

Publications

Refereed Publications

1. Marin, Z, Wallace, JK, Nadeau, JL **Khalil, A** 2017 *Wavelet-based tracking of bacteria in unreconstructed, off-axis holograms*. Methods, doi.org/10.1016/j.ymeth.2017.09.003.
2. Marin, Z, Batchelder, KA, Toner, BC, Guimond, L, Gerasimova-Chechkina, E, Harrow, AR, Arneodo, A and **Khalil, A** 2017 *Mammographic evidence of microenvironment changes in tumorous breasts*. Medical Physics, 44:1324-1336. doi:10.1002/mp.12120
3. Gerasimova-Chechkina, E, Toner, B, Marin, Z, Audit, B, Roux, SG, Argoul, F, **Khalil, A**, Gileva, O, Naimark, O, Arneodo, A 2016 *Comparative multifractal analysis of dynamic infrared thermograms and X-ray mammograms enlightens changes in the environment of malignant tumors*, Frontiers in Physiology, 7, 336 (15 pages)
4. Plourde, SM, Marin, Z, Smith, ZR, Toner, BC, Batchelder, KA, **Khalil, A** 2016. Computational growth model of breast microcalcification clusters in simulated mammographic environments. Computers in Biology and Medicine, 76, 7-13
5. Richard, CD, Tanenbaum, AB, Audit, B, Arneodo, A, **Khalil, A**, Frankel, WN 2015. *SWDreader: A Wavelet-Based Algorithm Using Spectral Phase to Detect and Characterize Spike-Wave Discharges in Three Genetic Mouse Models of Absence Epilepsy*, Journal of Neuroscience Methods, 242, 127-140
6. Batchelder, KA, Tanenbaum, AB, Albert, S, Guimond, L, Kestener, P, Arneodo, A, **Khalil, A** 2014. *Wavelet-based 3D reconstruction of microcalcification clusters from two mammographic views: New Evidence that fractal tumors are malignant and Euclidean tumors are benign*, PLoS One, 9 (9) e107580 (11 pages).
7. Gerasimova, E, Audit, B, Roux, SG, **Khalil, A**, Argoul, F, Naimark, O, Gileva, O, Arneodo, A 2014. *Interdisciplinary approach for estimating and differentiating healthy and cancerous breast tissues with a multifractal analysis of skin temperature dynamics*, Russian Journal of Biomechanics, 18(1), 79-91.
8. Gerasimova, E, Audit, B, Roux, SG, **Khalil, A**, Gileva, O, Argoul, F, Naimark, O, Arneodo, A 2014 *Wavelet-based multifractal analysis of dynamic infrared thermograms to assist in early breast cancer diagnosis*, Frontiers in Physiology, 5, 176 (11 pages).
9. Gerasimova, E, Audit, B, Roux, SG, **Khalil, A**, Argoul, F, Naimark, O, Arneodo, A, 2013. *Multifractal Analysis of Dynamic Infrared Imaging of Breast Cancer*, Europhysics Letters, 104 (6), 68001 (6 pages)
10. Wu, Y, Batuski, D, **Khalil, A**, 2013. *Nearest Neighbor Vector Analysis of SDSS DR5 Galaxy Distribution*, Natural Science, 5 (1), 26619 (5 pages)
11. Goody, MF, Kelly, MW, Reynolds, CJ, **Khalil, A**, Crawford, BD, Henry, CA 2012. *NAD⁺ Biosynthesis Ameliorates a Zebrafish Model of Muscular Dystrophy*, PLoS Biology, 10 (10), e1001409 (17 pages)

12. Wu, Y, Batuski, D, **Khalil, A**, 2012. *Three-Dimensional Filamentation Analysis of SDSS DR5 Survey*, IRSN Astronomy & Astrophysics, 171829 (7 pages).
13. McAteer, RT, Kestener, P, Arneodo, A, **Khalil, A** 2010. *Automated Coronal Loop Detection using a Wavelet Transform Modulus Maxima Method*, Solar Physics, Solar Image Processing and Analysis, 262, 387-397.
14. Robitaille, JF, Joncas, G, **Khalil, A** 2010. *Morphological Analysis of HI Features. III. Metric Space Technique Revisited*, Monthly Notices of the Royal Astronomical Society, 405, 636-656.
15. Kestener, P, Conlon, PA, **Khalil, A**, Fennell, L, McAteer, RTJ, Gallagher, PT, Arneodo, A 2010. *Characterising Complexity in Compound Systems: Segmentation in Wavelet-Space*, Astrophysical Journal, 717, 995-1005.
16. Goody, MF, Kelly, MW, Lessard, KN, **Khalil, A**, Henry, CA 2010. *Nrk2b-mediated NAD⁺ production regulates cell adhesion and is required for muscle morphogenesis in vivo: Nrk2b and NAD⁺ in muscle morphogenesis*, Developmental Biology, 344, 809-826.
17. Grant, J, Verrill, C, Coustham, V, Arneodo, A, Paladino, F, Monier, K, **Khalil, A** 2010. *Perinuclear distribution of heterochromatin in developing C. elegans embryos*, Chromosome Research, 18, 873-885.
18. **Khalil A**, Aponte, C, Zhang R, Davisson, TH, Dickey, I, Engelman D, Hawkins M, Mason, M 2009. *Image analysis of soft-tissue in-growth and attachment into highly porous alumina ceramic foam metals*, Medical Engineering and Physics, 31, 775-783.
19. Wu, Y, Batuski, D, **Khalil, A** 2009. *Multi-Scale Morphological Analysis of SDSS DR5 Survey Using the Metric Space Technique*, Astrophysical Journal, 707, 1160-1167.
20. Roland, T, **Khalil, A**, Tanenbaum, A, Berguiga, L, Delicheree, P, Bonneviot, L, Elezgaray, J, Arneodo, A, Argoul, F 2009. *Revisiting the physical processes of vapodeposited thin gold films on chemically modified glass by atomic force and surface plasmon microscopies*, Surface Science, 603, 3307-3320.
21. Snow, CJ, Goody, M, Kelly, MW, Oster, EC, Jones, R, **Khalil, A**, and Henry, CA 2008, *Time-lapse analysis and mathematical characterization elucidate novel mechanisms underlying muscle morphogenesis*. PLoS Genetics, 4(10):e1000219 (18 pages).
22. Snow CJ, Peterson, M, **Khalil, A**, Henry C 2008. *Muscle development is disrupted in zebrafish embryos deficient for Fibronectin*, Developmental Dynamics, 237, 2542-2553.
23. **Khalil, A**, Grant, JL, Caddle, LB, Atzema, E, Mills, KD, Arneodo, A 2007. *Chromosome territories have a highly non-spherical morphology and non-random positioning*. Chromosome Research, 15, 899-916.
24. Caddle, LB, Grant, JL, van Hase, J, Denegre, J, Shirley, BJ, Bewersdorf, J, Cremer, C, Arneodo, A, **Khalil, A**, & Mills, KD 2007 *Heterologous chromosome territory neighborhoods promote translocation susceptibility in primary lymphocytes*. Chromosome Research, 15, 1061-1073.
25. **Khalil, A**, Joncas, G, Nekka, F, Kestener, P, & Arneodo, A 2006, *Morphological Analysis of HI Features II: Wavelet-Based Multifractal Formalism*, Astrophysical Journal Supplement Series, 165, 512-550.

26. **Khalil, A**, Joncas, G, & Nekka, F 2004, *Morphological Analysis of HI Features I: Metric Space Technique*, Astrophysical Journal, Vol. 601, 352-364

Books

1. Wu, Y and **Khalil, A** 2009. *The Evolution of the Universe*. VDM Verlag, (76 pages).
2. Wu, Y, Batuski, D, and **Khalil, A** 2008. *The Fractal Structure of the Universe*. VDM Verlag, (80 pages).

Refereed Conference Proceedings

1. Gerasimova, E, Toner, B, Marin, Z, Audit, B, Roux, SG, Argoul, F, **Khalil, A**, Gileva, O, Naimark, O, Arneodo, A 2016 *Combining multifractal analyses of digital mammograms and infrared thermograms to assist in early breast cancer diagnosis*, in AIP Conference Proceedings, 1760, 020018 (11 pages).
2. Gerasimova, E, Audit, B, Roux, SG, **Khalil, A**, Gileva, O, Argoul, F, Naimark, O, Arneodo, A 2014 *A wavelet-based method for multifractal analysis of medical signals: Application to dynamic infrared thermograms of breast cancer*, in Nonlinear Dynamics of Electronic Systems: Communications in Computer and Information Science, 438, p. 288-300.
3. Dickey, ID, Donahue, DW, Peshlov, B, Nohe, A, **Khalil, A**, Mason, M, Zhang, R, Aponte, C, Davisson, TH, Engelman, D, Hawkins, M 2009. *Pore size modulates strength of soft-tissue in-growth and growth factor expression into novel porous titanium implants*, Transactions of the Orthopaedic Research Society, 34, 2213 (1 page).
4. **Khalil, A**, Mason, M, Dickey, ID, Zhang, R, Aponte, C, Davisson, TH, Engelman, D, Hawkins, M 2009. *Pore size and morphology modulate patterning of soft-tissue in-growth into porous titanium implants based on novel imaging tools*, Transactions of the Orthopaedic Research Society, 34, 478 (1 page).
5. **Khalil, A**, Mason, M, Dickey, I, Zhang, R, Aponte, C, Davisson, T, Engelman, D, Hawkins, M 2008, *Pattern of Soft Tissue In-Growth into Porous Implants Based on Novel Imaging Tools*, Transactions of the Orthopaedic Research Society, 33, 1877 (1 page).
6. Mills, KD, Caddle, LB, **Khalil, A**, Bewersdorf, J. 2006. *Imaging the Cancer Genome: High Resolution Microscopy and Quantitative Analyses*, Optical Society of America, paper WB5, (3 pages).
7. **Khalil A**, Joncas G, Nekka F 2002. *Exotic Tools for the Morphological Analysis of HI Clouds*, ASP Conference Proceedings, Vol. 276, Edited by A. R. Taylor, T.L. Landecker, and A.G. Willis, San Francisco, Astronomical Society of the Pacific, p. 194-197.

Conference Proceedings and Abstracts

1. Mills, KD, Cyr, A, Maclay, T, Day, M, Hasham, MG, **Khalil, A** 2017. *A small molecule RAD51 inhibitor preferentially affects cells expressing high cytidine deaminase activity*. American Society of Hematology 59th Annual Meeting & Exposition, Atlanta, GA.

2. Garrett, AM, Tadenev, ALD, **Khalil A**, Fuerst, PG, Burgess RW 2016. *Dscam promotes self-avoidance in neurodevelopment by masking diverse cell adhesion molecules*. Annual Meeting of the Society for Neuroscience: San Diego, CA.
3. Garrett, AM, Tadenev, ALD, **Khalil, A**, Fuerst, PG, Burgess, RW 2015. *Dscams promote self-avoidance by masking adhesion through both PDZ-dependent and –independent mechanisms*. Annual Meeting of the Society for Neuroscience: Chicago, IL.
4. Burgess, RW, Garrett, AM, Tadenev, ALD, **Khalil, A**, Fuerst, PG 2014. *Dscams promote self-avoidance by masking adhesion through both MAGI-dependent and –independent mechanisms*. Annual Meeting of the Society for Neuroscience: Washington, DC.
5. Richard, CD, **Khalil, A**, Frankel, W 2013. Novel computational approach to detect absence seizures in mutant mouse strains. Annual Meeting of the Society for Neuroscience: San Diego, CA.
6. Kestener, P, **Khalil, A**, Arneodo, A 2010. *A continuous wavelet-based segmentation tool to analyze multifractal properties of quiet and active regions from solar magnetogram data*. In ADA6, Astronomical Data Analysis Conference, Monastir, Tunisia.
7. Wu, Y, Batuski, D, **Khalil, A** 2010. *Properties of Density Field Clusters from the SDSS*, Bulletin of the American Astronomical Society, 42, 385.
8. Wu, Y, Batuski, D, **Khalil, A** 2009. *Application of the Metric Space Technique in 2D and 3D to SDSS DR5*, Bulletin of the American Astronomical Society, 41, 449.
9. Wu, Y, Batuski, D, **Khalil, A** 2007. *New statistical methods to analyze the Sloan Digital Sky Survey Data*, Joint New England Sections of the American Physics Society and AAPT Spring Meeting.
10. Wu, Y, Batuski, D, **Khalil, A** 2007. *New Statistical Methods to Determine the Fractal Dimension of Structures Evident in the SDSS, WMAP, and 2MASS Surveys*, Bulletin of the American Astronomical Society, 39, 804.
11. Wu, Y, Batuski, D, & **Khalil, A** 2006. *New statistical methods to analyze the SDSS DR5 galaxy distribution*, Bulletin of the American Astronomical Society, 38, 1000.

Theses Advised as Major Professor

Doctoral Theses

1. Wu, Yongfeng, Ph.D. Astrophysics 2010. '*Multi-Scale Three-Dimensional Analysis of Galaxy Distributions Using the Metric Space Technique*' (Co-Chair).
2. Richard, Christian, Ph.D. Functional Genomics 2014. '*Novel Computational Approaches to Detect and Characterize Absence Seizures in Seizure-Prone Mutant Mouse Strains*' (Co-Chair).
3. Toner, Brian, Ph.D. Computer Science and Spatial Information 2019 (expected). '*3D Modeling of Tumor Onset and Development in Simulated Breast Tissue*'.

Masters Theses

1. Wu, Yongfeng, M.S. Astrophysics 2007. '*New Statistical Methods to Get the Fractal Dimension of Bright Galaxies Distributions from the Sloan Digital Sky Survey Data*' (Co-Chair).
2. Robitaille, Jean-Francois, M.S. Astrophysics 2008. '*Analyse Metrique de Structure HI dans le Plan Galactique*' (Co-Chair at Université Laval, QC, Canada).
3. Grant, Jeremy, M.A. Mathematics 2008. '*Wavelet-Based Segmentation of Fluorescence Microscopy Images in Two and Three Dimensions*'.
4. Potter, Matthew, M.A. Mathematics 2010. '*Prime Modulo and Pascal's Triangle As Seen With Fractal Geometry*'.
5. Mooers, Kendra, M.A. Mathematics 2013. '*Characterization of Mammographic Breast Lesions And Their Microenvironment: An Application of a Wavelet-Based Multifractal Formalism*'.
6. Cox, Derrick, M.A. Mathematics 2014. '*Computational Analysis of Mammographic Breast Tissue Using the Metric Space Technique*'.
7. Toner, Brian, M.A. Mathematics 2015. '*The Geometric Properties of Cells Exhibiting Huntington's Disease*'.
8. Connerty-Marin, Zachary, M.A. Mathematics 2017. '*Automated tracking of marine extremophiles from 3D digital holographic microscopy*'.
9. Juybari, Jeremy, M.A. Mathematics 2020 (expected). '*Wavelet leaders and p-leaders analysis of loss of tissue homeostasis in mammographic tumor microenvironment*'.

Honors Theses

1. Dewey, Hannah, B.A. Honors Mathematics 2014. '*Wavelet-Based Multifractal Analysis of Brain Images*'.
2. Ossana, Elliot, B.A. Honors Mathematics 2015. '*Fractal Dimension of Residues Sets Within Pascal's Triangle Under Square-Free Moduli*'.
3. Plourde, Shayne, B.A. Honors Mathematics 2015. '*Modeling the Growth of Breast Microcalcifications in Mathematically-Generated Breast Tissue Environments Using an Agent-Based Model*'.
4. Canning, Dexter, B.A. Honors Mathematics 2019 (expected). '*Wavelet-Based Mammographic Analysis of Normal and Tumorous Tissue Microenvironment*'.

Patents

1. U.S. Patent Application: Improved Methods of Cancer Detection: 61/815,209
Filed: 4/23/2014. *Patent Pending*

Oral Presentations

Keynote and Invited Seminars & Presentations:

1. April 2017: UMaine Marches for Science, University of Maine, Orono, ME
Invited speech: *The Need for Fundamental Science*

2. January 2016: Department of Chemical/Biological Engineering, University of Maine, Orono, ME
Invited talk: *Fractal Analysis of Mammographic Breast Lesions and Characterization of Loss of Tissue Homeostasis in Tumor Microenvironment*
3. January 2016: Landmark College, Putney, VT
Invited talk: *The CompuMAINE Laboratory: Overview of Past and Current Activities*
4. November 2015: Department of Physics and Astronomy, University of Maine, Orono, ME
Invited Talk: *Fractal Analysis of Mammographic Breast Lesions and Characterization of Loss of Tissue Homeostasis in Tumor Microenvironment*
5. February 2015: Graduate School of Biomedical Sciences and Engineering, University of Maine, Orono, ME
Invited Talk: *The CompuMAINE Laboratory*
6. May 2013: Maine Cancer Consortium Annual Meeting, Jackson Laboratory, Bar Harbor, ME
Panel Discussion: *Cutting-Edge Cancer Research in Maine* (invited as one of four cancer research experts from Maine)
7. November 2012: Ecole Normale Supérieure de Lyon, France
Invited Talk: *Breast Cancer and Leukemia: On-Going Projects From The CompuMAINE Lab*
8. August 2012: Signal Processing and Image Analysis Interest Group, The Jackson Laboratory, Bar Harbor, ME
Invited Talk: *Fractals in Mammograms and Wavelets in Chromosomes: Signal Processing, Image Analysis and Modeling*
9. April 2012: University of Maine School of Biology and Ecology Colloquium Series
Invited Talk: *Fractals in Mammograms and Wavelets in Chromosomes*
10. April 2012: Maine Biological and Medical Scientific Symposium, Salisbury Cove, ME
Invited Talk: *Biomedical Image and Signal Processing, Analysis, and Modeling*
11. November 2011: Medical Research Council, Imperial College London, England
Invited Talk: *Computational Analysis of Chromosome Territories*
12. November 2011: Kirchhoff Institute for Physics, University of Heidelberg, Germany
Invited Talk: *3D Modeling of Chromosome Territories*
13. June 2011: Maine Cancer Foundation Annual Meeting, Portland, ME
Invited Presentation Display: *Breast Cancer: Wavelet-Based Image Analysis of Mammograms*
Invited Presentation Display: *Computational Pathology: 3D Structure of Chromosome Territories during Progression to Malignancy*
14. August 2010: SuperMe: UMaine Research Experience for Undergraduates, Orono, ME
Invited Talk: *Fractals and Wavelets*
15. June 2009: Maine Cancer Foundation Annual Meeting, Portland, ME
Invited Presentation Display: *Breast Cancer: Wavelet-Based Image Analysis of Mammograms*

16. November 2008: The Jackson Laboratory, Bar Harbor, ME
Invited Talk: *Signal Processing and Image Analysis with the WTMM Method*
17. June / July 2008: Graduate School of Mathematical and Computational Methods for the Sciences, University of Heidelberg, Germany
Invited Seven-Part Lecture Series (14 hours): *The Wavelet Transform Modulus Maxima Method: Image Analysis Lecture Series*
18. July 2008: Kirchhoff Institute for Physics, University of Heidelberg, Germany
Invited Talk: *Wavelet-Based Characterization of Chromosome Territories*
19. July 2008: Laboratoire Joliot-Curie, Ecole Normale Supérieure de Lyon, France
Invited Talk: *Morphological Analysis of Slow and Fast Muscle Cells in Zebrafish Embryos*
20. June 2008: Department of Applied Physical Chemistry, University of Heidelberg, Germany
Invited Talk: *Image Analysis with the Wavelet Transform Modulus Maxima Method*
21. May 2008: Pizza Pi, Department of Mathematics, University of Maine, Orono, ME
Invited Talk: *Building a bridge to nowhere and everywhere*
22. May 2008: First Annual Meeting of the Graduate School of Biomedical Sciences, University of Maine, Orono, ME
Invited Talk: *Breast Cancer: Wavelet-Based Characterization of Microcalcification Clusters*
23. March 2008: Department of Radiology, University of California, San Francisco, CA
Invited Talk: *Wavelet-Based Image Analysis*
24. October 2007: McGill University, Department of Biomedical Engineering, Montreal, Canada
Invited Talk: *Wavelet-Based Characterization of Chromosome Territories*
25. May 2007: Functional Imaging of the Cell Nucleus, Lyon, France
Keynote Talk: *Wavelet-Based Characterization of Chromosome Territories*
26. August 2005: Third Annual Meeting of the NSF - IGERT Functional Genomics Ph.D. Program, University of Maine, Orono, ME
Invited talk: *2D and 3D Signal Processing Tools for Bio-Medical Image Analysis*
27. March 2005: Department of Mathematics and Statistics, University of Maine
Invited talk: *Wavelets and Fractals: From Astrophysics to Bio-Medical Image Analysis*
28. February 2005: Department of Physics and Astronomy, University of Maine
Invited talk: *Wavelets and Fractals: From Astrophysics to Bio-Medical Image Analysis*
29. January 2005: Department of Spatial Information Science and Engineering, University of Maine
Invited talk: *Wavelets and Fractals: From Astrophysics to Bio-Medical Image Analysis*

30. November 2000: International Symposium on the Applications of Fractal Techniques in Biology and Medicine, Montréal, Canada

Invited talk: Morphological Analysis of Molecular Clouds: A Multi-Tool Analysis

Other Presentations

1. April 2017: 43rd Maine Biological and Medical Sciences Symposium, MDI Laboratory, ME
Poster: *Wavelet-Based Particle Tracking in Unreconstructed, Off-Axis Holograms*
2. April 2016: 43rd Maine Biological and Medical Sciences Symposium, MDI Laboratory, ME
Talk: The CompuMAINE Lab
3. September 2012: Department of Physics and Astronomy, University of Maine, Orono, ME
Talk: *The CompuMAINE Laboratory*
4. April 2012: Maine Biological and Medical Scientific Symposium, Salisbury Cove, ME
Poster: *SWDfinder: A Computational Tool for the Detection of Absence Seizures in Seizure-Prone Mice. Poster: Successful Discrimination Between Benign vs. Malignant Breast Lesions Using a Wavelet-Based Multifractal Method. Poster: 3D Structural Analysis and Modeling of Chromosome Territories*
5. March 2012: University of Maine Graduate School of Biomedical Sciences Student Reception, Orono, ME
Talk: *Computational Image Processing in Biomedicine.*
6. September 2010: University of Maine Graduate School of Biomedical Sciences Annual Meeting, Orono, ME
Poster: *Probabilistic Modeling of 2D Foci Counts with Respect to Radial Distribution*
Poster: *Enhanced 3D Segmentation of Fluorescence Microscopy Images*
7. February 2010: University of Maine Graduate School of Biomedical Sciences Student Reception, Orono, ME
Poster: *Pore size and morphology modulate patterning of soft-tissue in-growth into porous titanium implants based on novel imaging tools*
Poster: *2D and 3D Signal Processing Tools for Bio-Medical Image Analysis*
8. February 2010: University of Maine Graduate School of Biomedical Sciences Student Reception, Orono, ME
Poster: *Pore size and morphology modulate patterning of soft-tissue in-growth into porous titanium implants based on novel imaging tools*
Poster: *2D and 3D Signal Processing Tools for Bio-Medical Image Analysis*
9. September 2009: University of Maine Graduate School of Biomedical Sciences Annual Meeting, Orono, ME
Poster: *Pore size and morphology modulate patterning of soft-tissue in-growth into porous titanium implants based on novel imaging tools*
Poster: *2D and 3D Signal Processing Tools for Bio-Medical Image Analysis*
10. August 2009: Nano and Micro Technology Workshop, Mount Desert Island Biological Lab, Salisbury Cove, ME
Talk: *Multifractal analysis of actigraphy signals*
11. June 2009: Physics of Complexity, Ecole Normale Supérieure de Lyon, France
Poster: *Pattern of soft-tissue in-growth into porous implants based on novel imaging tools*

Poster: *Pore size and morphology modulate patterning of soft-tissue in-growth into porous titanium implants based on novel imaging tools*

Poster: *2D and 3D Signal Processing Tools for Bio-Medical Image Analysis*

12. March 2009: 55th Annual Orthopaedic Research Society Meeting, Las Vegas, NV

Poster: *Pore size and morphology modulate patterning of soft-tissue in-growth into porous titanium implants based on novel imaging tools*

13. March 2008: 54th Annual Orthopaedic Research Society Meeting, San Francisco, CA

Poster: *Pattern of soft-tissue in-growth into porous implants based on novel imaging tools*

14. February 2008: Institute for Molecular Biophysics Annual Meeting, Bar Harbor, ME

Poster: *Enhanced 3D Segmentation of Fluorescence Images*

15. February 2008: Institute for Molecular Biophysics Annual Meeting, Bar Harbor, ME

Talk: *Biomedical Image Analysis and Modeling*

16. June 2007: Frontiers in Microscopy II: Imaging From Single Molecules to Whole Organisms and Its Application, Bar Harbor, ME

Poster: *2D and 3D Signal Processing Tools for Bio-Medical Image Analysis*

17. March 2007: Frontiers in Probe Development, Bar Harbor, ME

Poster: *2D and 3D Signal Processing Tools for Bio-Medical Image Analysis*

18. July 2006: Fourth Annual Meeting of the NSF - IGERT Functional Genomics Ph.D. Program, University of Maine, Orono, ME

Poster: *2D and 3D Signal Processing Tools for Bio-Medical Image Analysis*

19. July 2006: Frontiers in Microscopy, Bar Harbor, ME

Poster: *2D and 3D Signal Processing Tools for Bio-Medical Image Analysis*

20. March 2006: Frontiers in Biomembranes: Experiments and Theory, Bar Harbor, ME

Poster: *2D and 3D Signal Processing Tools for Bio-Medical Image Analysis*

21. September 2005: Annual Scientific Advisory Board Meeting for the Institute for Molecular Biophysics, The Jackson Laboratory, Bar Harbor, ME

Talk: *On the Development and Use of Rigorously Well-Defined, Quantitative, and Objective Image Analysis Tools: Keeping Up With Technological Advancements*

22. May 2005: International Galactic Plane Survey Consortium (IGPS) Meeting, Toronto, Canada

Talk: *Fractals & Wavelets: New Projects and Early Results*

23. May 2004: International Galactic Plane Survey Consortium (IGPS) Meeting, Penticton, Canada

Talk: Wavelet-Based Multifractal Formalism: Anisotropy... at all scales

24. March 2004: Scientific Meeting of the Centre de recherche de l'Observatoire du Mont-Mégantic, Lac-Estérel, QC, Canada

Talk: Modélisation de la structure anisotrope du HI à grande échelle

25. September 2003: Annual Meeting of the Québec Astrophysics Graduate Students from Universities Laval, McGill, and de Montréal, Montréal, Canada
Talk: Analyse de la structure du milieu interstellaire
26. June 2003: Society of Industrial and Applied Mathematics (SIAM) meeting, Montréal, Canada
Talk: Morphological Analysis of Galactic Neutral Hydrogen
27. May 2003: Association Francophone pour l'Avancement des Sciences (ACFAS) 76th Annual Meeting, Rimouski, QC, Canada
Talk: Analyse de la structure du milieu interstellaire. **Poster:** L'introduction du spectre de mesures de Hausdorff pour la caractérisation de structures de même dimension fractale
28. April 2003: International Galactic Plane Survey Consortium (IGPS) Meeting, Québec, Canada
Talk: Morphological Analysis of Galactic Neutral Hydrogen
29. March 2003: Scientific Meeting of the Centre de recherche de l'Observatoire du Mont-Mégantic, Lac-Delage, QC, Canada
Talk: Analyse morphologique de l'hydrogène neutre à grande échelle
30. September 2002: Annual Meeting of the Québec Astrophysics Graduate Students from Universities Laval, McGill, and de Montréal, Montréal, Canada
Talk: Analyse morphologique de l'hydrogène neutre
31. March 2002: Fractal 2002, Complexity and Fractals in Nature 7th Interdisciplinary Conference, Grenada, Spain
Poster: Morphological Analysis of Astrophysical Clouds
32. October 2001: « Seeing Through the Dust » International Conference, Penticton, BC, Canada
Talk: Exotic Tools for the Morphological Analysis of Neutral Hydrogen Clouds
33. September 2001: Annual Meeting of the Québec Astrophysics Graduate Students from Universities Laval, McGill, and de Montréal, Québec, Canada
Talk: Multifractales et Ondelettes