

Chirps Everywhere: Time and Frequency Analysis of Transient AM/FM Waveforms

Date: **Friday, October 28, 2011**

Time: 12:00pm - 1:00pm

Speaker: Dr. Patrick Flandrin, Ecole Supérieure de Lyon

Agenda: Informal networking will begin at 11:30am.
Presentation will begin at 12:00pm.

Location: Promega BioPharmaceutical Technology Center
5445 E Cheryl Pkwy, Room Number: 122
Madison, WI 53711



Menu: Lunch meal provided: \$5 for IEEE members, \$10 for non-members, **free for students.**

RSVP: Deadline: October 24. Go to http://meetings.vtools.ieee.org/meeting_view/list_meeting/8693 to register. Please send questions or difficulties to Mark Vincent at mvincent@ecw.org.

Non-member guests are always welcome!

Abstract

Chirps (i.e., transient AM-FM waveforms) are ubiquitous in nature and man-made systems, and they may serve as a paradigm for many non-stationary deterministic signals. The time-frequency plane is a natural representation space for chirps, and we will here review a number of questions related to chirps, as addressed from a time-frequency perspective. Global and local approaches will be described for matching and/or adapting representations to chirps. As a corollary, joint time-frequency descriptions of chirps will be shown to allow for effective definitions of "instantaneous frequencies" via localized trajectories on the plane. A number of applications will be mentioned, ranging from bioacoustics to turbulence and gravitational waves.

Biography

Patrick Flandrin gained his engineer's diploma from the ICPI Lyon in 1978, became Docteur-Ingénieur in 1982 then Docteur d'Etat ès Sciences Physiques (higher level doctorate in physics) in 1987, at the INPG de Grenoble. He joined the CNRS in 1982 where he is currently a research director. He has just been awarded the 2010 CNRS Silver Medal. Since 1991, he has worked at the physics laboratory of the École Normale Supérieure de Lyon, in the SISYPHE (Signals, SYstems and PHysics) research team. His present research themes are: non stationary signals, time-frequency, wavelets, and laws of scale and complex systems. The common denominator of his research, which is interdisciplinary in nature, consists in the signal perspective which places Patrick Flandrin's work at the confluence of applied mathematics, physics and computing. He seeks to provide a precise mathematical framework for the methods he focuses on, to enable a simple physical interpretation of them and to associate them with efficient calculation algorithms.

IEEE Entrepreneurs & Consultants Network, Madison Networking Meeting

Date: **Thursday, October 6, 2011**

Time: 12:00pm to 1:00pm

Purpose: Officer's Meeting.

Location: Madison Area Technical College (MATC **West Campus**)
302 S. Gammon Road (Across from West Towne Mall)
Madison, WI 53717 ... Telephone: 608-246-6100

Parking: Open parking, so come early to get a closer spot.

Process: Members are encouraged to make introductions, describe endeavors, and make request for: contacts in target companies, needs, resources. Bring your elevator speech and rolodex!

RSVP: Tim Chapman (PrettyGoodGUIs@TrueNym.NET)

Vol. 14, No. 8

Serving IEEE Members of South Central Wisconsin

October 2011

Glacier Hills Wind Park Tour!

starting from University of Wisconsin-Madison

Date: Monday, November 7, 2011

Time: 12:45pm - 5:00pm (4.25 hours)

Speaker: Mitch Bradt, PE, Dept. of Eng. Professional Development

Rick O'Connor, PE, We Energies Engineering Manager

Mike Jackovich, PE, We Energies Electrical Engineer

Agenda: Bus leaves from Engineering Hall at 12:45pm sharp!

Bus returns to Engineering Hall at 5:00pm.

Location: UW Engineering Hall

1415 Engineering Drive

Madison, WI 53706



Menu: No lunch meal provided: \$5 for IEEE members, \$10 for non-members, free for students.

RSVP: Deadline: October 31. Go to http://meetings.vtools.ieee.org/meeting_view/list_meeting/8893 to register. Please send questions or difficulties to Mark Vincent at mvincent@ecw.org.



Non-member guests are always welcome!

Abstract

The Glacier Hills Wind Park, located in the towns of Randolph and Scott in Columbia County, is designed to generate 162 megawatts (MW) of electricity and will be capable of powering approximately 45,000 average residential homes. The site will consist of 90 Vestas V-90 1.8 MW Type 3 turbines. Construction began on May 17, 2010, and will be completed by the end of 2011. The project is being constructed by a Wisconsin-based alliance that includes The Boldt Company of Appleton, Michels Corporation of Brownsville and Edgerton Contractors, Inc. of Oak Creek. This tour will include a presentation during the bus ride to the site on some electrical aspects of the Type 3 turbine and the GHWP. While on the tour, a We Energies Project Engineer will discuss the development, layout and construction of the GHWP project, including a visit to one of the turbines and to the collector substation. Rick O'Connor will provide the tour of the wind farm and Mike Jackovich will provide the substation tour.

Biography

Mitch Bradt is a Program Director for continuing engineering education in the disciplines of Wind Energy, Power Electronics, Electrical Distribution and Electrical Safety. Prior to being in academia, he has been a consulting engineer designing substations and wind farms, has worked at a manufacturer of grid connected power electronic equipment (D-SMES, D-VAR, STATCOM), and got to blow up aircraft while serving the the US Air Force. He received his BSEE from Marquette University in 1993 and MSEE with a focus on Utility Application of Power Electronics from the University of Wisconsin-Madison in 1996.

IEEE Entrepreneurs & Consultants Network, Madison Networking Meeting

Date: **Thursday, October 6, 2011**

Time: 12:00pm to 1:00pm

Purpose: Officer's Meeting.

Location: Madison Area Technical College (MATC **West Campus**)

302 S. Gammon Road (Across from West Towne Mall)

Madison, WI 53717 ... Telephone: 608-246-6100

Parking: Open parking, so come early to get a closer spot.

Process: Members are encouraged to make introductions, describe endeavors, and make request

for: contacts in target companies, needs, resources. Bring your elevator speech and rolodex!

RSVP: Tim Chapman (PrettyGoodGUIs@TrueNym.NET)

Vol. 14, No. 8

Serving IEEE Members of South Central Wisconsin

October 2011

Monthly Section Meetings

The third Thursday of Jan.-May and Sep.-Dec. is reserved for a meeting to provide recent research, developments, trends and/or innovations in one of our membership's technical areas.

Section Meeting Schedule for 2011

(schedule subject to change)

(past) **January 19**, Wind Turbine Generators
(past) **January 20**, Capitol Heat & Power Plant
(past) **February 17**, Tesla Coil Design/Build
(past) **March 17**, Privacy of Elec. Health Info.
(past) **April 12**, 21st Century Electric Machines
(past) **May 19**, SADT/IDEF0 Modeling
(past) **August 18**, Debugging Electronics
(past) **September 1**, Consumer Digital Storage

October 28, Distinguished Lecturer on Signal Processing: Dr. Patrick Flandrin on time-frequency energy distributions.

November 7, Wind Farm Tour at Glacial Hills, Wisconsin. Mitch Bradt, PE.

November 17, TQM Experiences in the High Precision Instrumentation Industry. Tour the Bruker, AXS facility!!

December 15, Voting results for 2012 Officers Election.

Section Meeting Schedule for 2012

(schedule subject to change)

January 19, TBD
February 16, Patent Law
March 15, TBD
April 19, TBD
May 17, TBD
June 21, TBD
September 20, TBD
October 18, TBD
November 15, TBD
December 20, TBD

Monthly Networking Meetings

The first Thursday of every month is reserved for a meeting to provide networking opportunities for members who are consultants or entrepreneurs. Bring your elevator speech and rolodex!

Networking Meeting Schedule for 2011

(schedule subject to change)

(past) **January 3**, Kickoff meeting for 2011.
(past) **March 3**, SBIR Process and Panel.
(past) **April 7**, Sector67 – Overview of Madison innovation environment.

August 4, Working on the Network.

October 6, Telepresence.

December 1, IEEE Tools for Self Promotion.

2012 IEEE Technical Field Awards

We are pleased to announce below the recipients of this IEEE-wide award with their affiliated Section, which represents leadership and extraordinary contribution.

1. IEEE CLEDO BRUNETTI AWARD - YAN BORODOVSKY & SAM SIVAKUMAR - Lithography.
2. IEEE COMPONENTS, PACKAGING AND MANUFACTURING TECHNOLOGY AWARD - MAURO J WALKER - Packaging.
3. IEEE CONTROL SYSTEMS AWARD - ALBERTO ISIDORI - Control Theory.
4. IEEE ELECTROMAGNETICS AWARD — NADER ENGHETA - nanoscale optics.
5. IEEE JAMES L. FLANAGAN SPEECH AND AUDIO PROCESSING AWARD — JAMES BAKER & JANET BAKER - speech recognition.
6. IEEE ANDREW S. GROVE AWARD - JEAN-PIERRE COLINGE - silicon-on-insulator technology.
7. IEEE HERMAN HALPERIN ELECTRIC TRANSMISSION AND DISTRIBUTION AWARD - MICHEL DUVAL - high-voltage transformers.
8. IEEE MASARU IBUKA CONSUMER ELECTRONICS AWARD - GISLE BJØNTEGAARD, GARY SULLIVAN & THOMAS WIEGAND - codex standard H.264/MPEG4-AVC.
9. IEEE INTERNET AWARD - MARK HANDLEY - Internet open standards and open-source systems.
10. IEEE REYNOLD B. JOHNSON INFORMATION STORAGE SYSTEMS AWARD - NAOYA TAKAHASHI - heterogeneous storage systems.
11. IEEE RICHARD HAROLD KAUFMANN AWARD - JOHN P. NELSON - electrical safety culture.
12. IEEE JOSEPH F. KEITHLEY AWARD IN INSTRUMENTATION AND MEASUREMENT — RIK PINTELON - measurement applications.
13. IEEE GUSTAV ROBERT KIRCHHOFF AWARD — RONALD ROHRER - electronic design automation.
14. IEEE KOJI KOBAYASHI COMPUTERS AND COMMUNICATIONS AWARD — JEAN WALRAND - network resource allocation
15. IEEE WILLIAM E. NEWELL POWER ELECTRONICS AWARD - LEO LORENZ - power semiconductor.
16. IEEE DANIEL E. NOBLE AWARD FOR EMERGING TECHNOLOGIES — SUBRAMANIAN S. IYER – embedded DRAM technologies.
17. IEEE DONALD O. PEDERSON AWARD IN SOLID-STATE CIRCUITS — BEHZAD RAZAVI – CMOS communication circuits.
18. IEEE FREDERIK PHILIPS AWARD — CHIH-YUAN LU – semiconductor research , development & industrial alliances.
19. IEEE PHOTONICS AWARD — ELI YABLONOVITCH - photonic bandgap engineering.”
20. IEEE EMANUEL R. PIORE AWARD — FRED SCHNEIDER – security, fault tolerance & distributed systems.
21. IEEE JUDITH A. RESNIK AWARD — PRAMOD KUMAR VARSHNEY – multisensor data fusion.
22. IEEE ROBOTICS AND AUTOMATION AWARD — BERNARD ROTH - robot kinematics, manipulation & design.
23. IEEE FRANK ROSENBLATT AWARD — VLADIMIR VAPNIK – biologically inspired learning.
24. IEEE DAVID SARNOFF AWARD — HIDEO OHNO - semiconductor electronics, magnetism & spintronics.
25. IEEE MARIE SKLODOWSKA-CURIE AWARD — GENNADY ANDREEVICH MESYATS – nanosecond pulsed power.
26. IEEE CHARLES PROTEUS STEINMETZ AWARD — DALEEP MOHLA - power systems safety standards.
27. IEEE ERIC E. SUMNER AWARD — JACK WINTERS & ANDREAS MOLISCH - multiple-antenna systems.
28. IEEE NIKOLA TESLA AWARD — MANOJ SHAH – electrical machines.
28. IEEE KIYO TOMIYASU AWARD — MUNG CHIANG – communication networks theory.
30. IEEE LEON K. KIRCHMAYER GRADUATE TEACHING AWARD — ANTHONY CONSTANTINIDES - digital signal processing.
31. IEEE UNDERGRADUATE TEACHING AWARD — SANTOSH KURINEC - microelectronic engineering.

Section Notes

We are pleased to begin our 102nd year, and are proud of our members' accomplishments and of our Section's history.

Selection of Officers

At the December monthly meeting, the IEEE Madison Section conducted its annual officer elections prior to the presentation:

2011 Officers

David Marca, Chair
dmarca@openprocess.com
Steve Schultheis, Vice Chair
ss@ieee.org
Charles Gervasi, Treasurer
cj@cgervasi.com
Charles Gervasi, Secretary
cj@cgervasi.com
Tim Chapman, Web Master
prettygoodguis@truenym.net

2011 Members at Large

Dennis Bahr
bahr@inxpress.net
Mitch Bradt
bradt@wisc.edu
Craig Heilman
craigh@bugsoft.com
Clark Johnson
clarkjohnson@cpinternet.com
Sandy Rotter
rotter@ieee.org

Officers and members at large comprise our Board of Directors. Please feel free to contact any of them.

IEEE Madison Section Sponsors

We thank the following sponsors for their support of the IEEE Madison Section, and for the valuable opportunities and services they provide to the Section and to its membership:



DLS
EMC & Product Safety
Testing • Consulting

**Experts in
Medical Device Testing
since 1983.**

Comprehensive
We provide EMC and Safety testing for many global standards, including FDA requirements and Medical Device Directive.



Knowledgeable
Our NARTE certified test engineers know the latest changes in U.S. and global standards for medical devices.



Dependable
We provide problem solving and mitigation throughout testing at no extra cost to ensure your product meets applicable standards.



Flexible
We work hard to meet your scheduling needs, ensuring speed to market and saving you time and money.

1250 Peterson Drive, Wheeling, IL 60090
166 South Carter Street, Genoa City, WI 53128
www.dlsemc.com 847-537-6400

Underwriters Laboratories has officially accepted D.L.S. Conformity Assessment, Inc., a subsidiary of D.L.S. Electronic Systems, Inc., into their Third Party Test Data Program. This program allows D.L.S. to test directly to UL standards for ITE, audio/video, medical devices and equipment, and laboratory test and measurement equipment for formal listing. Manufacturers will be able to complete their EMC, Safety and Environmental testing requirements all under one roof, saving them time and allowing them to speed their product to market. This program provides for a formal UL listing for U.S. and Canadian safety standards. Please go to www.dlsemc.com/ul for more information on this program.

IEEE Membership Level Upgrades

Those interested in upgrading their IEEE membership level should send their resumes or other information showing five years of significant performance in an IEEE-designated field to Charles J Gervasi (cj@cgervasi.com). Madison Section Board will attempt to find Senior IEEE members knowledgeable in the applicant's area of practice who may be able to provide references. You are invited to attend the informal networking portion of the monthly Section meetings (starting at 11:30am) to meet the Section Board members and discuss intentions.

2011 Section Board Members

David Marca	Chair
Steve Schultheis	Vice Chair
Charles Gervasi	Treasurer
Charles Gervasi	Secretary
Timothy Chapman	Webmaster
Mitch Brandt	Member at Large
Clark Johnson	Member at Large
Dennis Bahr	Member at Large
Craig Heilman	Member at Large
Sandy Rotter	Member at Large

IEEE Madison Section Newsletter

Published 9 times per year (Jan.-May & Sep.- Dec.) by the Madison, Wisconsin Section of the Institute of Electrical and Electronic Engineers (IEEE), for its members in South-Central Wisconsin.

Online at <http://ieee-msn.truenym.net/>

For address changes: notify IEEE headquarters at: <http://www.ieee.org/> or address-change@ieee.org. For editorial, comments, contact David Marca at: dmarca@openprocess.com.

Permission to copy without fee all or part of any material without copyright notice is granted provided the copies are not made or distributed for direct communication advantage, and title of the publication and its date appear on each copy. To copy material with a copyright notice requires specific permission. Please direct all inquiries or requests to the IEEE Copyright Office. Thank you.

About the IEEE

The Institute of Electrical and Electronics Engineers or IEEE (read I-Triple-E) is an international non-profit, professional organization dedicated to advancing technology innovation and excellence for the betterment of humanity. IEEE and its members inspire a global community through IEEE's highly cited publications, conferences, technology standards, and professional and educational activities. It has the most members of any technical professional organization in the world, with more than 300,000 members in around 150 countries. The IEEE consists of 38 societies, organized around specialized technical fields, with more than 300 local organizations that hold regular meetings. For more information, please visit: www.ieee.org.



Reach over 700 IEEE members in South-Central Wisconsin with information on your products and services every month with an ad in this newsletter.

Our members have professional interests in computers, power engineering, signal processing, communications, industry applications and a number of other technical fields

For more information, contact Mitch Bradt at 608-263-1085 or bradt@wisc.edu.

Per issue rates:	1 Time	2 Times	5 Times	9 Times
1/16 Page (3.5x1.125)	\$53	\$46	\$42	\$40
1/8 Page (7x1.125 or 3.5x2.25)	\$82	\$74	\$68	\$67
1/4 Page (7x2.25 or 3.5x4.5)	\$129	\$118	\$112	\$110
1/2 Page (7x4.5 or 3.5x9)	\$205	\$192	\$185	\$183
Full Page (7x9)	\$330	\$315	\$306	\$303