random Fields and Applications," Monte Verita, Ascona, Switzerland, September 16-21, 1996.

IEEE International Conference on Image Processing ("ICIP-96"), Lausanne, Switzerland, Sept. 16-19, 1996. (Plenary Speaker)

Annual meeting: "Classification Society of North America," Amherst, MA., June 14-15, 1996. (Plenary Speaker)

University de Cergy, Department Sciences de l'Information, "Shape Quantization and Recognition," June, 1996. (Lecture Series)

24th Annual Dutch Conference on "Probability Theory and Mathematical Statistics," Lunteren, Netherlands, November 13-15, 1995. (Lecture Series)

Workshop on "Spatial Statistics, Image Analysis and Stochastic Geometry," CWI, Amsterdam, November 9-11, 1995.

Workshop on "Mathematical Methods in Computer Vision," Geometry Center, Univ. of Minnesota, September 11-15, 1995.

Seminaire "Mathématiques et Imagerie," ENS Cachan, March 29, 1995.

IEEE-IMS "Information Theory and Statistics Workshop," Alexandria, VA., October 27-29, 1994. (Plenary Speaker)

Ninth Conference on "Pattern Recognition and Artificial Intelligence" (RFIA '94), Paris, January 11-14, 1994. (Plenary Speaker)

Publications

Research in Computational Biology: 2003-present

Edelman, L., G. Toia, D. Geman, W. Zhang and N. D. Price (2009), "Two-transcript gene expression classifiers in the diagnosis and prognosis of human diseases," (preprint).

Lin, X., B. Afsari, L. Marchionni, G. Parmigiani, L. Cope, D. Naiman and D. Geman (2009), "The ordering of expression among a few genes can provide simple cancer biomarkers and signal BRCA1 mutations," *BMC Bioinformatics*, 10:256.

Geman, D., B. Afsari, A.C. Tan and D. Naiman (2008), "Microarray classification from several two-gene expression comparisons," Proceedings ICMLA 2008, (Winning entry, ICMLA Microarray Classification Algorithm Competition).

Xu, L, A.C. Tan, R.L. Winslow and D. Geman (2008), "Merging microarray data from separate breast cancer studies provides a robust prognostic signature," *BMC Bioinformatics* 9:125.

Xu, L, D. Geman and R. Winslow (2007), "Large-scale integration of cancer microarray data identifies a robust common cancer signature," *BMC Bioinformatics* 8:275.

Anderson, T. J., I. Tchernyshyov, R. Diez, R.N. Cole, D. Geman, C. V. Dang and R. L. Winslow (2007). "Discovering robust protein biomarkers for disease from relative expression reversals in 2D DIGE data," *Proteomics* 7:1197-1207.

Tan, A. C., D. Q. Naiman, L. Xu, R. L. Winslow and D. Geman (2005). "Simple decision rules for classifying human cancers from gene expression profiles." *Bioinformatics* 21(20): 3896-3904.

Xu, L., A. C. Tan, D. Q. Naiman, D. Geman and R. L. Winslow (2005). "Robust prostate cancer marker genes emerge from direct integration of inter-study microarray data." *Bioinformatics* 21(20): 3905-3911.

Geman, D., C. D'Avignon, D. Q. Naiman and R. L. Winslow (2004). "Classifying gene expression profiles from pairwise mRNA comparisons." *Stat. Appl. Genet. Mol. Biol.* 3(1): Article 19.

Geman, D., C. D'Avignon, D. Q. Naiman, R. L. Winslow and A. Zeboulon (2004). "Gene expression comparisons for class prediction in cancer studies." Proc. 36th Symp. On the Interface: Computing Science and Statistics, Baltimore.

D'Avignon, C. and D. Geman (2003). "Tree-structured neural decoding." *Journal of Machine Learning Research* 4: 743-754.

Research in Computer Vision: 1984-present

Ferecatu, M. and D. Geman (2009), "A statistical framework for image category search from a mental picture," *IEEE Trans. Pattern Analysis and Machine Intelligence*, 31(6): 1087-1101.

Fleuret, F. and D. Geman (2008), "Stationary features and cat detection," *Journal of Machine Learning Research*, 9:2547-2578.

Ferecatu, M. and D. Geman (2007), "Interactive search for image categories by mental matching," Proc. Inter. Conf. on Computer Vision (ICCV '07), Rio de Janeiro.

Gangaputra, S. and D. Geman (2006). The trace model for object detection and tracking. Toward Category-Level Object Recognition , Lecture Notes in Computer Science, 4170. J. Ponce et al. Berlin, Springer-Verlag: 401-420.

Koloydenko, A. and D. Geman (2006). "Ordinal coding of image microstructure." Proc. Inter. Conf. Image Processing, Computer Vision and Pattern Recognition (IPCV '06), Las Vegas.

Gangaputra, S. and D. Geman (2006). "A design principle for coarse-to-fine classification." Proc. IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), New York, New York: 1877-1884.

Sahbi, H. and D. Geman (2006). "A hierarchy of support vector machines for pattern detection." *Journal of Machine Learning Research* 7: 2087-2123.

Blanchard, G. and D. Geman (2005). "Sequential testing designs for pattern recognition." *Annals of Statistics* 33(3): 1155-1202.

Fang, Y. and D. Geman (2005). "Experiments in mental face retrieval." Proc. Inter. Conf. on Audio and Video-based Biometric Person Authentication (AVBPA), Rye, NY, Lecture Notes in Computer Science: 637-646.

Gangaputra, S. and D. Geman (2005). "A unified stochastic model for detecting and tracking faces." Proc. Second Canadian Conf. on Computer and Robot Vision (CRV'05), Victoria, British Columbia: 306-313.

Amit, Y., D. Geman and X. Fan (2004). "A coarse-to-fine strategy for multi-class shape detection." *IEEE Trans. Pattern Analysis and Machine Intelligence* 26(12): 1606-1621.

Fan, X. and D. Geman (2004). "Hierarchical object indexing and sequential learning." Proc. 17th Inter. Conf. on Pattern Recognition (ICPR'04), Cambridge, UK: 65-68.

Gangaputra, S. and D. Geman (2004). "Self-normalized linear tests." Proc. IEEE Inter. Conf. on Computer Vision and Pattern Recognition (CVPR '04), Washington DC: 616-662.

Fang, Y., D. Geman, N. Boujemaa, J. P. Chieze and H. Sahbi (2004). Experiments in mental face retrieval. Project IMEDIA, INRIA-Rocquencourt.

Geman, D. (2003). Coarse-to-fine classification and scene labeling. Nonlinear Estimation and Classification. Lecture Notes in Statistics, 171. D. D. Denison, M. Hansen, C. C. Holmes, B. Mallick and B. Yu. New York, Springer-Verlag: 31-48.

Fleuret, F. and D. Geman (2002). "Fast face detection with precise pose estimation." Proc. 16th Inter. Conf. on Pattern Recognition (ICPR), Quebec City: 235-238.

Sahbi, H., D. Geman and N. Boujemaa (2002). "Face detection using coarse-to-fine support vector classifiers." Proc. IEEE Inter. Conf. on Image Processing (ICIP), Rochester, New York: 3, 925-928.

Krempp, S., D. Geman and Y. Amit (2002). Sequential learning with reusable parts for object detection. Center for Imaging Science, Johns Hopkins University.

Geman, D. and R. Moquet (2001). Q & A models for interactive search, Center for Mathematics and

Its Applications, ENS-Cachan, France.

Geman, D. (2001). "Interrogation Bayesienne d'une base de donnees." 33rd Journees de Statistique, Nantes, France: 15-20.

Fleuret, F. and D. Geman (2001). "Coarse-to-fine face detection." *International Journal of Computer Vision* 41(1-2): 85-107.

Geman, D. and B. Jedynek (2001). "Model-based classification trees." *IEEE Trans. Information Theory* 47(3): 1075-1082.

Geman, D. and R. Moquet (2000). "A stochastic model for image retrieval." Proc. Reconnaissance des Formes et Intelligence Artificielle (RFIA), Paris, France.

Fleuret, F. and D. Geman (1999). "Graded learning for object detection." Proc. 1st IEEE Workshop on Statistical and Computational Theories of Vision (SCTV), Fort Collins, Colorado.

Geman, D. and A. Koloydenko (1999). "Invariant statistics and coding of natural microimages." Proc. 1st IEEE Workshop on Statistical and Computational Theories of Vision (SCTV), Fort Collins, Colorado.

Amit, Y. and D. Geman (1999). "A computational model for visual selection." *Neural Computation* 11: 1691-1715.

Li, C. and D. Geman (1999). "Active testing at multiple resolutions." Proc. Conf. American Statistical Association (ASA), Baltimore, Maryland.

Amit, Y., D. Geman and B. Jedynek (1998). Efficient focusing and face detection. Face Recognition: From Theory to Applications. H. Wechsler. Berlin, Springer-Verlag: 157-173.

Jung, F., B. Jedynek and D. Geman (1997). Recognizing buildings in aerial images. Automatic Extraction of Man-Made Objects from Aerial and Space Images (II). A. Gruen, E. P. Baltsavias and O. Basel. Birkhauser: 173-182.

Amit, Y. and D. Geman (1997). Shape quantization and recognition with randomized trees. *Neural Computation* 9:1545-1588.

Amit, Y., D. Geman and K. Wilder (1997). Joint induction of shape features and tree classifiers. *IEEE Trans. Pattern Analysis and Machine Intelligence* 19(11): 1300-1306.

Geman, D. and B. Jedynek (1996). "An active testing model for tracking roads from satellite images." *IEEE Trans. Pattern Analysis and Machine Intelligence*. 18(1): 1-14.

Geman, D. and C. G. Yang (1995). "Nonlinear image recovery with half-quadratic regularization." *IEEE Trans. Image Processing* 4(7): 932-946.

Geman, D. (1994). "The entropy strategy for shape recognition." Proc. IEEE-IMS Workshop on Information Theory and Statistics, Alexandria, VA.

Geman, D. and B. Jedynak (1994). "Shape recognition and twenty questions." Proc. Reconnaissance des Formes et Intelligence Artificielle (RFIA) : 21-37.

Geman, D., G. Reynolds and C. Yang (1993). Stochastic algorithms for restricted image spaces and experiments in deblurring. Markov Random Fields: Theory and Applications. R. Chellappa and A. Jain, Academic Press: 39-68.

Geman, D., J. Horowitz and J. Kepner (1993). "Computation of IRAS fluxes via a priori astrometry." Proc. Conf.on Infrared Astronomy with Arrays: The Next Generation, Los Angeles, California.

Geman, D. and G. Reynolds (1992). "Constrained restoration and the recovery of discontinuities." *IEEE Trans. Pattern Analysis and Machine Intelligence* 14(3): 367-383.

Geman, S., D. E. McClure and D. Geman (1992). "A nonlinear filter for film restoration and other problems in image processing." *Computer Vision, Graphics, and Image Processing* 54(4): 281-289.

Geman, D. and B. Gidas (1991). Image Analysis and Computer Vision. Spatial Statistics and Image Processing , National Academy Press, Washington: 9-37.

Dupuis, P., D. Geman, J. Horowitz and G. Reynolds (1991). Statistical inference on the shape of circumstellar disks from HST observations, University of Massachusetts.

Geman, D. and B. Jedynak (1991). "Detection of roads in SPOT satellite images." Proc. IEEE Inter. Geoscience and Remote Sensing Symp.(IGARSS), Helsinki, Finland.

Geman, D. (1990). Remarks on hard modeling vs. image processing, circumstellar disks, and model validation. Restoration of HST Images and Spectra, Space Telescope Science Institute: 74-79.

Geman, D., S. Geman, C. Graffigne and P. Dong (1990). "Boundary detection by constrained optimization." *IEEE Trans. Pattern Analysis and Machine Intelligence* 12(7): 609-628.

Geman, D. (1990). "Random Fields and Inverse Problems in Imaging." Lecture Notes in Mathematics, Springer-Verlag. 1427: 113-193.

Geman, D., S. Geman and C. Graffigne (1987). Locating object and texture boundaries. Pattern Recognition Theory and Applications. P. Devijver and J. Kittler, Springer-Verlag.

Geman, D. (1987). "A stochastic model for boundary detection." *Image and Vision Computing* 5: 61-65.

Geman, D. and S. Geman (1987). Relaxation and annealing with constraints. Complex Systems Technical Report No. 35, Division of Applied Mathematics, Brown University.

Geman, D. and S. Geman (1986). Bayesian image analysis. Disordered Systems and Biological Organization. E. Bienenstock, F. Fogelman and G. Weisbuch, Springer-Verlag.

Derin, H., H. Elliott, R. Christi and D. Geman (1986). Application of the Gibbs distribution to image segmentation. Statistical Image Processing and Graphics, Marcel-Dekker: 3-24.

Geman, D. (1985). "Bayesian image analysis by adaptive annealing." Proc. IEEE Inter. Geoscience and Remote Sensing Symp. (IGARSS): 269-276.

Geman, S. and D. Geman (1984). "Stochastic relaxation, Gibbs distributions, and the Bayesian restoration of images." *IEEE Trans. Pattern Analysis and Machine Intelligence* 6: 721-741.

Derin, H., H. Elliott, R. Christi and D. Geman (1984). "Bayes smoothing algorithms for segmentation of images modeled by Markov random fields." *IEEE Trans. Pattern Analysis and Machine Intelligence* 6: 707-721.

Geman, D. (1984). Parameter estimation for Markov random fields with hidden variables and experiments with the EM algorithm. Reports on Pattern Analysis No. 21, Division of Applied Mathematics, Brown University.

Geman, D. and S. Geman (1983). Parameter estimation for some Markov random fields. Reports on Pattern Analysis No. 11, Division of Applied Mathematics, Brown University.

Research in Stochastic Processes: 1971-1984

Geman, D., J. Horowitz and J. Rosen (1984). "A local time analysis of the intersections of Brownian paths in the plane." *Annals of Probability* 12: 86-107.

Geman, D. and J. Horowitz (1981). "Smooth perturbations of a function with a smooth local time." *Trans. Amer. Math. Soc.* 267: 517-530.

Geman, D. and J. Horowitz (1980). "Occupation densities." *Annals of Probability* 8: 1-67.

Geman, D. (1979). "Dispersion points for linear sets and approximate moduli for some stochastic processes." *Trans. Amer. Math. Soc.* 253: 257-272.

Geman, D. and J. Zinn (1978). "On the increments of multi-dimensional random fields." *Annals of Probability* 6: 151-158.

Geman, D. (1977). "On the approximate local growth of multi-dimensional random fields." *Z. Wahrscheinlichkeitstheorie verw. Geb.* 38: 237-251.

Geman, D. (1977). "Local times for vector functions: energy integrals and local growth rates." *Houston J. Math.* 3: 195-206.

Geman, D. (1976). "A note on the continuity of local times." *Proc. Amer. Math. Soc.* 57: 321-326.

Geman, D. and J. Horowitz (1976). "Occupation times for functions with countable level sets and the regeneration of stationary sequences." *Z. Wahrscheinlichkeitstheorie verw. Geb.* 35: 189-211.

Geman, D. and J. Horowitz (1976). "Local times for real and random functions." *Duke Math. J.* 43: 809-828.

Geman, D., J. Horowitz and J. Zinn (1976). "Recurrence of stationary sequences." *Annals of Probability* 4: 372-381.

Geman, D. and J. Horowitz (1975). "Polar sets and Palm measures in the theory of flows." *Trans. Amer. Math. Soc.* 208: 141-159.

Geman, D. and J. Horowitz (1975). "Random shifts which preserve measure." *Proc. Amer. Math. Soc.* 49: 143-150.

Geman, D. and J. Horowitz (1974). "Transformations of flows by discrete random measures." *Indiana Univ. Math. J.* 24: 291-306.

Geman, D. (1973). "A note on the distribution of hitting times." *Annals of Probability* 1: 854-856.

Geman, D. and J. Horowitz (1973). "Occupation times for smooth stationary processes." *Annals of Probability* 1: 131-137.

Geman, D. and J. Horowitz (1973). "Remarks on Palm measures." *Annals Inst. H. Poincare* 9: 215-232.

Geman, D. (1972). "On the variance of the number of zeros of a stationary Gaussian process." *Annals Math. Stat.* 43: 977-982.