

Fourier Transform Spectroscopy (FTS)

OSA Topical Meeting and Tabletop Exhibit

Collocated with

[Digital Holography and Three-Dimensional Imaging \(DH\)](#)
[Hyperspectral Imaging and Sensing of the Environment \(HISE\)](#)
[Novel Techniques in Microscopy \(NTM\)](#)
[Optical Trapping Applications \(OTA\)](#)

Technical Conference: April 26-30, 2009

Exhibition: April 27-29, 2009

[Sheraton Vancouver Wall Centre Hotel](#)

[Vancouver, BC, Canada](#)

PDP Submissions Deadline: April 2, 2009, 12:00 p.m. noon, EDT (16.00 GMT)

[Housing Deadline](#): March 25, 2009

[Pre-Registration Deadline](#): April 1, 2009

2009 Meeting Chairs

Peter Bernath, *York Univ., UK*, Chair

Jerome Genest, *Univ. Laval, Canada*, Chair

About Fourier Transform Spectroscopy

The FTS topical meeting welcomes all scientists who use or develop Fourier transform spectrometers. Fourier transform spectrometry is the technique of choice in all research areas that require high accuracy, sensitivity, and resolution over a wide spectral range. Its scope includes laboratory, Earth, planetary and astronomical spectroscopy. This meeting is the only international conference covering FTS instrumental development, technology and applications from the submillimeter to the ultraviolet.

Fourier transform spectrometry is the spectroscopic technique of choice in all research areas that require high accuracy, sensitivity, and resolution, and it continues to grow in application and utilization. This is especially true for new research areas, such as meteorology and chemical microscopy, where such attributes are mandatory. This FTS Topical Meeting is the only international conference on Fourier transform spectrometry covering the whole range of FTS technology and applications. Its scope will include laboratory spectroscopy, Earth and planetary remote sensing, and astronomy as well as new instrumental developments.

Topics To Be Considered

- Instrument Technology
 - Novel FTS concepts and designs
 - FTS in the sub-millimeter, infrared, visible, and ultraviolet
 - Time-resolved Fourier transform spectroscopy
 - Imaging Fourier transform spectroscopy
 - FTS using multiheterodyne and frequency combs
 - New technologies for FTS
 - Laboratory instruments
 - Space-based instruments
 - Astronomical instruments
- Analysis
 - New methods for radiometric accuracy
 - New methods for line shape determination

- New methods for improving frequency accuracy
- Improvements in atmospheric retrievals
- New approaches for spectral calibration
- Observations of particulate and gaseous absorption
- Applications
 - Atomic and molecular spectroscopy
 - FT Raman spectroscopy
 - Medical and biological *in-situ* spectroscopy
 - Earth remote sensing from the ground, air and space
 - Planetary spectroscopy from the ground, air and space
 - Astronomical spectroscopy of the sun, stars, the interstellar medium, and the cosmic background

About Fourier Transform Spectroscopy

This meeting will welcome all researchers who use Fourier transform spectrometry in their work or who have developed competing technologies within the historic application areas of FTS. The wide scope will include innovative techniques and instrumentation, laboratory research, imaging spectroscopy, remote sensing, space from the air and in space. The meeting will focus particularly on new instruments, new applications and new techniques.

Fourier transform spectrometry has been the central method in many research areas that require high accuracy, sensitivity, and resolution and continues grow in usage. Increasingly, Fourier transform spectrometry is becoming the technique of choice in new research areas, such as meteorology and chemical microscopy, where such attributes are needed. The breadth of applicability of FTS provides a common bond between researchers in otherwise disparate fields.

Topics to Be Considered

- Instrument Technology
 - Novel FTS concepts and designs
 - FTS in the sub-millimeter, infrared, visible, and ultraviolet
 - Time resolved Fourier transform spectroscopy
 - Imaging Fourier transform spectroscopy
 - New technologies for FTS
 - Laboratory instruments
 - Space-based instruments
 - Astronomical instruments
- Analysis
 - New methods for radiometric accuracy
 - New methods for line shape determination
 - New methods for improving frequency accuracy
 - Improvements in atmospheric retrievals
 - New approaches used for spectral calibration
 - Simultaneous observations of particulate and gaseous absorption
- Applications
 - Atomic and molecular spectroscopy
 - Raman FT spectroscopy
 - Medical and biological *in-situ* spectroscopy
 - Earth remote sensing from the ground, air and space
 - Planetary spectroscopy from the ground, air and space
 - Astronomy: the sun, stars, the interstellar medium, and the cosmic background

Program Committee

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Jerome Genest, *Univ. Laval, Canada*

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Joe Taylor, *Univ. of Wisconsin-Madison, USA*
Pierre Tremblay, *Univ. Laval, Canada*

Exhibitor Listings

ADVANCES in IMAGING

2009 OSA OPTICS
AND PHOTONICS
CONGRESS

April 26-30, 2009
Vancouver, BC
Canada

Collated Meetings:

Digital Holography
and Three-
Dimensional Imaging
(DH)

Fourier Transform
Spectroscopy (FTS)

Hyperspectral Imaging
and Sensing of the
Environment (HISE)

Novel Techniques in
Microscopy (NTM)

Optical Trapping
Applications (OTA)

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The organizers of the Advances in Imaging Congress and Tabletop Exhibit wish to acknowledge the following for their support:

Grants:

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- National Institute of Biomedical Imaging and Bioengineering/Department of Health and Human Services / National Institutes of Health
- The OSA Foundation

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Special Events

Meet the Applied Optics Editors Dinner

Date: April 28, 2009

Time: 7:00 PM

Where: The Relish Restaurant & Lounge, 888 Nelson ST. (Between Hornby & Howe), Vancouver, BC, Canada
(Website: <http://www.relishrestaurants.com/relish/index.asp>).

Don't miss this great opportunity to meet Applied Optics Information Processing Editors:

Prof. T.-C. Poon (Division Editor, Virginia Tech)

Prof. Partha P. Banerjee (Topical Editor, Univ. of Dayton)

Prof. Byoung-ho Lee (Topical Editor, Seoul National Univ., Korea)

All conference attendees, especially students, are invited to this casual networking dinner. You can sign-up onsite at the OSA Registration Desk at the Grand Ballroom Foyer Coatroom. Please RSVP by Tuesday, April 28 by 1:00 pm. **Please note: Participants pay for their own dinners.**

2009 OSA Optics & Photonics Congress
Advances In Imaging
April 26-30, 2009
Vancouver, British Columbia, Canada

OSA GROUP DINNER

Have Dinner with *Applied Optics* Editors
Students are Welcome!

All OSA conference attendees are invited to a casual networking dinner where you will have the opportunity to meet
Applied Optics Information Processing Editors:

Prof. T.- C. Poon (Division Editor, Virginia Tech)

Prof. Partha P. Banerjee (Topical Editor, Univ. of Dayton)

Prof. Byoung-ho Lee (Topical Editor, Seoul National Univ., Korea)

Tuesday, April 28, 2009, 7:00 p.m.

THE RELISH RESTAURANT & LOUNGE

888 Nelson St. (between Hornby & Howe) Vancouver, BC

Website: <http://www.relishrestaurants.com/relish/index.asp>

Sign up at the OSA Registration Desk
[Grand Ballroom Foyer, Coat Room]
by 1:00 p.m. on Tuesday, April 28

Note: Participants pay for their own dinners

Sponsored by the OSA External Relations Advisory Group

Invited Speakers

Fourier Transform Spectroscopy (FTS)/ Hyperspectral Imaging and Sensing of the Environment (HISE) Joint Session

MIPAS Status and Latest Results, Herbert Fischer; *Inst. für Meteorologie und Klimaforschung, Univ. Karlsruhe, Germany.*

Hyperspectral and Multispectral Infrared Sounding of the Environment: A Brief Overview, Allen Huang; *Univ. of Wisconsin-Madison, USA.*

High Spectral Resolution IR Instrument Developments for CLARREO, Hank Revercomb; *Univ. of Wisconsin-Madison, USA.*

The Total Carbon Column Observing Network, Geoff Toon; *JPL, USA.*

Invited Speakers

Instrumental Aspects of IASI, Denis Blumstein; *Ctr. Natl. d'Etudes Spatiales (CNES), France.*

A FTS for a Future Titan Mission, John Brasunas; *NASA, Goddard Space Flight Ctr., USA.*

An Historical Perspective on the Development of Fourier Transform Spectrometry, Henry Buijs; *ABB BOMEM Inc., Canada.*

Recent Instrument Development at Telops, Martin Chamberland; *Telops Inc., Canada.*

Frequency Comb Spectroscopy, Ian R. Coddington; *NIST, USA.*

A FTS for VUV Absorption Spectroscopy on the Synchrotron DESIRS Beamline: First Results, Nelson de Oliveira; *Synchrotron Soleil, France.*

The Mark 1 Spatial Heterodyne Spectrometer, Laurent Drissen; *Univ. Laval, Canada.*

Airborne / Balloonborne Imaging FTS, Felix Friedl-Vallon; *Inst. für Meteorologie und Klimaforschung, Univ. Karlsruhe, Germany.*

Practical and Accurate Frequency Comb Spectroscopy, Jerome Genest; *Univ. Laval, Canada.*

The Doppler Asymmetric Spatial Heterodyne (DASH) Interferometer, John M. Harlander; *St. Cloud State Univ., USA.*

Spatial Heterodyne Spectrometer (SHS), James E. Lawler; *Univ. of Wisconsin, USA.*

A New Lilliputian Generation of Fourier Spectrometer, Étienne Le Coarer; *Univ. Grenoble I, France.*

Recent Laboratory Work Relevant to Atmospheric Science, Johannes Orphal; *Univ. de Paris - 12, France.*

Laboratory Fourier Transform Zeeman Spectroscopy, Amanda Ross; *CNRS & Univ. de Lyon, France.*

HIS and the New CLARREO Mission, Hank Revercomb; *Univ. of Wisconsin-Madison, USA.*

MTG-IRS: Status, Specifications and Technical Concept, Rolf Stuhlmann; *European Organization for the Exploitation of Meteorological Satellites, Germany*

	<i>Grand Ballroom A</i>	<i>Junior Ballroom D</i>	<i>Junior Ballroom C</i>	<i>Grand Ballroom B</i>	<i>Junior Ballroom A/B</i>
Sunday, April 26					
3:00 p.m.–6:00 p.m.	Registration Open, Grand Ballroom Foyer Coatroom				
Monday, April 27					
7:30 a.m.–6:30 p.m.	Registration Open, Grand Ballroom Foyer Coatroom				
8:30 a.m.–10:30 a.m.	DMA • Advances in Digital Holography	JMA • FTS/HISE Joint Session		NMA • Superresolution I	OMA • Transport, Guiding and Sorting
10:30 a.m.–11:00 a.m.	Coffee Break, Grand Ballroom C/D				
10:30 a.m.–4:30 p.m.	Exhibits Open, Grand Ballroom C/D				
11:00 a.m.–12:30 p.m.	DMB • Novel Technologies in Holography (ends at 1:00 p.m.)	FMA • James W. Brault Memorial Session	HMA • Climate Absolute Radiance and Refractivity Observatory	NMB • Superresolution II	OMB • Physics Insights by Means of Optical Trapping I
12:30 p.m.–2:00 p.m.	Lunch Break (on your own)				
2:00 p.m.–4:00 p.m.	JMB • DH/OTA Joint Session	FMB • Combs and Static FTS	HMB • Clouds and Aerosols I	NMC • Nonlinear Microscopy I	
4:00 p.m.–4:30 p.m.	Coffee Break/Exhibits, Grand Ballroom C/D				
4:30 p.m.–6:00 p.m.	DMC • Metrology by Digital Holography and Profilometry (ends at 6:15 p.m.)	FMC • Space and Flight Projects	HMC • Future Missions and Sensor Calibration	NMD • Nonlinear Microscopy II	OMC • Physics Insights by Means of Optical Trapping II
6:30 p.m.–8:00 p.m.	Conference Reception, Junior Ballroom Foyer				
Tuesday, April 28					
7:30 a.m.–6:30 p.m.	Registration Open, Grand Ballroom Foyer Coatroom				
8:30 a.m.–10:30 a.m.	JTuA • DH/NTM Joint Session: Digital Holographic Microscopy	FTuA • FTS for Astronomy and Astrophysics	HTuA • Interpretation of Hyperspectral/Multi spectral Data Through Observations and Simulations		OTuA • Biophotonics Applications
10:30 a.m.–11:00 a.m.	Coffee Break, Grand Ballroom C/D				
10:30 a.m.–6:00 p.m.	Exhibits Open, Grand Ballroom C/D				
11:00 a.m.–12:30 p.m.	DTuA • Holographic Microscopy	FTuB • Combs, Optical Fiber and Fast-Scanning	HTuB • Particle Scattering Models	NTuA • Phase Microscopy and Tomography	OTuB • Novel Uses and Applications
12:30 p.m.–2:00 p.m.	Lunch Break (on your own)				
2:00 p.m.–4:00 p.m.	DTuB • Holography Applications	FTuC • Gosat and Akari	HTuC • New Remote Sensing Perspectives	NTuB • Optical Coherence Tomography	OTuC • Dynamics of Multiple and Parallel Trapping (ends at 3:30 p.m.)
4:00 p.m.–4:30 p.m.	Coffee Break/Exhibits, Grand Ballroom C/D				
4:30 p.m.–6:00 p.m.	JTuB • DH/FTS/HISE/NTM/OTA Joint Poster Session, Grand Ballroom C/D				
6:00 p.m.–6:45 p.m.	DTuC • Optical Scanning Holography				

	<i>Grand Ballroom A</i>	<i>Junior Ballroom D</i>	<i>Junior Ballroom C</i>	<i>Grand Ballroom B</i>	<i>Junior Ballroom A/B</i>
Wednesday, April 29					
7:30 a.m.–6:30 p.m.	Registration Open, Grand Ballroom Foyer Coatroom				
8:30 a.m.–10:30 a.m.	DWA • Three-Dimensional Imaging and Display	FWA • Earth Sensing	HWA • Hyperspectral IR and Imager Data Analyses (ends at 10:00 a.m.)	NWA • New Techniques I	
10:30 a.m.–11:00 a.m.	Coffee Break, Grand Ballroom C/D				
10:30 a.m.–12:30 p.m.	Exhibits Open, Grand Ballroom C/D				
11:00 a.m.–12:30 p.m.	DWB • DH Poster Session, Grand Ballroom C/D				
11:00 a.m.–12:30 p.m.		FWB • Visible and Ultra Violet	HWB • Clouds and Aerosols II	NWB • Superresolution III	
12:30 p.m.–2:00 p.m.	Lunch Break (on your own)				
2:00 p.m.–4:00 p.m.	DWC • Computer-Generated Holograms	FWC • Spatial Heterodyne	HWC • Validation of Cloud and Aerosol Products	NWC • Endomicroscopy	
4:00 p.m.–4:30 p.m.	Coffee Break, Grand Ballroom C/D				
4:30 p.m.–6:30 p.m.	DWD • Electro-Holography and Computer-Generated Holography	FWD • Laboratory and Miniature FTS (ends at 6:00 p.m.)	HWD • Hyperspectral Applications (ends at 6:00 p.m.)	NWD • New Techniques II (ends at 5:30 p.m.)	
Thursday, April 30					
7:30 a.m.–10:30 a.m.	Registration Open, Grand Ballroom Foyer Coatroom				
8:30 a.m.–10:30 a.m.	FThA • Spectral Imaging, Grand Ballroom A				

Key to Shading	
DH Sessions	No Shading
FTS Sessions	
HISE Sessions	
NTM Sessions	
OTA Sessions	

Fourier Transform Spectroscopy (FTS) Abstracts

• Sunday, April 26, 2009 •

Grand Ballroom Foyer Coatroom

3:00 p.m.–6:00 p.m.

Registration Open

• Monday, April 27, 2009 •

Grand Ballroom Foyer Coatroom

7:30 a.m.–6:30 p.m.

Registration Open

JMA • FTS/HISE Joint Session

Junior Ballroom D

8:30 a.m.–10:30 a.m.

Peter Bernath; Univ. of York, UK, *President*

JMA1 • 8:30 a.m. Invited

Hyperspectral and Multispectral Infrared Sounding of the Environment: A Brief Overview, Allen Huang; Univ. of Wisconsin-Madison, USA. Hyperspectral and multispectral sensors are the backbone of the atmospheric and surface remote sensing community. Over the past few decades these sensors have provided crucial measurements of the Earth environment from multiple satellite platforms.

JMA2 • 9:00 a.m. Invited

MIPAS Aboard ENVISAT: Status and Latest Results, Herbert Fischer, MIPAS-Team; Inst. für Meteorologie und Klimaforschung, Univ. Karlsruhe, Germany. The status of the MIPAS experiment onboard ENVISAT will be described. The latest scientific results will be presented and an outlook will be given.

JMA3 • 9:30 a.m. Invited

Total Column Carbon Observing Network (TCCON), Geoff Toon¹, Jean-Francois Blavier¹, Rebecca Washenfelder^{2,3}, Debra Wunch³, Gretchen Keppel-Aleks³, Paul Wennberg³, Brian Connor⁴, Vanessa Sherlock⁴, David Griffith⁵, Nick Deutscher⁵, Justus Notholt⁶; ¹JPL, Caltech, USA, ²Earth System Res. Lab, NOAA, USA, ³Caltech, USA, ⁴Natl. Inst. of Water and Air, New Zealand, ⁵Univ. of Wollongong, Australia, ⁶Univ. of Bremen, Germany. A network of ground-based, sun-viewing, near-IR, Fourier transform spectrometers has been established to accurately measure atmospheric greenhouse gases such as CO₂, CO, N₂O, and CH₄.

JMA4 • 10:00 a.m. Invited

High Spectral Resolution IR Instrument Developments for CLARREO, Hank E. Revercomb¹, Fred A. Best¹, John A. Dykema², Joe Taylor¹, David C. Tobin¹, Robert O. Knuteson¹, Douglas Adler¹, Mark Mulligan¹; ¹Univ. of Wisconsin-Madison, USA, ²Harvard Univ., USA. The infrared component of the CLimate Absolute Radiance Refractivity Observatory (CLARREO) benchmark climate system

under development at NASA will include on-orbit standards and test equipment to directly verify very high end-to-end instrument accuracy on-orbit.

Grand Ballroom C/D

10:30 a.m.–11:00 a.m.

Coffee Break/ Exhibits

FMA • James W. Brault Memorial Session

Junior Ballroom D

11:00 a.m.–12:30 p.m.

Jerome Genest; Univ. Laval, Canada, *President*

FMA1 • 11:00 a.m. Invited

An Historical Perspective on the Development of Fourier Transform Spectrometry, Henry Buijs; ABB Bomem Inc., Canada. Fourier Transform Spectroscopy has achieved considerable maturity since its beginning in the nineteen fifties. Early on it benefitted from a significant sensitivity advantage. Today the precision of measurement achievable is its most important advantage.

FMA2 • 11:30 a.m. Invited

HIS and the New CLARREO Mission, Hank Revercomb, Fred A. Best, David C. Tobin, Robert O. Knuteson, Joe K. Taylor, Dan LaPorte, Steve Dutcher, Bob Holz, Fred Nagle; Univ. of Wisconsin-Madison, USA. The High-resolution Interferometer Sounder (HIS) aircraft spectrometers have validated the accuracy of IR satellite instruments and helped form a foundation for the CLimate Absolute Radiance and Refractivity Observatory (CLARREO) benchmark climate mission (NRC Decadal Survey).

FMA3 • 12:00 p.m.

Thermal Infrared Spectroscopy of Saturn and Titan from Cassini, Donald E. Jennings¹, J. C. Brasunas¹, R. C. Carlson², F. M. Flasar¹, V. G. Kunde³, A. A. Mamoutkine⁴, C. A. Nixon³, J. C. Pearl¹, P. N. Romani¹, A. A. Simon-Miller¹, G. L. Bjoraker¹; ¹NASA Goddard Space Flight Ctr., USA, ²Catholic Univ. of America, USA, ³Univ. of Maryland, USA, ⁴Adnet Systems, Inc., USA. The Cassini spacecraft completed its nominal mission at Saturn and Titan in 2008 and began its extended mission. Cassini carries the Composite Infrared Spectrometer that measures composition, thermal structure and dynamics.

FMA4 • 12:15 p.m.

Analysis of the CrIS Flight Model 1 Radiometric Linearity, Joe K. Taylor, Dave C. Tobin, Henry E. Revercomb, Robert O. Knuteson, Lori Borg, Fred A. Best; Univ. of Wisconsin-Madison, USA. The CrIS Flight Model 1 has recently completed thermal vacuum testing. Here we present the independent UW-SSEC analyses of various test data to assess the radiometric linearity of the sensor.

12:30 p.m.–2:00 p.m.

Lunch Break (on your own)

FMB • Combs and Static FTS

Junior Ballroom D

2:00 p.m.–4:00 p.m.

Pierre Tremblay; Univ. Laval, Canada, Presider

FMB1 • 2:00 p.m.

Invited

Frequency Comb Spectroscopy, Ian R. Coddington, William C. Swann, Nathan R. Newbury; NIST, USA. A stabilized frequency comb provides a broadband array of highly resolved comb lines. Using a multiheterodyne technique, we measure the amplitude and phase of every comb line, allowing for massively parallel, high-resolution spectroscopy.

FMB2 • 2:30 p.m.

Frequency Comb Fourier Transform Spectroscopy with kHz Optical Resolution, Patrick Jacquet¹, Julien Mandon¹, Birgitta Bernhardt², Ronald Holzwarth², Guy Guelachvili¹, Theodor W. Hänsch^{2,3}, Nathalie Picqué¹; ¹CNRS, France, ²Max-Planck-Inst. für QuantenOptik, Germany, ³Ludwig-Maximilians-Univ. München, Germany. Michelson-less Fourier spectra, comprising 500,000,000 spectral elements spanning 1 nm with 2.3 kHz ($7.7 \cdot 10^{-8} \text{ cm}^{-1}$) resolution, are recorded within 6s. Moving mirror of equivalent interferometers should cover 130 km at 78,000 km/hour velocity.

FMB3 • 2:45 p.m.

GHz Yb-Fiber Laser Frequency Comb for Spectroscopy Applications, Ingmar Hartl, H. A. McKay, R. Thapa, B. K. Thomas, A. Ruehl, L. Dong, M. E. Fermann; IMRA America, Inc., USA. We demonstrate a fully stabilized GHz-spaced Yb-fiber laser frequency comb using a Yb-fiber femtosecond oscillator with 1.04 GHz fundamental repetition rate designed for comb spectroscopy applications.

FMB4 • 3:00 p.m.

Invited

SWIFTS: A New Lilliputian Family of Fourier Transform Spectrometer, Étienne Le Coarer; Univ. Joseph Fourier Grenoble I, France. SWIFTS is a new family of micro-Fourier-spectrometers without any moving part. This is an association of a set of small detectors that samples a stationary wave in the evanescent field of a single-mode waveguide.

FMB5 • 3:30 p.m.

From the Concept to the Definition of the SIFTI Instrument: Static Infrared Fourier Transform Interferometer, Philippe Hébert, E. Cansot, C. Pierangelo, C. Buil, F. Brachet, F. Bernard, J. Loesel, T. Trémas, L. Perrin, E. Courau, C. Casteras, I. Maussang; Ctr. Natl. d'Etudes Spatiales, France. SIFTI, a static interferometer using a pair of crossed staircase fixed mirrors, will provide high quality TIR spectra of O₃

and CO. At phase a mid-term, we review main technical choices, preliminary budgets and performances.

FMB6 • 3:45 p.m.

First Results from *Mistere*, a Cryogenic Static Fourier-Transform Spectroradiometer, Yann Ferrec, Sylvain Rommeluère, Didier Henry, Nicolas Guérineau; ONERA, France. *Mistere* is an infrared spectroradiometer, developed to make field measurements at different incidences. The requirements led to design a cryogenic static Michelson interferometer. We present in this paper the first laboratory results.

Grand Ballroom C/D

4:00 p.m.–4:30 p.m.

Coffee Break/ Exhibits

FMC • Space and Flight Projects

Junior Ballroom D

4:30 p.m.–6:00 p.m.

Akihiko Kuze; Japan Aerospace Exploration Agency, Japan, Presider

FMC1 • 4:30 p.m.

Invited

MTG-IRS: Status, Specifications and Technical Concept, Rolf Stuhlmann¹, Antonio Rodriguez¹, Stephen Tjemkes¹, Donny M. Aminou², Hendrik Stark², Wolfgang Schumann²; ¹European Organisation for the Exploitation of Meteorological Satellites, Germany, ²Directorate of the Earth Observation Programmes, Earth Observation Future Programmes Dept., European Space Agency, Germany. MTG-IRS will be Europe's first hyperspectral sounder in a geo-stationary orbit. It covers two bands (700-1210 and 1600-2175 cm^{-1}) and measures with a spatial sampling of 4 km the full Earth disc in 60 minutes.

FMC2 • 5:00 p.m.

Invited

Instrumental Aspects of IASI, Denis Blumstein¹, E. Péquignot¹, L. Buffet¹, C. Buil¹, P. Hébert¹, C. Larigauderie¹, C. Camy-Peyret², D. Siméoni³; ¹Ctr. Natl. d'Etudes Spatiales, France, ²Lab de Physique Moléculaire pour l'Atmosphère et l'Astrophysique, France, ³ALCATEL Space, France. This paper gives the status of the IASI instrument after more than two years in orbit. It details aspects like stability of the instrument, decontaminations and anomalies caused by radiative-environment.

FMC3 • 5:30 p.m.

A Small Surface-Based Infrared Spectrometer for the Exploration of the Moon and Other Planetary Bodies, Louis M. Moreau¹, John G. Spray², Philippe Giaccari¹, Suporn Boonsue², Lucy Thompson²; ¹ABB Bomem Inc., Canada, ²Univ. of New Brunswick, Canada. A concept for a small broadband Fourier transform spectrometer mounted on a surface platform such as rover for a lunar exploration mission is presented. The characteristics and performance of the instrument are given.

FMC4 • 5:45 p.m.

Modelling of the Beamsplitter Properties within the Tropospheric Airborne Fourier Transform Spectrometer (TAFTS) and Associated Effect on Instrument Calibration, *Caroline V. Cox, Paul Green, Juliet Pickering, Jon Murray, John E. Harries, Alan Last; Imperial College London, UK.* A polarising far infrared spectrometer has been simulated to investigate the effect of Mylar substrates on polarisers. Procedural errors were found to the calibration in certain spectral regions. Comparisons with laboratory measurements are discussed.

Junior Ballroom Foyer

6:30 p.m.–8:00 p.m.

Conference Reception

NOTES

• **Tuesday, April 28, 2009** •

Grand Ballroom Foyer Coatroom

7:30 a.m.–6:30 p.m.

Registration Open

FTuA • FTS for Astronomy and Astrophysics

Junior Ballroom D

8:30 a.m.–10:30 a.m.

Jean-Pierre Maillard; *Inst. d' Astrophysique de Paris, France, Presider*

FTuA1 • 8:30 a.m. Invited

CIRS-lite: A Fourier Transform Spectrometer for a Future Mission to Titan, John C. Brasunas, F. Michael Flasar, Donald E. Jennings; *NASA Goddard Space Flight Ctr., USA*. The CIRS FTS, aboard the NASA/ESA Cassini-Huygens mission to Saturn, has been returning exciting science since 2004. CIRS-lite, a lightweight CIRS successor, is being designed for a follow-up Titan mission.

FTuA2 • 9:00 a.m. Invited

SPIOMM, a FTS for Astrophysics, Laurent Drissen; *Dept. de Physique, Univ. Laval, Canada*. SpIOMM is an imaging FTS designed to obtain the visible spectrum of every light source in a 12 arcminute field of view. We present here some results highlighting SpIOMM's capabilities to map astrophysical objects.

FTuA3 • 9:30 a.m.

Laboratory Astrophysics: High-Resolution Fourier Transform Spectroscopy for Cool Stars and Brown Dwarfs, Richard J. Blackwell-Whitehead, Hampus Nilsson, Henrik Hartmann; *Lund Observatory, Sweden*. We describe our measurements using high-resolution Fourier transform spectroscopy to improve the laboratory atomic database for cool star analysis and discuss the adaptation of our Fourier transform spectrometers for atomic measurements.

FTuA4 • 9:45 a.m.

Dispersed Interferometer for Doppler Planet Search at Mt. Palomar 200 Inch Telescope, David J. Erskine¹, Jerry Edelstein², Ed Wishnow², James P. Lloyd³, Philip S. Muirhead³, Jason T. Wright³, Matthew W. Muterspaugh⁴; ¹Lawrence Livermore Natl. Lab, USA, ²Space Sciences Lab, USA, ³Cornell Univ., USA, ⁴Tennessee State Univ., USA. An interferometer mounted in the Cassegrain opening of Mt. Palomar's 200 inch telescope and dispersed by Cornell's Triplespec near infrared spectrograph has been field tested for M-star Doppler planet search and high resolution spectroscopy.

FTuA5 • 10:00 a.m.

Characterization and Suppression of Electrical Interference - Spikes, Periodic Waves, and Ripples - From Cassini Composite Infrared Spectrometer (CIRS) Spectra, Ronald C. Carlson^{1,2}, Ever A. Guandique^{1,3}, Donald E. Jennings¹, Stuart H. Pilorz⁴, Virgil G. Kunde^{1,5};

¹NASA Goddard Space Flight Ctr., USA, ²Catholic Univ. of America, USA, ³Adnet Systems, Inc., USA, ⁴JPL, USA, ⁵Univ. of Maryland, USA. Interferograms from the CIRS far- and mid-IR detectors are contaminated by electrical noise spikes, as well as by a single frequency ("sine wave") feature. It was therefore necessary to develop algorithms to suppress this interference.

FTuA6 • 10:15 a.m.

Broadband Measurements of the Absolute Brightness of Jupiter and Saturn at Submillimeter Wavelengths, Juan R. Pardo¹, Eugene Serabym²; ¹CSIC, Spain, ²Div. of Physics, Mathematics and Astronomy, Caltech, USA. We present the first measurements ever of the spectrum of Jupiter and Saturn across the 0.3 to 1.3 mm wavelength range. The measurement procedure and calibration will be described in detail, and the results discussed.

Grand Ballroom C/D

10:30 a.m.–11:00 a.m.

Coffee Break/ Exhibits

FTuB • Combs, Optical Fiber and Fast-Scanning

Junior Ballroom D

11:00 a.m.–12:30 p.m.

Ian R. Coddington; *NIST, USA, Presider*

FTuB1 • 11:00 a.m. Invited

Practical and Accurate Frequency Comb Spectroscopy, Jerome Genest, P. Giaccari, J.-D. Deschênes, G. Taurand; *Univ. Laval, Canada*. A technique to optically reference the multiheterodyne beat note produced by two mode-locked lasers is presented. The technique is similar to using a reference laser in a conventional Fourier transform spectrometer. Spectroscopy results are presented.

FTuB2 • 11:30 a.m.

Vector Frequency-Comb Fourier Transform Spectrometer Measuring Artificial Dielectrics, T. Ganz^{1,2}, Markus Brehm¹, Hans-Georg von Ribbeck^{1,3}, Fritiz Keilmann^{1,2}, Daniel van der Weide⁴; ¹Max-Planck-Inst. für Biochemie and Ctr. for NanoScience, Germany, ²Max-Planck-Inst. für Quantenoptik and Ctr. for NanoScience, Germany, ³Inst. für Angewandte Photophysik, Technische Univ., Germany, ⁴Univ. of Wisconsin-Madison, USA. We determine infrared and terahertz transmission amplitude and phase spectra of structured artificial dielectrics at well-defined incidence and polarization with a vector frequency-comb Fourier transform spectrometer (c-FTS) that uses no moving elements.

FTuB3 • 11:45 a.m.

Optical Low Coherence Reflectometry Measurements Using a Comb Fourier Transform Spectrometer, Geneviève Taurand, Jérôme Genest, Jean-Daniel Deschênes; *Univ. Laval, Canada*. A fibre Bragg grating is characterized using a comb Fourier transform spectrometer. By measuring its reflectance a complex spectrum is

retrieved, allowing a dispersion analysis, which is used to recover its time domain characteristics.

FTuB4 • 12:00 p.m.

An Mid-Infrared Fourier Transform Spectrometer for a Modal Characterization on Silver Halide Fiber, Romain Grille¹, Tomer Lewi², Pierre Kern¹, Brahim Arezki¹, Guillermmo Martin¹, Abraham Katzir²; ¹Lab d'Astrophysique de Grenoble, France, ²Tel Aviv Univ., Israel. An IR Fourier transform spectrometer was designed and built in order to characterize the spectral response of IR waveguides in the 3-14 μm range. It contains a specific signature related to the transmitted modes.

FTuB5 • 12:15 p.m.

High Resolution Ultra-Rapid-Scanning Fourier Transform Spectrometry, Jinsong Zhou¹, Ruyi Wei¹, Siyuan Li¹, Xiaohui Gao¹, Juanjuan Jing¹, Qiongsui Wu²; ¹Lab of Spectral Imaging Technology, Xi'an Inst. of Optics and Precision Mechanics, China, ²Electronic Information School, Wuhan Univ., China. A new interferometer without cube corner used in ultra-rapid-scanning Fourier transform spectrometry is described, which is possible to produce much higher spectral resolution with much less bulk, as well as with lower technological requirement.

12:30 p.m.–2:00 p.m.

Lunch Break (on your own)

FTuC • Gosat and Akari

Junior Ballroom D

2:00 p.m.–4:00 p.m.

Raphaël Desbiens; ABB Bomem Inc., Canada, Presider

2:00 p.m.–2:30 p.m.

Postdeadline Presentations, To Be Announced

FTuC1 • 2:30 p.m.

Invited

AKARI Far-IR FTS: A Space Application of the Imaging FTS with Photoconductive Detector Arrays, Mitsunobu Kawada¹, Hidenori Takahashi², Noriko Murakami³, Yoko Okada⁴, Akiko Yasuda^{1,4}, Takafumi Ootsubo⁴, Hidehiro Kaneda¹, Takao Nakagawa⁴, Hiroshi Shiba⁵; ¹Nagoya Univ., Japan, ²Gunma Astronomical Observatory, Japan, ³Bisei Astronomical Observatory, Japan, ⁴Inst. of Space and Astronautical Science, Japan, ⁵Graduate School of Sciences, Osaka Univ., Japan. The Japanese infrared astronomical satellite AKARI has a far-infrared Fourier transform spectrometer (FTS), which is the first FTS with photoconductive detector arrays operated in space and provided unique datasets in astrophysics.

FTuC2 • 3:00 p.m.

Invited

Initial Onboard Performance of TANSO-FTS on GOSAT, Akihiko Kuze, Hiroshi Suto, Masakatsu Nakajima, Takashi Hamazaki; Japan Aerospace Exploration Agency, Japan. Thermal And Near infrared

Sensor for carbon Observation (TANSO) Fourier-Transform Spectrometer (FTS) onboard GOSAT monitors CO₂ and CH₄ globally from space. GOSAT will be launched in January, 2009. The initial onboard performance will be presented.

FTuC3 • 3:30 p.m.

Overview of the Test Activities Performed on the Interferometer of GOSAT / TANSO-FTS, Louis M. Moreau¹, Raphael Desbiens¹, James Veilleux¹, Dominique Duquette¹, Luc Levesque¹, Marc-Andre Soucy¹, Takahiro Kawashima², Jun Tanii²; ¹ABB Bomem Inc., Canada, ²NEC Toshiba Space Systems Ltd., Japan. We present an overview of the tests performed on the flight unit of the modulator of TANSO-FTS for GOSAT mission. The results include tests on the interferometer module before and after integration to the sensor.

FTuC4 • 3:45 p.m.

Beamsplitter Emission in the Herschel/SPIRE Fourier Transform Spectrometer, Locke D. Spencer¹, David A. Naylor¹, Peter A. R. Ade², Jin Zhang²; ¹Dept. of Physics and Astronomy, Univ. of Lethbridge, Canada, ²School of Physics and Astronomy, Cardiff Univ., UK. Performance studies of the Herschel/SPIRE FTS show a significant contribution to the measured interferogram from beamsplitter emission when both input ports are well balanced. We describe results from further exploration of this effect.

Grand Ballroom C/D

4:00 p.m.–4:30 p.m.

Coffee Break/ Exhibits

JTuB • DH/FTS/HISE/NTM/OTA Joint Poster Session

Grand Ballroom C/D

4:30 p.m.–6:00 p.m.

JTuB8

Using High-Order Harmonic Generation for EUV Fourier Transform Spectroscopy, Milutin Kovacev^{1,2}, Uwe Morgner^{1,2}, Pascal Salieres³; ¹Leibniz Univ. Hannover, Germany, ²QUEST, Ctr. for Quantum Engineering and Space-Time Res., Germany, ³CEA/DSM/DRECAM/Service des Photons, Atomes et Molecules, France. We demonstrate a new scheme for extreme ultraviolet (EUV) Fourier transform spectroscopy. The technique is based on high-order harmonic generation from a fundamental IR driving field.

JTuB9

Calibration and Data Reduction of a Stationary Wave Integrated Fourier Transform Spectrometer (SWIFTS), Jerome Ferrand¹, Guillaume Custillon², Pierre Benech², Alain Morand², Etienne Le Coarer¹; ¹Lab d'Astrophysique, Observatoire de Grenoble, CNRS, France, ²L'Inst. de Microélectronique Electromagnétisme et Photonique et le Laboratoire d'Hyperfréquences et de Caractérisation, CNRS, France. SWIFTS is a new technology for FTS which allows the realization of small FTS

(5cm*10cm*15cm) with the same performances as standard spectrometers (better than 0.5 cm⁻¹). Here, we present the method of calibration and data-reduction.

JTuB10

A Read-Out Electronic System for Imaging FTS, Tom Neubert¹, Heinz Rongen¹, Karl Ziemons¹, Felix Friedl-Vallon², Thomas Gulde², Guido Maucher², Anne Kleinert²; ¹Forschungszentrum Jülich, Germany, ²Forschungszentrum Karlsruhe, Germany. A high performance read-out system for imaging FTS instruments based on equal time sampling designs with data post processing is presented. It can perform a data storage throughput up to 160 MByte/s.

JTuB11

A Solar-Occultation Fourier Transform Spectrometer for Mars, Louis M. Moreau¹, Jacques Giroux¹, Marc-Andre Soucy¹, James R. Drummond², Lisa Leblanc², Kaley A. Walker³; ¹ABB Bomem Inc., Canada, ²Dalhousie Univ., Canada, ³Univ. of Toronto, Canada. We present a summary of a feasibility study that investigated the possibility of adapting the ACE-FTS, a solar occultation FTS in orbit around Earth, to an orbiter around Mars.

JTuB12

Wavelength Calibration Sources for Instruments on Extremely Large Telescopes, Florian Kerber¹, Maria Aldenius¹, Paul Bristow¹, Sandro D'Odorico¹, Gillian Nave², Yu. Ralchenko², Craig J. Sansonetti²; ¹European Southern Observatory, Germany, ²NIST, USA. ESO and NIST are using FT spectroscopy to survey the near-IR spectra of 20 elements in order to identify the best calibration sources and establish wavelength standards for instruments on extremely large astronomical telescopes.

JTuB13

Super Resolution for an Imaging Fourier Transform Spectrometer, Thanh Nguyen¹, Ahmed Mahgoub¹, Raphaël Desbiens², André Zaccarin¹; ¹Lab de Vision et Systèmes Numériques, Univ. Laval, Canada, ²ABB Bomem Inc., Canada. A Fourier-based motion estimation followed by a square regularized super-resolution algorithm to reconstruct a high spatial resolution hyper spectral cube from several low spatial resolution hyper spectral cubes.

JTuB14

Tracking the Signed Velocity of an Interferometer Carriage Using an Extended Kalman Filter, Simon Potvin¹, Jérôme Genest¹, Benjamin Couillard³, Simon Savary², Martin Chamberland²; ¹Univ Laval, Canada, ²Telops Inc., Canada, ³Canada. An extended Kalman filter, which tracks the signed speed the moving carriage, is presented. The filter uses quadrature-less reference laser fringes. Performances are evaluated on the speed estimate using experimental data highly stained by vibrations.

JTuB15

Non-Linear Behavior of Bolometric Detectors in Fourier Spectroscopy, David A. Naylor, Brad G. Gom, Scott C. Jones, Locke D. Spencer; Dept. of Physics and Astronomy, Univ. of Lethbridge, Canada. The non-linear behavior of bolometric detectors can lead to significant radiometric errors in Fourier spectroscopy if left uncorrected. We discuss preliminary investigation of this effect and its correction.

JTuB16

Interferogram Resampling for GLORIA-AB, Anne Kleinert, Felix Friedl-Vallon, Anton Lengel; Forschungszentrum Karlsruhe, Germany. Interferograms measured by GLORIA-AB are recorded equidistantly in time and then resampled equidistantly in space. Simulations with different settings for the resampling procedure are performed and the impact on the data quality is quantified.

Posters JTuB1–JTuB7 can be found in the DH abstracts section.

Posters JTuB17–JTuB21 can be found in the HISE abstracts section.

Posters JTuB22–JTuB29 can be found in the NTM abstracts section.

Posters JTuB30–JTuB35 can be found in the OTA abstracts section.

• **Wednesday, April 29, 2009** •

Grand Ballroom Foyer Coatroom

7:30 a.m.–6:30 p.m.

Registration Open

FWA • Earth Sensing

Junior Ballroom D

8:30 a.m.–10:30 a.m.

Felix Friedl-Vallon; *Inst. fuer Meteorologie und Klimaforschung, Univ., Germany, Presider*

FWA1 • 8:30 a.m.

Invited

Atmospheric Chemistry Experiment (ACE): Latest Results, Peter Bernath; *Univ. of York, UK*. ACE is a Canadian-led satellite mission that is measuring atmospheric composition by solar occultation using an infrared FTS. A mission update and latest results will be presented.

FWA2 • 9:00 a.m.

Invited

Recent Laboratory Work Relevant to Atmospheric Science, Johannes Orphal; *Univ. de Paris - 12, France*. Atmospheric remote sensing requires spectroscopic reference data. Therefore, parallel to the preparation of atmospheric sensors, laboratory studies need to be developed. We discuss progress in this field by three examples: ozone, chlorine-nitrate, and water vapour.

FWA3 • 9:30 a.m.

Upper Stratospheric and Stratospheric Measurements of Atmospheric Chemistry and Trends by the Atmospheric Chemistry Experiment (ACE) Fourier Transform Spectrometer, Curtis Rinsland¹, Linda Chiou², Peter Bernath³, Chris Boone⁴; ¹NASA Langley Res. Ctr., USA, ²Science Systems and Applications, Inc., USA, ³Univ. of York, UK, ⁴Univ. of Waterloo, Canada. We highlight atmospheric composition and trend studies that have including detections of new species and the measurement of trends for the key climate change-related species CO₂ and CH₄.

FWA4 • 9:45 a.m.

Observations of Climate Radiative Forcing from Ground and Space, Wayne F. Evans; *NorthWest Res. Associates, USA*. The observation and monitoring of the radiative forcing of climate from greenhouse gases at the top of the atmosphere and at the surface by FTS is presented.

FWA5 • 10:00 a.m.

Target Factor Analysis for Trace Agent Detection, Peter R. Griffiths¹, Limin Shao²; ¹Univ. of Idaho, USA, ²Univ. of Science and Technology of China, China. Target factor analysis (TFA) can be used to identify trace atmospheric agents by open-path Fourier transform infrared

(OP/FT-IR) spectrometry under conditions of battlefield clutter provided that a high-pass filter is applied to the interferograms.

FWA6 • 10:15 a.m.

Absolute Infrared Cross Sections of Gas-Phase H₂O₂ Using Fourier Transform Mid-Infrared Spectroscopy, Timothy Johnson, Thomas A. Blake, Robert L. Sams, Sarah D. Burton; *Pacific Northwest Natl. Lab, USA*. We report quantitative-spectra of pressure-broadened H₂O₂ vapor. An 83%-solution was flowed into a disseminator and diluted with N₂ gas; water-lines were subtracted. The H₂O₂ spectrum spans the IR and compares well with HITRAN-values for ν₆ band.

Grand Ballroom C/D

10:30 a.m.–11:00 a.m.

Coffee Break/ Exhibits

FWB • Visible and Ultra Violet

Junior Ballroom D

11:00 a.m.–12:30 p.m.

Gillian Nave; *NIST, USA, Presider*

FWB1 • 11:00 a.m.

Invited

A FTS for VUV Absorption Spectroscopy on the Synchrotron DESIRS Beamline: First Results, Nelson de Oliveira¹, D. Joyeux², D. Phalippou², J. C. Rodier², M. Roudjane¹, M. Vervoet¹, L. Nahon¹, K. Ito³; ¹Synchrotron Soleil, France, ²Lab Charles Fabry de l'Inst. d'Optique, France, ³KEK, Photon Factory, Japan. A Fourier transform spectrometer dedicated to Vacuum Ultra-Violet [180-40nm] photoabsorption has been developed. The first experimental results, presented here, show unprecedented resolving power, above 700000. The instrument is an endstation on the DESIRS synchrotron beamline.

FWB2 • 11:30 a.m.

Atomic Spectroscopy for Astrophysics Applications by High Resolution UV and VUV Fourier Transform Spectrometry, Juliet C. Pickering¹, Darren G. Smillie¹, Anne P. Thorne¹, Gillian Nave², Richard Blackwell-Whitehead³, Peter L. Smith⁴; ¹Imperial College London, UK, ²NIST, USA, ³Lund Observatory, Sweden, ⁴Harvard-Smithsonian Ctr. for Astrophysics, USA. Accurate high resolution UV/VUV atomic data are required for interpretation of astrophysical spectra acquired by modern spectrographs on astronomical telescopes. Atomic spectroscopy studies by high resolution Fourier transform spectrometry at Imperial College are described.

FWB3 • 11:45 a.m.

High Resolution UV Photoabsorption Cross Sections of SO₂ at 198 K, 213 - 325 nm, Douglas Blackie¹, Juliet C. Pickering¹, James Rufus¹, Anne Thorne¹, Richard Blackwell-Whitehead², Glenn Stark³, Peter L. Smith⁴; ¹Imperial College London, UK, ²Lund Observatory, Sweden, ³Wellesley College, USA, ⁴Harvard-Smithsonian Ctr. for Astrophysics, USA. High resolution measurements of SO₂ photoabsorption cross-

sections at 198K between 213-325nm are presented, together with an outline of planned measurements of spectra of SO₂ isotopologues with applications in the study of the ancient Earth atmosphere.

FWB4 • 12:00 p.m.

Imaging Fourier Transform Spectrometer Based on a Beam-Folding Position-Tracking Technique, Jianping Li, Robert K. Y. Chan; Dept. of Physics, Hong Kong Baptist Univ., Hong Kong. A near UV-near IR imaging Fourier transform spectrometer based on a beam-folding position-tracking technique is reported. Preliminary measurement results on plant foliage's fluorescence emission show its potential in biological and chemical applications.

FWB5 • 12:15 p.m.

Wavelength Calibration of Atomic Spectra Obtained by FTS, Gillian Nave, Craig J. Sansonetti; NIST, USA. We discuss the wavelength calibration of atomic spectra obtained by Fourier transform spectroscopy. Wavelength standards, their uncertainties and practical application are also discussed.

12:30 p.m.–2:00 p.m.

Lunch Break (on your own)

FWC • Spatial Heterodyne

Junior Ballroom D

2:00 p.m.–4:00 p.m.

Christoph R. Englert; NRL, USA, *Presider*

FWC1 • 2:00 p.m.

Invited

Spatial Heterodyne Imager for Mesospheric Radicals (SHIMMER): Results from the First Satellite Borne SHS Spectrometer, Christoph R. Englert¹, Michael H. Stevens¹, David E. Siskind¹, John M. Harlander², Fred L. Roesler³; ¹NRL, USA, ²St. Cloud State Univ., USA, ³Univ. of Wisconsin-Madison, USA. SHIMMER was launched in 2007 on board the STPSat-1 satellite. We present a brief look at the spectroscopic data analysis and summarize recent results from the mesospheric hydroxyl (OH) and polar mesospheric cloud (PMC) observations.

FWC2 • 2:30 p.m.

Invited

The Mark 1 Spatial Heterodyne Spectrometer, James E. Lawler¹, J. Harlander², F. L. Roesler¹, Z. Labby¹; ¹Dept. of Physics, Univ. of Wisconsin, USA, ²Dept. of Physics, Astronomy, and Engineering Science, St. Cloud State Univ., USA. Design features of the broadband, high resolution Mark 1 Spatial Heterodyne Spectrometer (SHS) which eliminate aberrations in the fringe imaging system, suppress ghosts, and enhance thermal stability are reviewed. Applications of this SHS are described.

FWC3 • 3:00 p.m.

Invited

The Doppler Asymmetric Spatial Heterodyne (DASH) Interferometer, John M. Harlander¹, Christoph R. Englert², David D. Babcock³; ¹St. Cloud State Univ., USA, ²Space Science Div., NRL, USA,

³Arteq, Inc., USA. Doppler Asymmetric Spatial Heterodyne Spectroscopy (DASH) is being developed for atmospheric Doppler wind measurements. This paper discusses the technique, the advantages and tradeoffs of DASH.

FWC4 • 3:30 p.m.

Dispersed Fourier Transform Spectrographs: The Next Generation, Andrew Cenko¹, Jeff Meade¹, Gillian Brockett¹, Bradford Behr¹, Marc Murison², Robert S. McMillan³, Arsen R. Hajian¹; ¹Univ. of Waterloo, Canada, ²US Naval Observatory, USA, ³Univ. of Arizona, USA. We compare a first and second generation dispersed FTS, which is a combination of an FTS and grating spectrometer. We include a quantitative analysis of resulting increase in sensitivity, and preliminary results.

FWC5 • 3:45 p.m.

HYPE: A Sub-Orbital Spatial Heterodyne Spectro-Polarimeter for Study of Ly- α Sources in the Solar System, Walter Harris¹, Fred Roesler², Lotfi Ben-Jaffe³, Jason Corliss², Yan Betremieux¹, Frederic Vincent¹; ¹Univ. of California at Davis, USA, ²Univ. of Wisconsin-Madison, USA, ³Inst. d'Astrophysique de Paris, France. We describe progress toward the development of a sounding rocket spatial heterodyne spectro-polarimeter designed for studies of H Ly- α line profiles from solar system targets.

Grand Ballroom C/D

4:00 p.m.–4:30 p.m.

Coffee Break/ Exhibits

FWD • Laboratory and Miniature FTS

Junior Ballroom D

4:30 p.m.–6:00 p.m.

Guy Guelachvili; CNRS, France, *Presider*

FWD1 • 4:30 p.m.

Invited

Laboratory Fourier Transform Zeeman Spectroscopy, Amanda J. Ross; Univ. de Lyon and CNRS, France. A laser-induced fluorescence experiment coupled to a Bomem DA3 FT spectrometer is used to measure visible spectra of metal hydrides in the presence of a magnetic field. Landé factors are obtained for several transitions simultaneously.

FWD2 • 5:00 p.m.

Fourier Transform Laser-Induced Fluorescence Spectra of the Rubidium Dimer, Houssam Salami¹, Thomas Bergeman¹, Patrick Crozet², Amanda J. Ross²; ¹SUNY at Stony Brook, USA, ²Univ. de Lyon, CNRS, France. Laser-induced fluorescence from the lowest vibrational levels of the A ¹ Σ_u^+ state of Rb₂ have been recorded on an FT spectrometer. Global deperturbation gives vibrational numbering in the A ¹ Σ_u^+ and perturbing b ³ π_u states.

FWD3 • 5:15 p.m.

Fourier Transform Infrared Photoacoustic Spectroscopy of Polymer Beads, *Qing Wen, Kirk H. Michaelian; CanmetENERGY, Natural Resources Canada, Canada.* Photoacoustic (PA) spectra of polymer beads were acquired using a Fourier transform infrared spectrometer. Absorption bands were identified in both the magnitude and phase spectra. The modulation-frequency dependence of PA intensity varied with saturation.

FWD4 • 5:30 p.m.

A Miniature Fourier Transform Spectrometer by a Large-Vertical-Displacement Microelectromechanical Mirror, *Lei Wu, Andrea Pais, Sean R. Samuelson, Shuguang Guo, Huikai Xie; Dept. of Electrical and Computer Engineering, Univ. of Florida, USA.* A microelectromechanical system (MEMS) mirror based miniature Fourier transform spectrometer is reported. A spectral resolution of 19.2 cm^{-1} has been achieved with a $261 \text{ }\mu\text{m}$ physical scan range generated by the large-vertical-displacement MEMS mirror.

FWD5 • 5:45 p.m.

Non-Mechanically Scanned DFTS, *Dominic F. Murphy, Dónal A. Flavin; Waterford Inst. of Technology, Ireland.* Non-mechanically scanned dispersive Fourier transform spectrometry (DFTS) is reported for dispersion-insensitive measurements of thermally-induced change in dispersive group delay; optical path scan lengths of 260 microns yield 0.5fs resolution for a dispersive optical sample.

NOTES

•Thursday, April 30, 2009 •

Grand Ballroom Foyer Coatroom

7:30 a.m.–10:30 a.m.

Registration Open

FThA • Spectral Imaging

Grand Ballroom A

8:30 a.m.–10:30 a.m.

Donald E. Jennings; NASA Goddard Space Flight Ctr., USA, Presider

FThA1 • 8:30 a.m.

Invited

Airborne / Balloonborne Imaging FTS, Felix Friedl-Vallon; Inst. für Meteorologie und Klimaforschung, Univ. Karlsruhe, Germany. The current status of the development of the airborne Global Limb Radiance Imager of the Atmosphere (GLORIA-AB) instrument is outlined. Characterization measurements and the road map to scientific usage are presented.

FThA2 • 9:00 a.m.

Invited

Recent Instrument Development at Telops, Martin Chamberland, Vincent Farley, Philippe Lagueux, André Villemaire, Patrick Dubois, Jean-Philippe Gagnon; Telops Inc., Canada. Since the introduction of a LWIR imaging-FTS in 2005, Telops developed other state-of-the-art FTS instruments. An airborne imaging-FTS, real-time calibration of hypercubes, fast imaging-FTS for explosion measurements and a cryogenic FTS are presented here.

FThA3 • 9:30 a.m.

Continuous-Scan Imaging FTS with an Integrating Camera - Contributions of Sampling Jitter Noise to NESR, Pierre Tremblay¹, Martin Chamberland²; ¹Univ. Laval, Canada, ²Telops Inc., Canada.

We report a thorough analysis of the impact of sampling jitter in imaging Fourier-Transform Spectrometers operating with an externally triggered integrating camera. Through estimation of integrating parameters statistics, we can predict resulting spectral noise.

FThA4 • 9:45 a.m.

Wide-Field Imaging FTS at High Spectral Resolution, Jean-Pierre Maillard; Inst. d' Astrophysique de Paris, France. Astronomical spectral imaging calls in many case for wide-field instruments and high spectral resolution. These two conditions are theoretically realized with an imaging FTS. Practical examples in two different domains, visible and mid-IR, are presented.

FThA5 • 10:00 a.m.

Retrieving of a Spectrum from a Non Stationary Imaging Fourier Transform Spectrometer, Ahmed G. Mahgoub¹, Thanh Nguyen¹, André Zaccarini¹, Raphaël Desbiens²; ¹Univ. Laval, Canada, ²ABB Bomem Inc., Canada. Motion estimation is used to align the frames resulting from a non-stationary imaging Fourier transform spectrometer. This

motion correction is expected to increase the spectral resolution, or retrieve an undistorted spectrum.

FThA6 • 10:15 a.m.

Spatial Heterodyne Imager for Chemicals and Atmospheric Detection (SHIMCAD): First Brassboard Results, David D. Babcock¹, Christoph R. Englert², John M. Harlander³; ¹Artep, Inc., USA, ²NRL, Space Science Div., USA, ³St. Cloud State Univ., USA. A design overview of the Spatial Heterodyne Imager for Chemicals and Atmospheric Detection (SHIMCAD) brassboard instrument and its first long-wave infra-red transmittance measurement are presented. SHIMCAD uses a field widened Spatial Heterodyne Spectroscopy (SHS) interferometer.

Key to Authors and Presiders

(**Bold** denotes Presider or Presenting Author)

A

Achilefu, Samuel—NTuB5
Ackerman, Andrew—HWB1
Ackerman, Steven A.—HWB1,
HWC4
Ackermann, Jörg—HMC2
Ade, Peter A. R.—FTuC4
Adeyemi, Adekunle A.—**DMA5**
Adler, Douglas—JMA4
Afanasiev, Kirill—JTUB34, **OTuA5**
Aguet, François—NMB3
Albella, Pablo—**JTuB25**
Aldenius, Maria—JTUB12
Alvarez-Palacio, Diana—DWB9
Aminou, Donny M.—FMC1
Anderson, James—**HMA1**, HMA4,
HMC3
Andilla, Jordi—JTUB33
Arden-Jacob, Jutta—NMB2
Arezki, Brahim—FTuB4
Armand, Marie-Francoise—DWD5
Arroyo, M. Pilar—**DWD3**
Ash, William M.—**DTuA4**
Asundi, Anand—DTuB6, **JTuA2**
Awatsuji, Yasuhiro—**JTuB2**

B

Baasantseren, Ganbat—**DWB31**
Babcock, David D.—**FThA6**, FWC3
Bachler, Brandon R.—NMC4
Backman, Vadim—NTuB6
Backsten, Jan—DWB13, DWC3
Badizadegan, Kamran—NTuA1,
NTuA2
Balikov, Daniel—NTuB6
Balla, Naveen K.—NWB3
Banerjee, Partha P.—DMB1, **DMB**,
DTuB3
Bao, Hong Chun—NWD3
Barada, Daisuke—**DWD4**
Baran, Anthony—**HTuB2**, **HTuC**
Barbastathis, George—DMB4,
DTuA, DTuB5, DWB3,
DWB4, JTUB5
Barnet, Christopher—**HTuA**,
HTuC2, HWC5
Barrera, John F.—JTUB3
Barsi, Christopher—**DMA4**
Barthelemy, Alain—NWC6
Barton, Jennifer—DTuB5
Bartoo, Aaron C.—NWC3
Baum, Bryan A.—**HMA**, HMB4,
HMB5, HWB3
Beeby, Ralph—HWC6
Behr, Bradford—FWC4
Ben-Jaffel, Lotfi—FWC5

Benech, Pierre—JTUB9
Bengtsson, Jörgen—DWB13, DWC3
Bergeman, Thomas—FWD2
Berglund, Andrew J.—**NWB5**
Bergoënd, Isabelle—**DWB5**
Bernard, F.—FMB5
Bernath, Peter—**FWA1**, FWA3, **JMA**
Bernhardt, Birgitta—FMB2
Best, Fred A.—FMA2, FMA4, JMA4
Betremieux, Yan—FWC5
Bi, Lei—HMB4
Bierhoff, Walter C. J.—NWC5
Bifano, Thomas G.—NMD3
Biteen, Julie S.—NMA5
Bjoraker, G. L.—FMA3
Blackie, Douglas—**FWB3**
Blackwell-Whitehead, Richard—
FTuA3, FWB2, FWB3
Blake, Thomas A.—**FWA6**
Blanche, Pierre-Alexander—DWB36
Blatherwick, Ron—HMC5
Blavier, Jean-Francois—JMA3
Blumstein, Denis—**FMC2**
Boone, Chris—FWA3
Boonsue, Suporn—FMC3
Booth, Martin J.—**NWA1**
Borbás, Eva—HWA2
Borg, Lori—FMA4
Bornemann, Jorge—HMC4
Borvoï, Anatoli—**HTuB4**
Boss, Daniel—DTuA2
Botvinick, Elliot—**OMA1**
Bouma, Brett E.—**NTuB4**
Boussioutas, Alex—NWD1
Bouyer, Philippe—**OTuC5**
Bowman, Richard W.—**OMC3**
Bozinovic, Nenad—**NWC3**
Brachet, F.—FMB5
Brasunas, John C.—FMA3, **FTuA1**
Braun, A. L.—NWC5
Brehm, Markus—FTuB2
Brevier, Julien—NWC6
Bristow, Paul—JTUB12
Brockett, Gillian—FWC4
Brzobohatý, Oto—OTuC3
Buffet, L.—FMC2
Buijs, Henry—**FMA1**
Buil, C.—FMB5, FMC2
Burnham, Daniel—OTuB3
Burton, Sarah D.—FWA6

C

Cagigal, Manuel P.—**JTuB23**
Calbet, Xavier—HMC4, HTuC3
Camy-Peyret, C.—FMC2

Canales, Vidal F.—JTUB23
Cansot, E.—FMB5
Carberry, David M.—**OMA5**
Carl, Daniel—**DWD6**
Carlson, Ronald C.—FMA3, **FTuA5**
Carriles, Ramon—NMD4
Case, Jason—OTuA1
Casteras, C.—FMB5
Cauwenberghs, Gert—NWA6
Cenko, Andrew—**FWC4**
Chamberland, Martin—**FThA2**,
FThA3, JTUB14
Chan, Robert K. Y.—FWB4
Chandler, Eric V.—**NMD4**
Chang, Chi-Ching—DWB35
Chang, Yuan-Shuo—JTUB29
Charron, Luc G.—**OMA4**
Chatfield, Robert—HMC5
Chen, Chiung-Liang—**DWB29**
Chen, Gang—DWB23
Chen, George C. K.—JTUB4
Chen, Jocelyn S. Y.—OMA6
Chen, Nanguang—**NWA5**
Chen, Xin-Chang—JTUB29
Cheng, Chau-Jern—**DTuB2**
Cheng, Zhaohui—HWC5
Chestukhin, Anton—NTuB5
Cheung, Wai Keung—DWC2
Chi, Yu M.—NWA6
Chia, Thomas H.—NMD2
Chiang, Chung-Sheng—DWB35
Chiang, Jen-Shiun—DTuB2
Chiou, Linda—FWA3
Chiu, Daniel—**OMA2**
Chiu, Jui-Yuan C.—HTuC5
Chmyrov, Andriy—**NMB2**
Choi, Wonshik—**NTuA1**, NTuA2,
NTuB
Chong, Shau Poh—NWA5
Chou, Jin-Wen—DTuB2
Christenson, Todd C.—NWC7
Chu, Kengyeh K.—**NMD3**, NWA4,
NWC3
Chumbley, Scott—DMC3
Chylek, Petr—HTuC1
Čižmár, Tomáš—OTuC3, OTuA4
Coddington, Ian R.—**FMB1**, **FTuB**
Colomb, Tristan—DTuA3, DWB5
Connor, Brian—JMA3
Contag, Christopher H.—NWC1,
NWC2
Corliss, Jason—FWC5
Couillard, Benjamin—JTUB14
Courau, E.—FMB5
Cox, Caroline V.—**FMC4**

Crawford, James M.—NWC2
Crozet, Patrick—FWD2
Cui, Meng—NMC4
Cureton, Geoff P.—**JTuB21**
Curtis, Jennifer—**OTuA2**
Custillon, Guillaume—JTUB9

D

D'Odorico, Sandro—JTUB12
Dainty, Chris—NTuA6
Dallas, William—**DTuB**, **DWB36**
Damania, Dhwanil—NTuB6
Darakis, Emmanouil—**DTuB6**
Darcie, Thomas E.—DMA5
Dasari, Ramachandra R.—NTuA1,
NTuA2
Davis, Anthony B.—**HTuC6**
Day, Daniel—OMC4
de Oliveria, Nelson—**FWB1**
Debarre, Delphine—NWA1
Dee, Nick—NMC6
Deneke, Hartwig M.—HWC3
Depeursinge, Christian—DTuA2,
DTuA3, DWB5, **JMB**,
JTU3
Desbiens, Raphaël—**FTuC**, FTuC3,
JTUB13, FThA5
Deschênes, Jean-Daniel—FTuB1,
FTuB3
Descour, Michael R.—NWC7
Desjardins, Adrien E.—NWC5
Desouza-Machado, Sergio—HMC5
Desroches, Jérôme—**NWC6**
Desyatnikov, Anton S.—OMB4,
OTuB2, OTuC4
Deutscher, Nick—JMA3
Dewhirst, Mark—NTuB2
Dholakia, Kishan—OTuC3
Dineen, Colm—**OTuB5**
Divakarla, Murty G.—**HWC5**
Dominguez-Caballero, Jose A.—
DWB3
Dong, L.—FMB3
Downing, Benjamin P. B.—OMB3,
OTuA3
Drake, Ginger—HMA3
Drexhage, Karl-Heinz—NMB2
Drissen, Laurent—**FTuA2**
Drummond, James R.—JTUB11
Dubois, Patrick—FThA2
Dufresne, Eric—**JMB3**
Dunagan, Steve—HTuC4
Duquette, Dominique—FTuC3
Dutcher, Steve—FMA2, JTUB17
Dykema, John—JMA4, HMA1,
HMA4, HMC3
Dylov, Dmitry V.—**DMB3**

E

Edelstein, Jerry—FTuA4
Eisenmann, David—DMC3
Emery, Yves—DWB5
Englert, Christoph R.—FThA6, **FWC**,
FWC1, FWC3
English, Stephen—HMC4
Engström, David—**DWB13**, DWC3
Erskine, David J.—**FTuA4**
Espejo, Joey—HMA3
Eun, Jae-Jeong—DWB31
Euser, Tijmen G.—OMA6
Evans, Wayne F.—**FWA4**
Evstrapov, Anatoly—JTUB27

F

Faber, C—DMC4
Fan, Jinda—NTuB5
Fang-Yen, Christopher—NTuA1,
NTuA2
Farbiz, Farzam—DWB32
Fargeix, Alain—DWD5
Farley, Vincent—FThA2
Farré, Arnau—**JTuB33**
Faulk, Ben—OTuA1
Feld, Michael S.—NTuA1, NTuA2
Feldkhun, Daniel—**NWA3**
Fermann, M. E.—FMB3
Ferrand, Jerome—**JTuB9**
Ferrec, Yann—**FMB6**
Fetzer, Eric J.—HTuA3
Fiedler, Lars—**HMC2**
Field, Jeff—NMD4
Fienup, James R.—JTU5
Finikova, Olga S.—NMC7
Fischer, Herbert—**JMA2**
Fischer, Martin—NMC1
Fischer, Peer—DMB5
Flasar, F. M.—FMA3, FTuA1
Flavin, Dónal A.—FWD5
Fleischer, Jason W.—DMA4, DMB3
Flezar, Matjaz—DWB2
Flynn, Connor J.—HTuC4
Fontanella, Andrew—NTuB2
Ford, Tim N.—NWC3
Forde, Nancy—OMB3, OTuA3,
OTuB
Frank, Anders—DWB13, DWC3
Fratz, Markus—**DMB5**, DWD6
Friedl-Vallon, Felix—**FThA1**, **FWA**,
JTUB10, JTUB16
Friedman, Arnold C.—DWB36
Fu, Dan—NMC1
Furlan, Walter D.—**JTuB35**

G

Gagnon, Jean-Philippe—FThA2
Gaier, Todd—HWD4
Gambacorta, Antonia—HWC5
Ganz, T.—FTuB2

Gao, Xiaohui—FTuB5
Garbos, Martin K.—**OMA6**
Garcés-Chávez, Veneranda—OTuC3
Garcia-Sucercua, Jorge—DWB15,
DWB9
Geissbühler, Stefan—NMB3
Gelsing, Paul—DTuB5
Genest, Jérôme—**FMA**, **FTuB1**,
FTuB3, JTUB14
Gerhardt, Nils C.—DMB6
Gero, P. J.—**HMC3**
Giaccari, Philippe—FMC3
Giaccari, P.—FTuB1
Gibson, Graham M.—OMA5, OMC3
Giel, Dominik M.—DMB5, DWD6
Giménez, F.—JTUB35
Giménez, M. H.—JTUB35
Giroux, Jacques—JTUB11
Gmitro, Arthur F.—**NWC4**, **NWD4**
Goda, Keisuke—**NWC8**
Goksör, Mattias—DWB13, DWC3
Goldberg, Mitchell D.—HTuA2,
HTuA5, HWC5,
HWD2
Gom, Brad G.—JTUB15
Gonzalez, Emilio—NWC1
González, Francisco—JTUB25
Grange, Rachel—DTuA1
Green, Paul—FMC4, **HWC6**
Greuell, Wouter—HWC3
Griebner, Uwe—DMA6
Grier, David G.—OMC1
Grieve, James A.—OMA5
Grieve, Kate—NWA1
Griffith, David—JMA3
Griffiths, Peter R.—**FWA5**
Grille, Romain—**FTuB4**
Grunwald, Ruediger—DMA6
Gu, Min—NWD1, NWD2, NWD3,
OMC4
Guandique, Ever A.—FTuA5
Guelachvili, Guy—**FMB2**, **FWD**
Guérineau, Nicolas—FMB6
Gulde, Thomas—JTUB10
Guo, Shuguang—FWD4, **NTuB3**
Gustafsson, Mats—**NMA4**

H

Ha, Woosung—OTuA6
Hack, Erwin—NWB4
Hahn, Joonku—JTUB1, JTUB7
Hajian, Arsen R.—FWC4
Halas, Naomi J.—OMB2
Hale, Tom—HTuC1
Haliyo, D. Sinan—OMC3
Ham, Seung-Hee—HWB3
Hamazaki, Takashi—FTuC2
Hammer, Daniel—NTuB5
Hanna, Simon—OMA3, OMA5,
OMC2

Hänsch, Theodor W.—FMB2
Hansel, Thomas—DMA6
Harber, Dave—HMA3
Harbers, Rik—NWC5
Harlander, John M.—FThA6, FWC1,
FWC2, FWC3
Harries, John E.—FMC4, HWC6
Harris, Walter—FWC5
Hartl, Ingmar—FMB3
Hartmann, Henrik—FTuA3
Hasegawa, Satoshi—DWB10
Häusler, Gerd—DMC4
Havemann, S.—HTuA4
Hawat, Toufic—HMC5
Hawthorne, Benjamin—NWA2
Hayasaka, Tadahiro—HWC2
Hayasaki, Yoshio—DWB10, DWC
Hébert, Philippe—FMB5, FMC2
Heidinger, Andrew—HMB1, HWC4
Heintzmann, Rainer—NWA, NWB1
Hell, Stefan W.—NMA1
Helmerson, Kristian—OMB2
Helms, Mike W.—NWC2
Henaio, Rodrigo—JTUB3
Hendargo, Hansford C.—NTuA3,
NTuB2
Hendriks, Benno H. W.—NWC5
Hennelly, Bryan M.—DWB12
Henry, Didier—FMB6
Hester, Brooke C.—OMB2, OMC
Heuerman, Karl—HMA3
Heymsfield, Andrew J.—HMB5
Hezemans, Cees A.—NWC5
Höfler, Heinrich—DWD6
Hofmann, Martin R.—DMB6
Holben, Brent N.—HTuC4
Holz, Robert—FMA2, HWA2,
HWC4
Holzwarth, Ronald—FMB2
Hong, Jisoo—DWB1, DWB27
Hong, Keehoon—DWB1
Hoover, Erich E.—NMD4
Horikk, Jeroen J. L.—NWC5
Hourtoule, Claire—NWC3
Hristlova-Veleva, Svetla—HTuA3
Hsieh, Chia-Lung—DTuA1
Hsieh, Wang-Ta—DWB35
Hsu, Ken—NWB2
Hu, Cuiying—DWB16
Huang, Allen—HWA, JMA1
Huang, Hung-Lung (Allen)—HMB4
Huang, Kui-Teng—JTUB30
Huang, Yi—HMA4
Huang, Zhiwei—NMC5
Hubanks, Paul A.—HWB1
Hur, Nam-Ho—DWB21

I

Iftimia, Nicusor V.—NTuB5
Ikin, Leo—OMA5

Ito, Kenichi—JTUB2
Ito, Tomoyoshi—DWB6, DWD1
Ivey, Peter A.—DWB28
Iwai, Hidenao—NTuA4
Iwaniuk, Daniel—NWB4
Izatt, Joseph—NTuA, NTuA3,
NTuB1, NTuB2
Izdebskaya, Yana V.—OMB4,
OTuC4

J

Jacquet, Patrick—FMB2
Jalali, Bahram—NWC8
Jang, Hyun-Sung—JTUB18
Jennings, Donald E.—FMA3, FThA,
FTuA1, FTuA5
Jeong, Yoonseob—OTuA6
Jeromin, Andreas—NMC6
Jesacher, Alexander—NWA1
Jezersek, Matija—DWB2
Ji, Won-Soo—JTUB28
Jia, Baohua—NWD2
Jin, Hongzhen—DWB7
Jin, Hongchun—HWA3
Jin, Xin—HTuA2, HTuA5
Jing, Juanjuan—FTuB5
Jofre, Ana—OTuA1
Johnson, Roy R.—HTuC4
Johnson, Timothy—FWA6
Joiner, Joanna—HMB2, HWD
Jones, Scott C.—JTUB15
Joseph, Joby—DTuB1
Jourdain, Pascal—DTuA2
Jung, Jae-Hyun—DWB1
Jung, Yongmin—OTuA6
Junio, Joseph—OTuB4

K

Kahn, Brian H.—HTuA3, HWA3
Kamin, Dirk—NMA1
Kaneda, Hidehiro—FTuC1
Kaneko, Atsushi—JTUB2
Kang, Hoonjong—DTuB7, DWA4
Kang, Hong—NWD2
Kang, Jin-mo—DWB1
Kangaslahti, Pekka—HWD4
Karásek, Vítězslav—OTuC3
Kariwala, Vinay—DTuB6
Kaspar, Roger—NWC1
Kasseck, Christoph—DMB6
Kassianov, Evgueni—HTuC4
Kattawar, George—HMB4, HTuB1
Katz, Barak—DMC2
Katzir, Abraham—FTuB4
Kawada, Mitsunobu—FTuC1
Kawashima, Takahiro—FTuC3
Keeley, Fred W.—OTuA3
Keilmann, Fritz—FTuB2
Kelly, Damien P.—DWB12
Kemper, Björn—JMB5

Kempkes, Michel—DTuB6
Kendrick, Mark J.—OMC5
Keppel-Aleks, Gretchen—JMA3
Kerber, Florian—JTUB12
Kern, Pierre—FTuB4
Kester, Robert T.—NWC7
Ketelhut, Steffi—JMB5
Khanam, Taslima—DTuB6
Kiire, Tomohiro—DWB11
Kikuchi, Yuichi—DWD4
Kim, Dong-Jin—DWB18
Kim, Dong-Wook—DWB21, DWB30
Kim, Dae-Chan—JTUB28
Kim, Eun-Soo—DWA3, DWB17,
DWB19, DWB20
Kim, Eun-Hee—JTUB7
Kim, Joohwan—DWB25
Kim, Jhoon—HTuA6
Kim, Jongki—OTuA6
Kim, Junki—OTuA6
Kim, Kum-Lan—JTUB19
Kim, Mijin—HTuA6
Kim, Myung K.—DMA, DTuA4,
DTuB4
Kim, Nam—DWB14, DWB31
Kim, Sung-Kyu—DWA
Kim, Seung-Cheol—DWB19,
DWB20
Kim, Sung-Kyu—DWB21, DWB24,
DWB30
Kim, Taegeun—DMB7
Kim, Younghoon—DWB25
Kim, Yunhee—DWB27
Kim, Yoonjae—JTUB19
Kimura, Kouhei—DWB10
Kindel, B.—HMA2
King, Michael D.—HWB1
King, Tom—HWC5
Kino, Gordon S.—NWC1, NWC2
Kishore, Rani—OMB2
Kitayama, Ryo—DWC4
Kivshar, Yuri S.—OMB4, OTuB2,
OTuC4
Kleinert, Anne—JTUB10, JTUB16
Knauer, M. C.—DMC4
Knuteson, Robert—JMA4, FMA2,
FMA4, JTUB17
Knyazikhin, Yuri—HTuC5
Köber, Sebastian—DMB6
Koch, S. W.—OTuB5
Kopp, Greg—HMA2, HMA3
Korobtsov, Alexander—JTUB34,
OTuA5
Kosmeier, Sebastian—JMB5
Kostuk, Raymond—DTuB5
Kotlarchyk, Maxwell—OMA1
Kotova, Svetlana—JTUB34, OTuA5
Kou, Shan S.—JTU1
Koukourakis, Nektarios—DMB6
Kovacev, Milutin—JTUB8

Koyama, Takamasa—JTB2
Kozawa, Yuichi—**JTuB32**, NMA3
Kranitzky, C.—DMC4
Kreuzer, Jurgen—DWB9
Krolikowski, Wieslaw Z.—OMB4,
OTuB2, OTuC4
Krupinski, Elizabeth A.—DWB36
Kubasik-Thayil, Anisha—NWA1
Kubota, Toshihiro—JTB2
Kuehn, Ralph—HWC4
Kühn, Jonas—**DTuA3**, JTA3
Kukhtarev, Nickolai V.—**DMB1**,
DTuB3
Kukhtareva, T.—DMB1
Kumer, John (Jack) B.—**HMC5**
Kunde, V. G.—FMA3
Kunde, Virgil G.—FTuA5
Kuo, Ming-Kuei—DWB35
Kuporosov, Yury—**JTuB27**
Kustova, Natalia—HTuB4
Kuze, Akihiko—**FMC**, **FTuC2**
Kwon, Ki-Chul—DWB14
Kwon, Yong-Moo—DWB21, DWB30

L

Labby, Z.—FWC2
Labonnote, Laurent—**HWB2**
Lagueux, Philippe—FThA2
Lai, Xin-Ji—DTuB2
Lam, Edmund Y.—DMA3
Lambriqtsen, Bjorn—**HWD4**
Landau, Sara M.—**NWC7**
Langehanenberg, Patrik—JMB5
Lanman, Douglas—JTB5
LaPorte, Dan—FMA2
Lara, David—NTuA6
Larar, Allen M.—HTuA1, **HWD3**
Larigauderie, C.—FMC2
Lasser, Theo—NMB3
Last, Alan—FMC4, HWC6
Lattanzio, Alessio—HTuC3
Lauterbach, Marcel A.—NMA1
Lawler, James E.—**FWC2**
Lazarz, Evan—NMC6
Le Coarer, Étienne—**FMB4**, JTB9
Leblanc, Lisa—JTB11
Lee, Byoung-ho—DWB1, DWB25,
DWB27, JTB1, JTB7
Lee, Byung-Gook—DWB17, DWB18
Lee, Byung-II—**JTuB19**
Lee, El-Hang—JTB28
Lee, Eun S.—**JTuB22**, **JTuB24**
Lee, Hyesog—NMA6
Lee, Jaehwa—HTuA6
Lee, Jae Y.—JTB22, JTB24
Lee, Kwang - Hoon—**DWB21**
Lee, Seungwon—HTuA3
Lee, Seung Gol—JTB28
Lee, Sejin—OTuA6
Lee, Sung J.—DWB3

Lee, Wai-Hon—**DWC5**
Lee, Yi-Ta—DTuB2
Lemonnier, Olivier—DWD5
Lengel, Anton—JTB16
Leroy, Stephen—HMA1, HMA4
Levene, Michael J.—**NMD2**
Levesque, Luc—FTuC3
Levin, Carly—OMB2
Lewi, Tomer—FTuB4
Li, Jianping—**FWB4**
Li, Jun—**HTuA2**
Li, Jinlong—HTuA2
Li, Jun—HTuA5, HWA2, JTB17
Li, Jingliang—NWD2, NWD3
Li, Siyuan—FTuB5
Li, Yong—**DWB7**
Liang, Xinan—DWB32
Liao, Ho-En—DWA2
Liddle, J. A.—NWB5
Lien, Chen-Hui—DWB29
Lilge, Lothar—OMA4
Liliana, L.—DWA3, DWB17
Lim, Daryl—**NWA4**, NWC3
Lim, Young-Tae—**DWB14**
Lim, Yongjun—**JTuB1**
Lin, Hermann—JTB26
Lin, Kuo-Kuei—DWA2
Lin, Li-Chien—**DWA2**, DWB29
Lin, Yuxiang—NWD4
Lin, Zhiping—JTA4
Liu, Jung-Ping—DWC2, **JTuB4**
Liu, Jonathan T. C.—NWC1, **NWC2**
Liu, Lin—NTuB3
Liu, Xu—**HTuA1**, HWD3
Liu, Xingpin—HWC5
Liu, Yan-an—JTB20
Liu, Zhihai—OTuC2, **JTuB31**
Liu, Zhaowei—**NMA6**
Livingston, John M.—HTuC4
Livschitz, Yakov—HMC2
Lloyd, James P.—FTuA4
Lobera, Julia—DWD3
Loesel, J.—FMB5
Loomis, Nick—**DMB4**
Lopez-Mariscal, Carlos—**OMA**
López-Quesada, Carol—JTB33
Losevsky, Nikolay—JTB34, OTuA5
Louradour, Frederic—NWC6
Love, Steven P.—**HTuC1**
Lu, Fake—NMC5
Luo, Yuan—**DTuB5**

M

Maddux, Brent—HWB1
Maddy, Eric—HTuC2, HWC5
Maejima, Kohei—**DMA2**
Magistretti, Pierre—DTuA2
Maheshwari, Sameer—NTuB6
Mahgoub, Ahmed—JTB13, **FThA5**
Maillard, Jean-Pierre—**FThA4**, **FTuA**

Makhlouf, Houssine—NWC4
Malinovskaya, Svetlana A.—**NMC2**
Mamoutkine, A. A.—FMA3
Mandella, Michael J.—NWC1,
NWC2
Mandon, Julien—FMB2
Märki, Iwan—**NMB3**
Marquet, Pierre—**DTuA2**, DTuA3
Marshak, Alexander—**HTuC5**
Marston, Philip L.—**OMB5**
Martin, Brigitte—DWD5
Martin, Guillermmo—FTuB4
Martin-Badosa, Estela—JTB33
Martinez, Christophe—**DWD5**
Matoba, Osamu—JTB2
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Advances in Imaging
OSA Optics & Photonics Congress and Tabletop Exhibit 2009
UPDATE SHEET

Withdrawals:

NMC6	JTuB34
FTuA4	JTuB35
OTuA5	HTuC6
JTuB23	DWA3
JTuB29	DWB2
JTuB30	HWD4

Substituted Papers:

The paper **HTuC6** that is in your program will not be presented. During this time slot, the following postdeadline paper will be presented in its place: **PHTuC6, Airborne Radiometer Measurements of Above Cloud Reflectance in the Presence and Absence of Aerosols**, *Odele Coddington¹, Peter Pilewski¹, Tomislava Vukicevic¹, John Livingston², Steve Platnick³, Gala Wind³, Jens Redemann⁴, Philip B. Russell⁴*; ¹Univ. of Colorado at Boulder, USA, ²SRI Intl., USA, ³NASA GSFC, USA, ⁴NASA AMES, USA.

The poster **JTuB17** will be presented during the session **HWA • Hyperspectral IR and Imager Data Analyses** (April 29, 2009, 8:30 a.m.–10:30 a.m., Junior Ballroom C) as oral presentation **HWA5**.

Presider Updates:

Nickolai V. Kukhtarev; Alabama A&M Univ., USA, will preside over session **DMB • Novel Technologies in Holography**, on Monday, April 27, 2009, 11:00 a.m. –1:00 p.m. in Grand Ballroom A.

Yoshio Hayasaki; Utsunomiya Univ., Japan, will preside over session **DWC • Computer-Generated Holograms**, on Wednesday, April 29, 2009, 2:00 p.m.–4:00 p.m. in Grand Ballroom A.

Presenter Changes:

DTuA1, Harmonic Holography will now be presented by *Chia-Lung Hsieh^{1,2}*, ¹Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland, ²Caltech, USA.

NTuA5, Linear Phase-Gradient Imaging with Asymmetric Illumination Based Differential Phase Contrast (AIDPC), will now be presented by *Colin J. R. Sheppard, Natl. Univ. of Singapore, Singapore*.

Time Changes:

HWA will end a half hour later at 10:30 a.m.

Exhibits will end at 12:30 p.m. on Wednesday, April 29, 2009.

Postdeadline Paper Programs:

Post deadline Paper Programs are available at Registration.

Special Events:

Meet the Applied Optics Editors Dinner on Tuesday, April 28, 2009, 7:00 p.m. All conference attendees, especially students, are invited to this casual networking dinner. More information is available at Registration.

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POSTDEADLINE PAPERS

ADVANCES IN IMAGING

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Fourier Transform Spectroscopy (FTS)

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•Tuesday, April 28, 2009•

Junior Ballroom C

2:00 p.m.–4:00 p.m.

HTuC • New Remote Sensing Perspectives

Anthony Baran; Met Office, UK, Presider

PHTuC6 • 3:45 p.m.

Airborne Radiometer Measurements of above Cloud Reflectance in the Presence and Absence of Aerosols, *Odele Coddington¹, Peter Pilewskie¹, Tomislava Vukicevic¹, John Livingston², Steve Platnick³, Gala Wind³, Jens Redemann⁴, Philip B. Russell⁴*; ¹Univ. of Colorado at Boulder, USA, ²SRI Intl., USA, ³NASA GSFC, USA, ⁴NASA AMES, USA. We present cloud retrieval results from SSFR measurements made in the presence and absence of aerosols and show comparisons to MODIS. A method for treating aerosol bias in retrievals as systematic model uncertainty is described.

Grand Ballroom C/D

4:30 p.m.–6:00 p.m.

JTuB • DH/FTS/HISE/NTM/OTA Joint Poster Session

PJTuB36

Automated Particle Characterization Using Holographic Video Microscopy, *Fook Chiong Cheong, David G. Grier; New York Univ., USA*. With an efficient particle identification algorithm, combine with hardware acceleration and software optimization, holographic microscopy data can be analysis in near real time with sufficient accuracy to enable unattended holographic tracking and particle characterization.

PJTuB37

Incoherent Optical Imaging Using Synthetic Aperture with Fresnel Elements, *Barak Katz, Joseph Rosen; Ben-Gurion Univ. of the Negev, Israel*. We present a new lensless incoherent holographic system operating in a synthetic aperture mode. Spatial resolution exceeding the Rayleigh limit is obtained by tiling several holographic elements into a complete Fresnel hologram of observed objects.

PJTuB38

CrIS Radiance Spectra Modeling and End-to-End Error Analysis, *Nikita Pougatchev, Gregory Cantwell, Gail Bingham; Space Dynamics Lab, Utah State Univ., USA*. We present the Cross-track Infrared Sounder (CrIS) end-to-end error model consisting of instrument model and Validation Assessment Model. Models' descriptions along with examples of application are presented.

PJTuB39

SPDM - Single Molecule Superresolution of Receptor Clusters in *E. coli* Bacteria, *Thomas Ruckelshausen¹, Paul Lemmer¹, Victor Sourjik², Christoph Cremer^{1,3,4}*; ¹Kirchhoff-Inst. for Physics, Univ. of Heidelberg, Germany, ²Ctr. for Molecular Biologie Heidelberg, Univ. of Heidelberg, Germany, ³Inst. for Pharmacy and Molecular Biotechnology, Univ. of Heidelberg, Germany, ⁴Inst. for Molecular Biophysics, The Jackson Lab, USA. In *E. coli* bacteria the chemotaxis phosphatase protein CheZ was labeled with YFP (yellow fluorescent protein). Their reversible photobleaching is used for an optical isolation in time. An average localization precision of 22nm was achieved.

•Wednesday, April 29, 2009•

Junior Ballroom C

8:30 a.m.–10:30 a.m.

HWA • Hyperspectral IR and Imager Data Analyses

Allen Huang; Univ. of Wisconsin at Madison, USA, Presider

PHWA6 • 10:15 a.m.

Investigations of Cirrus in the Far Infrared with the Tropospheric Airborne Fourier Transform

Spectrometer (TAFTS), *Caroline Cox¹, Neil Humpage¹, Paul Green¹, Juliet Pickering¹, John Harries¹, Jonathan Taylor², Anthony Baran², Alan Last¹, Jon Murray¹; ¹Imperial College London, UK, ²Met Office, UK*. An overview of the results of recent field campaigns performed with the Tropospheric Airborne Fourier Transform Spectrometer (TAFTS) to study the radiative properties of cirrus in the far infrared spectral region is presented.

Grand Ballroom C/D

11:00 a.m.–12:30 p.m.

DWB • DH Poster Session

PDWB37

Femtosecond Time-Resolved Off-Axis Digital Holography, *Tadas Balciunas, Andrius Melninkaitis, Andrius Vanagas, Valdas Sirutkaitis; Laser Res. Ctr., Vilnius Univ., Lithuania*. We present time-resolved off-axis digital holography for investigation of laser-induced plasma filaments in condensed media. An experimental setup with tilted reference pulse allows larger crossing angles to be used for recording of digital holograms.

PDWB38

A High-Definition Full-Parallax CGH Created by the Polygon-Based Method, *Kyoji Matsushima, Sumio Nakahara; Kansai Univ., Japan*. A large-scaled full-parallax CGH with 4 billion pixels is produced by a polygon-based method. The CGH reconstructs a fine 3-D image and gives a large sensation of depth owing to the silhouette-masking technique.

Key to Authors and Presiders
(**Bold** denotes Presider or Presenting Author)

B

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Baran, Anthony—**HTuC**, PHWA6
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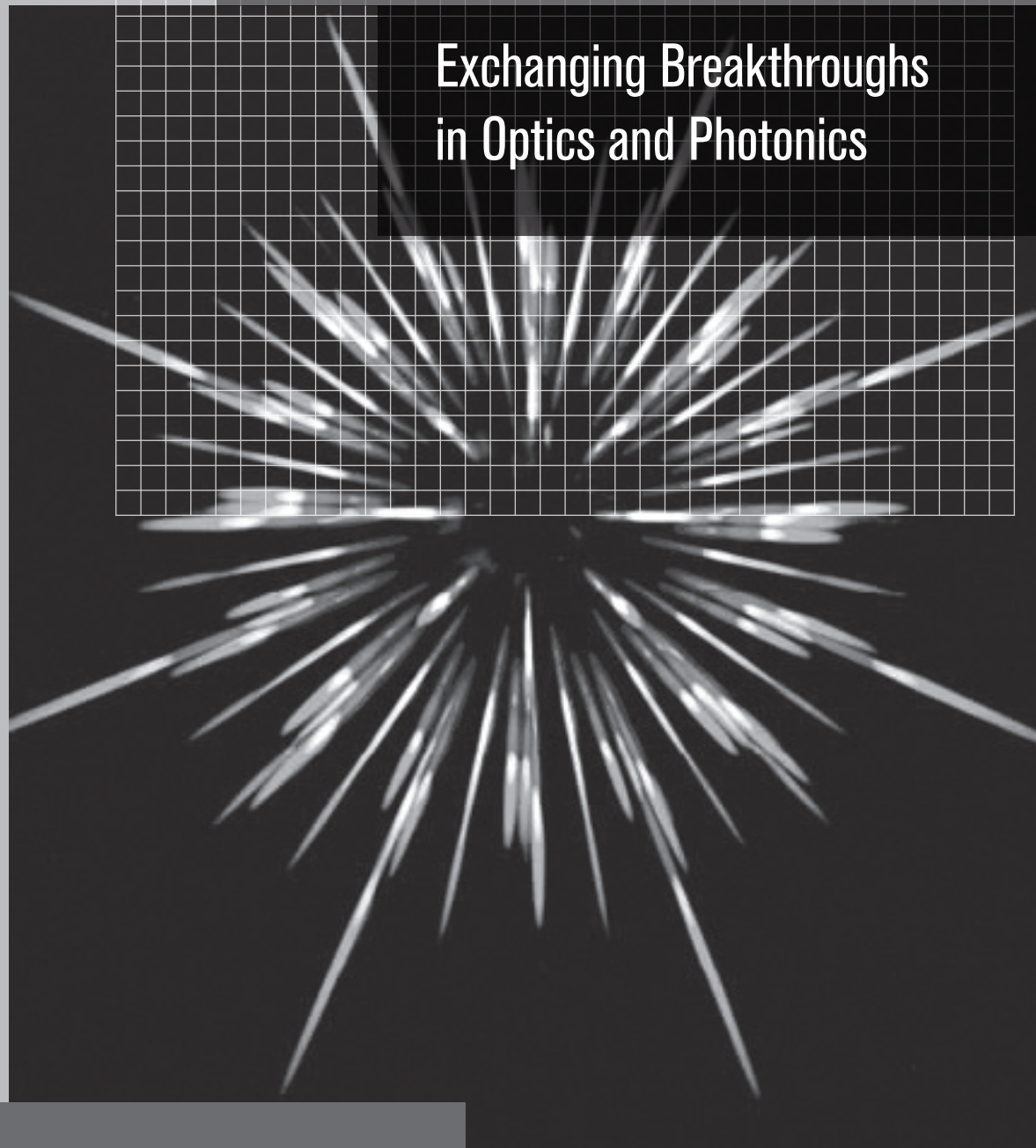
Taylor, Jonathan—PHWA6

V

Vanagas, Andrius—PDWB37
Vukicevic, Tomislava—PHTuC6
Wind, Gala—PHTuC6

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