

# VLADIMIR ZAVYALOV

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## EDUCATION

Ph.D. in Physics and Mathematics, 1994, Ural State University (one of the five highest-ranked universities in Russia). Dissertation on "Tunneling in Barrier Structures on the Base of Narrow-Gap Semiconductors HgCdTe in Quantizing Magnetic Field."

## KEY QUALIFICATIONS

- Forty-five years of experience of designing, developing and testing complex mathematical models and experimental equipment
- Worked for Fortune 500 corporations and for top applied physics laboratories in Russia
- Extensive experience with:
  - Infrared radiation technologies, measurements and simulation
  - Optical properties of atmospheric constituents and materials
  - Materials and devices for infrared sensor applications
  - Nanoelectronics and thin film technologies
- Developed mathematical models and simulation algorithms for atmosphere remote sensing, Scanning Probe Microscopy, and current transport mechanisms in semiconductor devices
- Managed research on MOSFET device development and consulted for IBM, Digital Instruments, Motorola, and Texas Instruments on the inversion algorithm for Scanning Capacitance Microscopy
- Proficient in writing scientific reports, papers, and technical documentation
- Programming Languages: Assembler, MatLab, C++
- Computer Application Software: Microsoft Office, MATLAB, Maple, LabView, Sigma Plot, Multisim 2001, Ultiboard 2001, VeryBest, simulation programs Medici and Davinci

## EXPERIENCE

**Adjunct Professor, Adjunct Associate Professor**, Department of Physics, Utah State University, Logan, Utah (11/1995-present)

- Developed an experimental setup for Secondary Electron Emission measurements in high vacuum with application to the spacecraft charging problems
- Extended existing capabilities to measure electron/ion yield under electron/ion irradiation of the insulating spacecraft materials using advanced pulse technique
- Gave seminars and advised graduate and undergraduate students

**Senior Scientist, Project Scientist**, Space Dynamic Laboratory, USURF, 1695 N. Research Parkway North Logan, UT 84341 (11/2003- 06/2017)

- Development and testing of forward models and retrieval algorithms for atmospheric remote sounding with infrared, microwave, and LIDAR instruments
- Calibration of FTS sensors on-flight and on-ground environment
- Verification and validation of the retrieval operational product from satellite and aircraft based remote sensing instruments
- Advised graduate, undergraduate and PhD students

**Senior Scientist, QA Engineer-Analyst**, Materials Research Dept., Bourns Inc.,  
Riverside, California (04/2000-05/2002)

- Managed development of new materials and technologies to support R-NET product
- Managed Product/Failure Analysis Lab
- Applied electrical and mechanical tests, optical, Scanning Electron, and Scanning Acoustic microscopy, Energy-Dispersive X-ray Spectroscopy, and x-ray radiology in performing failure analysis

**Research Associate**, Department of Physics, University of Utah,  
Salt Lake City, Utah (04/1997-04/2000)

- Managed (co-PI) Semiconductor Research Corporation sponsored projects
- Improved and optimized the Scanning Capacitance Microscopy (SCM) performance for quantitative doping profiling
- Managed the development of the SCM conversion algorithm and inverse modeling
- Developed an SCM methodology for cross-sectional quantitative analysis in the vicinity of p-n junctions. Demonstrated for the first time the SCM ability to measure carrier redistribution in an active MOSFET device

**Senior Scientific Researcher**, Institute of Physics and Mathematics, Ural State University,  
Ekaterinburg, Russia (05/1986 – 01/1995)

- Managed (PI) Defense Ministry research projects
- Investigated MOS, MS structures and p-n junctions formed using narrow gap semiconductors (InSb, HgCdTe) at liquid helium temperatures for infrared sensor applications
- Developed a mathematical model for tunneling in crossed electric and magnetic fields
- Elaborated technology for preparing nearly ideal Schottky barriers on the base of narrow gap semiconductor HgCdTe
- Investigated two-dimensional electron gas behavior in magnetic field
- Supervised undergraduate and graduate student projects

**Research Engineer**, Semiconductor Physics Laboratory, Ural State University,  
Ekaterinburg, Russia (03/1976 – 05/1986)

- Investigated optical properties of GaAlAs hetero-lasers, and of other materials for fiber-optics communications in a project supervised by Nobel Prize winner Zhores I. Alferov
- Developed thin film technologies (vapor deposition, sputtering, liquid phase epitaxy)

**Automation Engineer**, Automation Department of Chemical Technologies Plant,  
Ekaterinburg, Russia (09/1972 – 03/1976)

- Designed control systems for chemical technologies in radioactive isotopes industry

**HONORS:**

2015: **SDL/USURF**, Service Award for 10 years of dedicated service

2014: **NASA**, Group Achievement Award

2012: **SDL/USURF**, Award of Outstanding Performance

2007: **SDL/USURF**, Award of Outstanding Performance

1999: **U of U**, Jack W. Keufel Award for Outstanding Research

**MEMBERSHIPS:** American Physical Society, Materials Research Society, SPIE

**LANGUAGES:** Fluent in English and Russian

## PUBLICATIONS:

### I. Journals:

1. Vladimir Zavyalov, Mark Esplin, Deron Scott, Benjamin Esplin, Gail Bingham, Erik Hoffman, Christopher Lietzke, Joseph Predina, Rebecca Frain, Lawrence Suwinski, Yong Han, Charles Major, Brandon Graham<sup>1</sup>, Lee Phillips, Noise Performance of the CrIS Instrument, *J. Geophys. Res.*, V.118, 13, pp.108-120, **2013** [doi:10.1002/2013JD020457].
2. Yong Han, Hank Revercomb, Mike Crompt, Degui Gu, David Johnson, Dan Mooney, Deron Scott, Larrabee Strow, Gail Bingham, Lori Borg, Yong Chen, Daniel DeSlover, Mark Esplin, Denise Hagan, Xin Jin, Bob Knuteson, Howard Motteler, Joe Predina, Lawrence Suwinski, Joe Taylor, Dave Tobin, Denis Tremblay, Chunming Wang, Lihong Wang, Likun Wang, and Vladimir Zavyalov, CrIS Measurements, Sensor Data Record Algorithm, Calibration and Validation Activity Overview, and Record Data Quality, *J. Geophys. Res.* V.118, pp. 1-15, **2013** [doi:10.1002/2013JD020344]
3. **V. F. Radantsev and V. V. Zavyalov, Strong magnetic field effect on over-the-barrier transport in Hg<sub>1-x</sub>CdxTe diodes and Schottky barriers**, *Semicond. Sci. Technol.* (UK), V.28 035004, **2013** [doi:10.1088/0268-1242/28/3/035004].
4. V. V. Zavyalov, C. C. Marchant, G. E. Bingham, T. D. Wilkerson, J. L. Hatfield, R. S. Martin, P. J. Silva, K. D. Moore, J. Swasey, D. J. Ahlstrom, T. L. Jones, Aglite lidar: Calibration and retrievals of well characterized aerosols from agricultural operations using a three-wavelength elastic lidar, *J. Applied Remote Sensing*, 3(1), 033522 (**2009**) [doi: 10.1117/12.833365].
5. G. E. Bingham, C. C. Marchant, V. V. Zavyalov, D. J. Ahlstrom, K. D. Moore, D. S. Jones, T. D. Wilkerson, L. E. Hipps, R. S. Martin, J. L. Hatfield, J. H. Prueger, R. L. Pfeiffer, Lidar based emissions measurement at the whole facility scale: method and error analysis, *J. Appl. Remote Sens.* **3**(1), 033510 (**2009**) [doi: 10.1117/12.829411].
6. C. C. Marchant, T. D. Wilkerson, G. E. Bingham, V. V. Zavyalov, J. M. Andersen, C. B. Wright, S. S. Cornelsen, R. S. Martin, P. J. Silva, J. L. Hatfield, Aglite lidar: A portable elastic lidar system for investigating aerosol and wind motions at or around agricultural production facilities, *J. Appl. Remote Sens.* **3**(1), 033511 (**2009**) [doi:10.1117/12.829412].
7. V.V. Zavyalov, J.S. McMurray and C.C. Williams, Noise in Scanning Capacitance Microscopy measurements, *J. Vac. Sci. Technol.*, **B18** (3), p. 1125-1133, **2000**.
8. V.V. Zavyalov, J.S. McMurray, S.D. Stirling, C.C. Williams and H. Smith, Two dimensional dopant and carrier profiles obtained by Scanning Capacitance Microscopy on an actively biased cross-sectioned MOSFET device, *J. Vac. Sci. Technol.*, **B18**(1), p. 549-554, **2000**.
9. V.V. Zavyalov, J.S. McMurray and C.C. Williams, A Scanning Capacitance Microscope Methodology for quantitative analysis of p-n junctions, *J. Appl. Phys.*, V.85 (11), p. 7774-7783, **1999**.
10. V.V. Zavyalov, J.S. McMurray and C.C. Williams, Advances in experimental technique for quantitative two-dimensional dopant profiling by Scanning Capacitance Microscopy, *Rew. Sci. Instrum.*, V.70 (1), p. 158-164, **1999**.
11. V.V. Zavyalov, J.S. McMurray and C.C. Williams, Surface and tip characterization for quantitative two dimensional dopant profiling by Scanning Capacitance Microscopy, Characterization and Metrology for ULSI Technology: **1998** International Conference edited by D. G. Seiler et.al, *The American Institute of Physics CP449*, p.753-756.
12. V.A. Ukraintsev, R.S. List, Mi-Chang Chang, H. Edwards, C.F. Machala, R.S. Martin, V. Zavyalov, J.S. McMurray, C.C. Williams, P. De Wolf, W., Vandervorst, D. Venables, S.S. Neogi, D.L. Ottiviani, J.J. Kopanski, J.E., Marchiando, B.G. Rennex, J.N.

- Nxumalo, Y. Li and D.J. Thomson, Dopant characterization round-robin study performed on two-dimensional test structures fabricated at Texas Instruments, Characterization and Metrology for ULSI Technology: **1998** International Conference edited by D. G. Seiler et.al, *The American Institute of Physics CP449*, p.741-745.
13. V.V. Zav'yalov and V.F. Radantsev, Tunneling in Pb-p-HgCdTe Schottky barriers in longitudinal and transverse magnetic fields", *Semicond. Sci. Technol. (UK)*, V.9 (3), p. 281-288, **1994**.
  14. V.V. Zav'yalov and V.F. Radantsev, Tunnel junctions in narrow-gap HgCdTe barrier structures in a magnetic field, *Sov. Phys. JETP*, V.76 (3), p. 514-522, 1993 (Russian version: *Zh. Eksp. Teor. Fiz.*, V.103 (3), p.1045-1063, **1993**).
  15. V.V. Zav'yalov, V.F. Radantsev and T.I. Deryabina, Characteristics of the tunneling across Schottky barriers made of narrow-gap semiconductor p-type HgCdTe", *Sov. Phys. Semicond.*, V.26 (4), p. 388-394, 1992 (Russian version: *Fiz. Tech. Poluprovodn.*, V.26 (4), p. 688-699, **1992**).
  16. V.F. Radantsev, V.V. Zav'yalov and S. Khomutova, Special features of two-dimensional electron states in inversion layers of semimetallic HgCdTe having a fluctuation-induced band overlap", *Sov. Phys. Solid State*, V.32 (7), p. 1201-1204, 1990 (Russian version: *Fiz. Tverd. Tela*, V.32 (7), p. 2067-2073, **1990**).
  17. V.F. Radantsev, T.I. Deryabina, V.V. Zav'yalov, L.P. Zverev, G.I. Kulaev and S.S. Khomutova, Capacitance of surface layers in Kane semiconductors under size and magnetic quantization conditions", *Sov. Phys.Semicond.*, V.23 (2), p. 213-216, 1989, (Russian version: *Fiz. Tekn. Poluprovodn.*, V.23 (2), p. 346-351, **1989**).
  18. T.I. Deryabina, V.V. Zav'yalov and V.F. Radantsev, Effects of inclined magnetic fields on accumulation layers in degenerate InAs and semimetallic HgCdTe, *Sov. Phys. JETP*, V.65 (3), p. 602-609, 1987, (Russian version: *Zh. Eksp. Teor. Fiz.* V.92 (3), p. 1061-1073, **1987**).
  19. Vladimir V. Zavyalov, Chad S. Fish, Gail E. Bingham, Mark Esplin, Mark Greenman, Deron Scott, and Yong Han. Preflight assessment of the cross-track infrared sounder (CrIS) performance, *Proc. SPIE Europe: Atmospheric Remote sensing*, **8176**, 817606 (2011), Prague, Czech Republic, September 19-22 2011.
  20. Vladimir V. Zavyalov, Chad S. Fish, Gail E. Bingham, Mark Esplin, Mark Greenman, Deron Scott, and Tim Nielsen, The US joint polar satellite system (JPSS) Cross-track Infrared Sounder (CrIS) predicted sensor performance, calibration, and cal/val overview, *Proc. IGARSS 2011, Vancouver, Canada, July 25-29,2011*.
  21. D. Scott, G. Bingham, C. Fish, H. Latvakowski, M. Greenman, M. Esplin. V. Zavyalov, and Yong Han, Calibration and validation on-orbit plan of the NPOESS Cross-track Infrared Sounder (CrIS), *Proc. IGARSS 2011, Vancouver, Canada, July 25-29,2011*.
  22. Vladimir V. Zavyalov, Gail E. Bingham, Michael Wojcik, Jerry L. Hatfield, Thomas D. Wilkerson, Randal S. Martin, Christian Marchant, Kori Moore, and Bill Bradford, Integration of remote lidar and in-situ measured data to estimate particulate flux and emission from tillage operations, *Proc. SPIE Europe: Atmospheric Remote sensing*, V.7832, p. 78320H (2010), DOI:10.1117/12.865140. *Toulouse, France, 20-24 September, 2010*
  23. Gail E. Bingham, Chad Fish, Vladimir V. Zavyalov, Christopher D. Barnet, Dave Tobin, Larrabee Strow and Denise Hagan. 2010. The NPOESS Preparatory Project (NPP) Cross-track Infrared Scanner (CrIS) predicted sensor performance calibration and preliminary data product performance, *Proc. IGARSS, Honolulu, HI, June 24-29,2010*.
  24. Gail E. Bingham, Chad Fish, Vladimir V. Zavyalov, William J. Blackwell, Christopher D. Barnet, Dave Tobin, Larrabee Strow and Denise Hagan. 2010. End to End Testing of The NPOESS Preparatory Project (NPP) Cross-track Infrared Microwave Sounder System (CrIMSS) GRAVITE (Linux based) Cal/Val Codes, *Proc. IGARSS, Honolulu, HI, June 24-29, 2010*.

25. Vladimir V. Zavyalov, Gail E. Bingham, Michael Wojcik, Heidi Johnson, Marc Struthers Space Dynamics Laboratory, Application of principal component analysis to lidar data filtering and analysis, *Proc. SPIE Europe Atmospheric Remote sensing, V.7479*, p. 747907, (2009), Berlin, Germany, 31 August-3 September 2009 [doi: 10.1117/12.830126]
26. Gail E. Bingham, Chad Fish, Vladimir V. Zavyalov, Christopher D. Barnet, Dave Tobin, Larrabee Strow and Denise Hagan, The NPOESS Preparatory Project (NPP) Cross-track Infrared Scanner (cris) predicted sensor performance calibration and preliminary data product performance, *Proc. IGARSS, Earth Observations – Origin to Applications, MO3.09.5*, , Cape Town, South Africa, July 12-1, 2009.
27. M. D. Wojcik, G. E. Bingham, C. C. Marchant, V. V. Zavyalov, D. J. Ahlstrom, K. D. Moore, T. D. Wilkerson, L. E. Hipps, R. S. Martin, J. L. Hatfield, J. H. Prueger, Lidar Based Particulate Flux Measurements of Agricultural Field Operations, *Proc.IGARSS 2008, Boston, Massachusetts, July 2008*.
28. Bingham, G. E., Fish, C., Zavyalov, V. V., Barnet, C. D., "NPOESS Preparatory Project (NPP): Cross-track Infrared Microwave Sounder Sensors (CrIMSS) characterization and performance validation plan" in *Multispectral, Hyperspectral, and Ultraspectral Remote Sensing Technology, Techniques, and Applications II*, edited by Allen M. Larar, Mervyn J. Lynch, Makoto Suzuki, *Proc. SPIE Bellingham, WA 2008, Vol. 7149, 71490A* [doi: 10.1117/12.806491]
29. Thomas D. Wilkerson; Gail E. Bingham; Vladimir V. Zavyalov; Christian C. Marchant; Jan M. Anderson; Luke P. Andrew, AGLITE: Multiwavelength lidar for characterizing atmospheric emissions from animal feeding operations using simultaneous optical and point measurements, *Proc. SPIE Europe: Remote sensing, V.6750*, p. 67500I, (2007), Florence, Italy, 17-20 September 2007 [doi: 10.1117/12.739758]
30. Thomas D. Wilkerson, Gail E. Bingham, Vladimir V. Zavyalov, Jason A. Swasey, Jed J. Hancock, Blake G. Crowther, Scott S. Cornelsen, Christian Marchant, James N. Cutts, David C. Huish, Curtis L. Earl, Jan M. Andersen, McLain L. Cox, AGLITE: A multi-wavelength lidar for measuring emitted aerosol concentrations and fluxes and air motion from agricultural facilities, *Proc. SPIE Asia-Pacific Remote Sensing Symposium, V. 6409*, p. 64090V (2006), Goa, India, November 13-17, 2006 [ doi: 10.1117/12.702077]
31. Vladimir V. Zavyalov, Christian Marchant, Gail E. Bingham, Thomas D. Wilkerson, Jason Swasey, Christopher Rogers, Douglas Ahlstrom, and Paul Timothy, Retrieval of physical properties of particulate emission from animal feeding operations using three-wavelength elastic Lidar measurements, *Proc. SPIE Optics and Photonics, V. 6299*, p. 6299OS-1, San Diego, CA, USA, 13-17 August 2006 [doi: 10.1117/12.680967]
32. Thomas D. Wilkerson, Vladimir V. Zavyalov, Gail E. Bingham, Jason A. Swasey, Jed J. Hancock, Blake G. Crowther, Scott S. Cornelsen, Christian Marchant, James N. Cutts, David C. Huish, Curtis L. Earl, Jan M. Andersen, and McLain L. Cox, AGLITE: a multiwavelength lidar for aerosol size distributions, flux, and concentrations, Proc. SPIE Laser Lidar Technology and Applications XI, 6214, 62140J (2006) [doi: 10.1117/12.666219]
33. Zavyalov V. V, G. E. Bingham, M. Smith, C. Going, D. K. Zhou, N. S. Pougatchev, and D. W. Sorenson., "Initial retrievals inter-comparison of the satellite AIRS/AMSU and aircraft NAST-I/NASt-M soundings using the same retrieval algorithm', *Proc. SPIE Optics and Photonics, 13-17 August 2006, San Diego, CA, USA*.
34. Nikita Pougatchev, Gail Bingham, Joel Cardon, Karen St. Germain, Stephen Mango, Joe Tansock, Vladimir Zavyalov, Stanislav Kireev, and David Tobin, Validation assessment model for atmospheric retrievals, *Proc. SPIE: Optics and Photonics, V. 6301*, p. 63010M-1, 13-17 August 2006, San Diego, CA, USA [doi: 10.1117/12.679651]
35. V. V. Zavyalov, G. E. Bingham, T. D. Wilkerson, J. Swasey, C. Marchant, R. Martin, P. Silva, and V. Doshi, Characterization of particulate emission from animal feeding operations

with three-wavelength Lidar using simultaneous in-situ point measurements as calibration reference sources, *Proceedings of Workshop on Agricultural Air Quality: State of Science, Potomac, MD, USA, June 5-8, p. 1263-1273, 2006.*

36. G. E. Bingham, J. Hatfield, J. H. Prueger, T. D. Wilkerson, V. V. Zavyalov, R. L. Pfeiffer, L. Hipps, R. Martin, P. Silva, W. Eichinger, An Integrated Approach to Measuring Emissions from Confined Animal Feeding Operations at the Whole Facility Scale, *Proceedings of Workshop on Agricultural Air Quality: State of Science, Potomac, MD, USA, June 5-8, p.88-89, 2006.*
37. L. Hipps, J. H. Prueger, J. Hatfield, G. E. Bingham, W. Eichinger, T. D. Wilkerson, V. V. Zavyalov, R. Martin, P. Silva, Integrating Lidar and Atmospheric Boundary Layer Measurements to Determine Fluxes and Dynamics of Particulate Emissions from an Agriculture Facility, *Proceedings of Workshop on Agricultural Air Quality: State of Science, Potomac, MD, USA, June 5-8, p. 752-755, 2006.*
38. T. D. Wilkerson, G. E. Bingham, V. V. Zavyalov, J. Swasey, J.J. Hancock, B.G. Crowther, S.S. Cornelsen, C. Marchant, J.N. Cutts, D.C. Huish, C.L. Earl, J.M. Andersen, and M.L. Cox, AGLITE: A Multiwavelength Lidar for Aerosols, *Proceedings of Workshop on Agricultural Air Quality: State of Science, Potomac, MD, USA, June 5-8, p. 1238-1244, 2006.*
39. V. V. Zavyalov, G. E. Bingham, D. K. Zhou, C. Going, M. Smith, and J. Morris, Study of cloud-clearing error versus footprint size using aircraft NAST-I infrared sounder observations, 2005, *WSEAS Transactions on Systems, V. 4, issue 12, pp. 2437-2442, 2005 WSEAS International Conference on Remote Sensing, Venice, Italy, November 2-4.*
40. G. E. Bingham, T. D. Wilkerson, V. Zavyalov, S. S. Connelsen, J. Swasey, J. Haddock, AGLITE: a portable Lidar for Agriculture production practice optimization, *Proceedings of the 31<sup>st</sup> International Symposium on Remote Sensing and Environment, Saint Petersburg, Russia, June 20-24, 2005.*
41. C.D. Thomson, V. Zavyalov, and J.R. Dennison, Instrumentation for Studies of Electron Emission and Charging from Insulators, *Proceedings of the 8<sup>th</sup> Spacecraft Charging Technology Conference, NASA Marshall Space Flight Center, Huntsville, Al, October 2003, 15 pp.*
42. J.R. Dennison, C.D. Thomson, J. Kite, V. Zavyalov and, Jodie Corbridge, Materials Characterization at Utah State University: Facilities and Knowledgebase of Electronic Properties of Materials Applicable to Spacecraft Charging, *Proceedings of the 8th Spacecraft Charging Technology Conference, NASA Marshall Space Flight Center, Huntsville, Al, October 2003, 15 pp.*
43. C.D. Thomson, V. Zavyalov, J.R. Dennison and Jodie Corbridge, Electron Emission Properties of Insulator Materials Pertinent to the International Space Station, *Proceedings of the 8th Spacecraft Charging Technology Conference, NASA Marshall Space Flight Center, Huntsville, Al, October 2003, 14 pp. Honorable Mentioned: Student Paper Competition.*

## **II. Presentations.**

1. Mark Esplin, Vladimir Zavyalov, Deron Scott, Mark Greenman, Ben Esplin, Brandon Graham, Kevin Grant, Charles Major and Lee Phillips, JPSS Crosstrack Infrared Sounder (CrIS) On-Orbit Validation, *AMS Annual Meeting, Austin, TX, January 8, 2013.*
2. Vladimir Zavyalov, Mark Esplin, Deron Scott, Ben Esplin, Gail Bingham, Brandon Graham, Charles Major, Lee Phillips, and Yong Han, Continuity of prelaunch and on-orbit calibration of the Cross-track Infrared Sounder (CrIS) sensor system, EUMETSAT Meteorological satellite conference, Vienna, Austria, 6-20 September, 2013
3. Vladimir Zavyalov, Noise Performance of the CrIS Instrument On-orbit, SUOMI NPP SDR

- Science and Validated Product Maturity Review, NOAA Center for Weather and Climate Prediction, December 18-20, 2013
4. Vladimir Zavyalov, Mark Esplin, Mark Greenman, Deron Scott, Brandon Graham, Charles Major, and Yong Han, Cross-track infrared sounder (CRIS) instrument in-flight performance, CALCON Technical Conference, Logan, Utah, 27-30 August, 2012
  5. Mark Esplin, Kevin Grant, Vladimir Zavyalov and Deron Scott, CrIS Sensor Temperature Effects on CrIS Radiometric Performance, CALCON Technical Conference, Logan, Utah, 27-30 August, 2012
  6. Vladimir Zavyalov, Mark Esplin, Mark Greenman, Deron Scott, Brandon Graham, Charles Major, and Yong Han, Cross-track infrared sounder (CRIS) instrument in-flight performance, EUMETSAT Meteorological satellite conference, Sopot, Poland, 3-7 September, 2012
  7. Vladimir Zavyalov, Mark Esplin, Mark Greenman, Deron Scott, Ben Esplin, Brandon Graham, Charles Major, and Kevin Grant, CrIS on NPP: Instrument status and first glance on the instrument in-flight performance, ITSC-18 Work shop, Toulouse, France, March 21-27, 2012.
  8. Mark Esplin, L. L. Strow, G. Bingham, V. Zavyalov, D. K. Scott, and C. Fish, CrIS NPP Full Spectral Resolution Test, 92 Annual AMS meeting, New Orleans, USA, January 22-26, 2012
  9. Deron K. Scott, G. Bingham, C. Fish, M. Esplin, M. Greenman, V. Zavyalov, and Y. Han, JPSS Crosstrack Infrared Sounder (CrIS) Calibration and Validation, 92 Annual AMS meeting, New Orleans, USA, January 22-26, 2012
  10. Vladimir Zavyalov, Chad Fish, Gail Bingham, Mark Esplin, Mark Greenman, Deron Scott, Tim Holmes, Charles Major, and Kevin Grant, Preflight characterization of the Cross-track Infrared Sounder (CrIS), *2011 CALCON Technical Conference, Logan, Utah, 29-31 August, 2011*
  11. Mark Esplin, Gail Bingham, Vladimir Zavyalov, Deron Scott, and Chad Fish, CrIS full spectral resolution test results, *2011 CALCON Technical Conference, Logan, Utah, 29-31 August, 2011*
  12. Vladimir Zavyalov, Deron Scot, Harri Latvakoski, Mark Greenman, Mark Esplin, IASI based CrIS proxy RDR, *NASA Sounder Science Team Meeting, Greenbelt, Maryland, July 5-8, 2011.*
  13. G. E. Bingham, C. Fish, N. S. Pougatchev, V. Zavyalov, M. Esplin, Deron Scott, NPP CrIS Sensor Performance Review and Cal/Val Plan Overview, 91 AMS annual meeting, January 23-27, 2011
  14. Mark Esplin, Kevin Grant, Vladimir Zavyalov, and Chad Fish, CrIS Internal Target Emissivity Check from Day in the Life Test Data, *NASA Sounder Science Team Meeting, November 3 – 5, 2010 Greenbelt, Maryland.*
  15. Chad S. Fish, G.E. Bingham, M. Esplin, V. Zavyalov, M. Greenman, and T. Nielsen, NPP CrIS Sensor Performance and Cal/Val Plan Overview, *A-Train Symposium, New Orleans, LA, October 25-28, 2010.*
  16. Mark Esplin, Daniel Mooney, Vladimir Zavyalov, and Chad Fish, CrIS Day in the Life Test Results, *2010 CALCON Technical Conference, Logan, Utah, 23-26 August, 2010.*
  17. Kori Moore, Dr. Michael Wojcik, Dr. Randal Martin, Christian Marchant, Derek Jones, Dr. Jerry Hatfield, Dr. Richard Pfeiffer, Dr. John Prueger, William Bradford, Dr. Vladimir Zavyalov, Doug Ahlstrom, Tanner Jones, Dr. Philip Silva, Dr. Gail Bingham, Particulate Emissions from Fall Tillage Operations as Determined via Inverse Modeling and Lidar Mass Balance Techniques, *ASABE 2010 Annual International Meeting, Pittsburg, Pennsylvania, June 20-23, 2010.*
  18. Vladimir Zavyalov, Mark Esplin, Gail Bingham, Chad Fish, Greg Cantwell, BJ Randall, Marc Struthers, and Xu Liu, Using IASI radiances to generate proxy data set to test CrIS SDR algorithm, *ITSC-17 Conference, Monterey, CA, USA 14-20 April 2010.*

19. G.E. Bingham, N. Pougatchev, V. Zavyalov, M. Esplin, W.J. Blackwell and C.D. Barnet 2010. The NPOESS Cross-Track Infrared Sounder (CrIS) and Advanced Technology Microwave Sounder (ATMS) as a Companion to the New Generation AIRS/AMSU and IASI/AMSU Sounder Suites, *AMS Annual Meeting, Atlanta, GA, January 18-24, 2010*.
20. G. E. Bingham, Chad Fish, N. S. Pougatchev, V. Zavyalov, M. Esplin, W. J. Blackwell, C.D. Barnet, The NPOESS Crosstrack Infrared Sounder (CrIS) and Advanced Technology Microwave Sounder (ATMS) as a Companion to the New Generation AIRS/AMSU and IASI/AMSU Sounder Suites, *2009 AGU Fall Meeting, 14-18 December, San Francisco, CA, USA*.
21. D. E. Hagan; G. E. Bingham; J. Predina; D. Gu; F. Sabet-Peyman; C. Wang; G. De Amici; M. Plonski; S. V. Farrow; J. Hohn; M. Esplin; V. Zavyalov; C. S. Fish; R. Glumb; S. Wells; L. Suwinski; J. Strong; C. Behrens; H. Kilcoyne; J. Feeley; G. Kratz; D. A. Tremblay, Cross-Track Infrared Sounder Science Data Record Pre-Launch Calibration and On-Orbit Validation Plans, *2009 AGU Fall Meeting, 14-18 December, San Francisco, CA, USA*.
22. Vladimir Zavyalov, Nikita Pougatchev, Mark Esplin, Gail Bingham, Chad Fish, B.J. Randall, Marc Struthers, Lynn Chidester, William Blackwell, and Xu Liu, Developing Proxy Platinum Day Data Set, *SOAT Meeting CrIS/ATMS Cal/Val Team, SDL, Logan, Utah USA, 9-11 September 2009*.
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