The 2018 29th IEEE International Symposium on Space Terahertz Technology

Pasadena, California, USA

March 26-28, 2018

Web: isstt2018.com

- Terahertz systems and instrumentation
- Applications of receiver and detector systems
- Heterodyne & direct detectors (SIS, HEB, TES, KID, novel devices)
- Sources and local oscillator systems
- Low noise amplifiers
- Backend signal processors for receiver systems
- Optical design and components
- Measurement techniques
- Laboratory astrophysics

Program and Abstract Book

ISSTT CALIFORNIA US 2018

IEEE

IRMMW-THz

International Society of Infrared, Millimeter, and Terahertz Waves: IRMMW-THz

"Promoting the worldwide collection, dissemination, and exchange of scientific and technical knowledge in the areas and disciplines involving infrared, millimeter and terahertz waves"

ISSTT 2018 in Pasadena, California

(group photo)

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www.jpl.nasa.gov/

Welcome

Dear colleagues,

It was our pleasure to host the 2018 29th IEEE International Symposium on Space Terahertz Technology (ISSTT2018) held on March 26-28, 2018 on the grounds of California Institute of Technology in Pasadena, California, USA. We thanks all the participants for their contributions.

Committees

The **Local Organizing Committee (LOC)** was responsible for the planning and organizing activities. It consisted of the following JPL scientists and engineers:

Daniel Cunnane

Cecile Jung-Kubiak

Boris Karasik (Chair)

Corinne Karpinski

Jonathan Kawamura

Imran Mehdi

Peter Siegel

Jose Siles

The ISSTT2018 website is at www.isstt2018.com and will remain operaitonal until October 2019.

The **Scientific Organizing Committee (SOC)** was responsible for reviewing the abstracts and making recommendations on acceptance and format of presentation for each abstract. This Committee also decided on the place and dates for the next ISSTT2019.

The SOC members were:

Andrey Baryshev	University of Groningen, the Netherlands
Victor Belitsky	Chalmers University of Technology, Sweden
Brian Ellison	Rutherford Appleton Laboratory, United Kingdom
Jian-Rong Gao	SRON, the Netherlands
Gregory Goltsman	MSPU, Russia
Christopher Groppi	Arizona State University, USA
Jeffrey Hessler	Virginia Diodes Inc., USA
Heinz-Wilhelm Hübers	DLR, Germany
Boris Karasik	Jet Propulsion Laboratory, USA
Valery Koshelets	IRE RAS, Russia
Alain Maestrini	Paris Observatory, France
Hiroshi Matsuo	NAOJ, Japan
Imran Mehdi	Jet Propulsion Laboratory, USA
Patricio Mena	University of Chile, Chile
Omid Noroozian	NRAO, USA
Patrick Pütz	University of Cologne, Germany
Christophe Risacher	MPIfR Bonn, Germany
Karl Schuster	IRAM, France
Sheng-Cai Shi	Purple Mountain Observatory, China
Edaward Tong	Smithsonian Astrophysics Observatory, USA
Christopher Walker	University of Arizona, USA
Ghassan Yassin	University of Oxford, United Kingdom

2018 29th IEEE International Symposium on Space Terahertz Technology (ISSTT 2018)

March 26-28, 2018, Pasadena, California, USA

Symposium Schedule

For ISSTT 2018, **109** abstracts have been accepted, **6** of which were Invited presentations, **44** contributed Oral personations, and **59** contributed Poster presentations. The review process was carried out by SOC members with each abstract been reviewed by at least two reviewers and by an LOC member. The conference schedule (see below) consisted of **5** Invited Sessions, **11** Oral Sessions and **1** Poster Session.

SYMPOSIUM SCHEDULE

Time	Sunday, March 25	Time	Monday, March 26		Time	Tuesday, March 27		Time	Wednesday, March 28		Thursday, March 29
		8:00 AM 8:30 AM	Registration	60	8:30 AM	Registration	30	8:30 AM	Registration	30	
		9:00 AM	Welcome	20	9:00 AM	Session T1 (1 talk)	30	9:00 AM	Session W1 (1 talk)	30	Tour to JPL 9:30 am - noon
		9:20 AM	Session M1 (4 talks)	80	9:30 AM	Session T2 (4 talks)	80	9:30 AM	Session W2 (4 talks)	80	
		10:40 AM	Coffe Break	30	10:50 AM	Coffe Break	30	10:50 AM	Coffe Break	30	
		11:10 AM	Session M2 (4 talks)	80	11:20 AM	Session T3 (4 talks)	80	11:20 AM	Session W3 (4 talks)	80	
		12:30 PM	Lunch Break SOC meeting	90	12:40 PM	Lunch Break	80	12:40 PM	Lunch Break	80	
		2:00 PM	Session M3 (1 talk)	30	2:00 PM	Session T4 (2 talks)	60	2:00 PM	Session W4 (1 talk)	30	
		2:30 PM	Session M4 (5 talks)	100	3:00 PM	Session T5 (2 talks)	40	2:30 PM	Session W5 (5 talks)	100	
		4:10 PM	Coffe Break	30	3:40 PM	Poster session		4:10 PM	Coffe Break	30	
		4:40 PM	Session M5 (4 talks)	80		Coffe Break	110	4:40 PM	Session W6 (4 talks)	80	
		6:00 PM			5:30 PM	Poster session Break	30				
5:30 PM	Welcome Reception and Registration 5:30 pm - 8:30 pm				6:00 PM	Reception & Banquet 6:00 pm - 9:00 pm		6:00 PM 6:10 PM	Wrap-up and farewell	10	
8:30 PM					9:00 PM						
Duration (min.)	150			600			570			580	

March 26, 2018 (Monday)

9:00 am Welcome Note

9:10 am ISSTT2018 Intro & Info

Session M1: **Sources and Local Oscillator Systems I**

Chair: *Jian-Rong Gao*

9:20 am **M1.1.** Ali Khalatpour [1], Qing Hu [1], and John L. Reno [2], *[1]Massachusetts Institute of Technology (MIT), Cambridge, Massachusetts 02139, USA; [2]Center for Integrated Nanotechnology, Sandia National Laboratories, Albuquerque, New Mexico 87123, USA.*
"4.7 THz local oscillator for GUSTO."

9:40 am **M1.2.** Heinz-Wilhelm Hübers [1,2], Till Hagelschuer [1], Heiko Richter [1], Martin Wienold [1], Lutz Schrottke [3], Xiang Lü [3], Benjamin Röben [3], Klaus Biermann [3], Holger T. Grahn [3], *[1]German Aerospace Center (DLR), Institute of Optical Sensor Systems, Rutherfordstr. 2, 12489 Berlin, Germany; [2] Humboldt-Universität zu Berlin, Department of Physics, Newtonstr. 15, 12489 Berlin, Germany; [3] Paul-Drude-Institut für Festkörperelektronik, Leibniz-Institut im Forschungsverbund Berlin e. V., Hausvogteiplatz 5−7, 10117 Berlin, Germany.*
"Compact and efficient 4.7-THz local oscillator with a GaAs/AlAs quantum-cascade laser."

10:00 am **M1.3.** Mark B. Taylor, Lorene A. Samoska, Jose E. Velazco, Robert H. Lin, Andy Fung, Alejandro Peralta, *Jet Propulsion Laboratory, California Institute of Technology, 4800 Oak Grove Dr., Pasadena, CA 91109, USA.*
"Spatial Power Combining Amplifier (SPCA) for W-Band Radar in Earth and Planetary Science."

10:20 am **M1.4.** Behnam. Mirzaei [1], J. R. G. Silva [2], D. Hayton [3], W. Laauwen [2], Y. Gan [2,4], Q. Hu [5], A. Khalatpour [5], C. Groppi [6], and J. R. Gao [1,2], *[1] Kavli Institute of NanoScience, Delft University of Technology, Delft, the Netherlands; [2] SRON Netherlands Institute for Space Research, Groningen/Utrecht, the Netherlands; [3] Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA; [4] Kapteyn Astronomical Institute, University of Groningen, 9747 AD, Groningen, The Netherlands; [5] Massachusetts Institute of Technology (MIT), Cambridge, Massachusetts 02139, USA; [6] School of Earth and Space Exploration, Arizona State University, AZ, USA*
"Prototype 4.7 THz array local oscillator for GUSTO."

10:40 am Coffee Break

Session M2: **SMM and THz Receivers**

Chair: *Heinz-Wilhelm Hübers*

11:10 am **M2.1.** Alain Maestrini [1], L. Gatilova [1,2], J. Treuttel [1], Y. Jin [2], A. Cavanna [2], D. Moro-Melgar [1], T. Vacelet [1], A. Féret [1], S. Caroopen [1], G. Gay [1], F. Dauplay [1], J-M. Krieg [1], P. De Maagt [3], C. Goldstein [4], *[1] LERMA, Observatoire de Paris, PSL Research University, CNRS, UMR*

8112, Sorbonne Universités, UPMC Univ. Paris 06, F-75014 Paris, France; [2] C2N-Marcoussis, Route de Nozay, F-91460 Marcoussis, France; [3] ESA-ESTEC, Keplerlaan 1, PO Box 299, NL-2200 AG Noordwijk, The Netherlands; [4] Centre National d'Etudes Spatiales, 18 avenue Edouard Belin, F-31401 Toulouse cedex 9, France.
"1080-1280GHz Schottky Receiver for JUICE-SWI with 1600-2600K DSB Receiver Noise Temperature."

11:30 am **M2.2.** Sascha Krause, D. Meledin, V. Desmaris and V. Belitsky, *Group for Advanced Receiver Development, Onsala Space Observatory Division, Department of Space, Earth and Environment, Chalmers University of Technology, Gothenburg, 41296, Sweden.*
"Noise performance of a balanced waveguide NbN HEB mixer utilizing a GaN buffer-layer at 1.3 THz."

11:50 am **M2.3.** Wei Miao [1,2], H. Gao [1,2], Z. Lou [1,2], J. Hu [1,2], W. Zhang [1,2], Y. Ren [1,2], K.M. Zhou [1,2], S.C. Shi [1,2], H.Li [3], J.C. Cao [3], and Y. Delorme [4], *[1] Purple Mountain Observatory, CAS, Nanjing, 210008, China; [2] Key Lab of Radio Astronomy, CAS, Nanjing, 210008, China; [3] Shanghai Institute of Microsystem and Information, CAS, Shanghai, 200050, China; [4] Observatoire de Paris, Paris, 75014, France.*
"A fully integrated heterodyne receiver based on a hot electron bolometer mixer and a quantum cascade laser."

12:10 pm **M2.4.** Theodore Reck, Cecile Jung-Kubiak, Maria Alonso-delPino, Goutam Chattopadhyay, *Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA.*
"A MEMS-based, Dicke-switched radiometer at 560GHz."

12:30 pm Lunch Break & SOC/LOC Meeting

Session M3: **Invited I**
Chair: *Ghassan Yassin*

2:00 pm **M3.1**. Satoshi Ochiai, *National Institute of Information and Communications Technology, Koganei, Tokyo 184-8795, Japan.*
"Results of SMILES and the plan of follow-on THz mission, SMILES-2."

Session M4: **Direct Detectors and Instruments**
Chair: *Peter Day*

2:30 pm **M4.1**. Pierre Echternach, B.J. Pepper, T. Reck, and C.M. Bradford, *Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA.*
"Single Photon Detection of 1.5THz Radiation with the Quantum Capacitance Detector."

2:50 pm **M4.2**. Omid Noroozian [1,2,3], E. M. Barrentine [2], Jochem J.A. Baselmans [4], A. D. Brown [2], M. Cyberey [3], L. A. Hess [2], A. W. Lichtenberger [3], T. R. Stevenson [2], E. J. Wollack [2], S. H. Moseley [2], *[1] National Radio Astronomy Observatory, Charlottesville, VA 22903, USA; [2] NASA Goddard Space Flight Center, Greenbelt, MD 20771, USA; [3] University of Virginia, Charlottesville, VA 22903, USA; 4 Netherlands Institute for Space Research (SRON), Utrecht, Netherlands.*
"Enabling Technologies for Photon-Counting Spectroscopy with the Origins Space Telescope (OST) in the Mid/Far-Infrared Region."

3:10 pm **M4.3.** Matt Bradford on behalf of the SuperSpec team and the STARFIRE development team, *Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA; California Institute of Technology, Pasadena, CA 91125, USA.*
"JPL / Caltech KID Development for Far-IR / mm-Wave Spectroscopy."

3:30 pm **M4.4.** Eduard F.C. Driessen on behalf of the NIKA2 collaboration, *Institut de Radioastronomie Millimétrique (IRAM), 300 rue de la Piscine Domaine Universitaire St Martin d'Heres 38406, France.*
"The NIKA2 instrument at the IRAM 30m-telescope: state-of-the-art KID performance in the mm range."

3:50 pm **M4.5.** Hiroshi Matsuo [1], Hajime Ezawa [1], Hitoshi Kiuchi [1], Mareki Honma [1], Yasuhiro Murata [2], *[1] National Astronomical Observatory of Japan, Mitaka, Tokyo 181-8588, Japan; [2] Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Sagamihara, Kanagawa 252-5210, Japan.*
"Prospects of Terahertz Intensity Interferometry."

4:10 pm Coffee Break

Session M5: **Optical Design, Systems, and Components I**
Chair: *Maria Alonso-delPino*

4:40 pm **M5.1.** Irmantas Kašalynas [1], Heiko Richter [2], Simonas Indrišiūnas [1], Ignas Grigelionis [1], Linas Minkevičius [1], Gediminas Račiukaitis [1], Heinz-Wilhelm Hübers [2], *[1] Center for Physical Sciences and Technology, Saulėtekio Ave. 3, LT-10257 Vilnius, Lithuania; [2] German Aerospace Center (DLR), Institute of Optical Sensor Systems, Rutherfordstr. 2, 12489 Berlin, Germany.*
"Development of diffractive optics for 4.7 THz frequency."

5:00 pm **M5.2.** T. Matsumura [1], S. Hanany [2], H. Imada [4], H. Ishino [4], N. Katayama [1], Y. Kobayashi [5], K. Komatsu [4], K. Konishi [6,7], M. Kuwata-Gonokami [6], S. Nakamura [8], H. Sakurai [6], Y. Sakurai [1], R. Takaku [8] , S. Utsunomiya [1], Q. Wen [2], K. Young [2], J. Yumoto [6,7], *[1] Kavli Institute for The Physics and Mathematics of The Universe (WPI), The University of Tokyo, Kashiwa, 277- 8583, Japan; [2] University of Minnesota, Twin Cities, Minneapolis, 55455, USA; [3] Institute of Space and Astronautical Science (ISAS), Japan Aerospace Exploration Agency (JAXA), Sagami-hara, Kanagawa,252-5210, Japan; [4] Okayama University, Okayama, 700-0082, Japan; [5] The Institute for Solid State Physics, The University of Tokyo, Kashiwa, 277-8583, Japan; [6] Institute for Photon Science and Technology, The University of Tokyo, Tokyo, 113-8654, Japan; [7] Department of Physics, The University of Tokyo, Tokyo, 113-8654, Japan; [8] Yokohama National University, Yokohama, 240-8501, Japan.*
"Development of the broadband anti-reflection coating on sapphire using a sub-wavelength structure for a CMB polarization experiment."

5:20 pm **M5.3.** H. Imada [1], T. Matsumura [2], R. Takaku [3], G. Patanchon [4], H. Ishino [5], Y. Sakurai [2], K. Komatsu [5], N. Katayama 2, *[1] Institute of Space and Astronautical Science (ISAS), Japan Aerospace Exploration Agency (JAXA), Sagamihara, Kanagawa, 252-5210, Japan; [2] Kavli Institute for the Physics and Mathematics of the Universe, The University of Tokyo, Kashiwa, Japan; [3] Yokohama National University, Yokohama, Kanagawa, Japan; [4] Paris Diderot University, Paris, France; [5] Okayama University, Okayama, Okayama, Japan.*
"Instrumentally induced spurious polarization of a multi-layer half wave plate for a CMB polarization observation."

5:40 pm **M5.4.** Mikko Kotiranta [1], Axel Murk [1], Karl Jacob [1], Hyunjoo Kim [1], Paul Hartogh [2], *[1] University of Bern, Bern, 3012, Switzerland; [2] Max Planck Institute for Solar System Research, Göttingen, 37077, Germany.*
"Optical Design of the Submillimeter Wave Instrument on JUICE."

March 27, 2018 (Tuesday)

Session T1: **Invited II**
Chair: *Matt Bradford*

9:00 am **T1.1.** Dariusz C. Lis, *LERMA, Observatoire de Paris, PSL Research University, CNRS, Sorbonne Universités, UPMC Univ. Paris 06, F-75014, Paris, France.*
"Future prospects for the high-resolution space far- infrared spectroscopy."

Session T2: **SMM Instruments**
Chair: *Victor Belitsky*

9:30 am **T2.1.** Raquel R. Monje, Ken B. Cooper, Robert J. Dengler, Corey J. Cochrane, Stephen L. Durden, Adrian Tang, and Mathieu Choukroun, *Jet Propulsion Laboratory, California Institute of Technology, 4800 Oak Grove Dr., Pasadena, CA 91109, USA.*
"A 95 GHz FMCW thermal-noise-limited radar: sensitivity and range-Doppler measurements."

9:50 am **T2.2.** Deacon J. Nemchick [1], Brian J. Drouin [1], Adrian J. Tang [2], Yanghyo Kim [2], Gabriel Virbila [3], and Mau-Chung Frank Chang [3], *[1] Laboratory Studies and Atmospheric Observation, Jet Propulsion Laboratory, Pasadena, CA 91109, USA; [2] Submillimeter Wave Advanced Technology, Jet Propulsion Laboratory, Pasadena, CA 91109, USA; [3] Department of Electrical Engineering, University of California at Los Angeles, Los Angeles, CA 90025 USA.*
"A CMOS-Based 90 – 105 GHz Pulsed-Echo Spectrometer: New Approaches for Highly-Mobile and Low-Power in situ Chemical Detections."

10:10 am **T2.3.** Richard J. Roy, Ken Cooper, Matthew Lebsock, Jose V. Siles, Luis Millán, Raquel Rodriguez Monje, Robert Dengler, *Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA.*
"Differential absorption radar near the 183 GHz water absorption line for inside-cloud humidity profiling."

10:30 am **T2.4.** Eric W. Bryerton and Jeffrey L. Hesler, *Virginia Diodes, Inc., Charlottesville, VA 22902, USA.*
"An Integrated G-Band 4-Channel Direct Detection Radiometer for the TROPICS Mission."

10:50 pm Coffee Break

Session T3: **Superconducting Heterodyne Detectors I**
Chair: *Gregory Goltsman*

11:20 am **T3.1.** Daniel Cunnane [1], Narendra Acharya [2], Wenura K. Withanage [2], Xiaoxing Xi [2], Jonathan Kawamura [1], and Boris S. Karasik [1], *[1] Jet Propulsion Laboratory, Pasadena, CA 91109, USA; [2] Temple University, Philadelphia, PA 19122, USA.*
"MgB_2 Hot Electron Bolometers for Array Receivers."

11:40 am **T3.2.** Sergey Cherednichenko, Evgenii Novoselov, Usman Ul-Haq, Narendra Acharya, *Terahertz and Millimetre Wave Laboratory, Department of Microtechnology and Nanoscience, Chalmers University of Technology, SE-412 96 Gothenburg, Sweden.*
"Prospects with low noise and wide bandwidth MgB_2 HEB THz mixers."

12:00 pm **T3.3.** Sheng-Cai Shi [1,2], Jing Li [1,2], Wen Zhang [1,2], Wei Miao [1,2], Zhen-Hui Lin [1,2,3], Jin-Ping Yang [1,2], Dong Liu [1,2], Wen-Ying Duan [1,2], Zheng Wang [1,2], Zheng Lou [1,2], Qing Shi [1,2,4], Zhi Li [1,2,4], Kang-Ming Zhou [1,2], Ming Yao [1,2,3], Jie Hu [1,2,3], Yun Ren [1,2], and Qi-Jun Yao [1,2], *[1] Purple Mountain Observatory, Chinese Academy of Sciences, Nanjing, China; [2] Key Laboratory of Radio Astronomy, Chinese Academy of Sciences, Nanjing, China; [3] University of Chinese Academy of Sciences, Beijing 100049, China; [4] University of Science and Technology of China, Hefei 230026, China.*
"Development of THz Superconducting Mixers and Detectors for DATE5."

12:20 pm **T3.4.** J. R. G. Silva [1,2], D. Hayton [1,2], B. Mirzaei [4], W. Laauwen [1], Y. Gan [1,2], A. Young [5], C. Kulesa [5], C. Walker [5], J. R. Gao [1,4], *[1] SRON Netherlands Institute for Space Research, Groningen/Utrecht, The Netherlands;[2] Kapteyn Astronomical Institute, University of Groningen, 9747 AD, Groningen, The Netherlands; [3] Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA;[4] Kavli Institute of NanoScience, Delft University of Technology, Delft, The Netherlands;[5] Steward Observatory, 933 N Cherry Ave., Rm N204, University of Arizona, Tucson, AZ 85721, USA.*
"Preliminary design study of a 4×2 HEB array at 4.7 THz for GUSTO."

12:40 pm Lunch Break

Session T4: **Invited III**
Chair: *Imran Mehdi*

2:00 pm **T4.1.** Paul F. Goldsmith, *Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA.*
"The Renaissance of Submillimeter Astronomical Spectroscopy."

2:30 pm **T4.2.** Paul Hartogh and the SWI team, *Max Planck Institute for Solar System Research, Göttingen, 37077, Germany.*
"The Submillimeter Wave Instrument on JUICE."

Session T5: **LNAs and Backends**
Chair: *Omid Noroozian*

3:00 pm **T5.1.** Peter Day, Byeong Ho Eom, Henry G. Leduc, *Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA.*
"Traveling-wave Superconducting Parametric Amplifiers."

3:20 pm **T5.2.** Yanghyo Kim [1,2], Yan Zhang [2], Adrian Tang [1,2], Theodore Reck [1], and Mau-Chung Frank Chang [2], *[1] Jet Propulsion Laboratory, Pasadena, CA 91109, USA; [2] University of California, Los Angeles, Los Angeles, CA 90095, USA.*
"A 1.5 W 3 GHz Back-End Processor in 65-nm CMOS for Sub-millimeter-wave Heterodyne Receiver Arrays."

3:40 pm

Poster Session

Chairs: *Daniel Cunnane and Andrey Khudchenko*

(Coffee will be available during the Session)

PA1. Olivier Auriacombe [1], M. Henry [1], B. N. Ellison [1], M. Jarret [1], J. Charlton [2], S. Parkes [3], I. Rule [4], *[1] Millimetre Wave Technology Group, Chilton, UK; [2] JCR Systems Ltd., South Gloucestershire, UK; [3] STAR Dundee Ltd., Dundee, UK; [4] Met Office., Exeter, Devon, UK.*
"HYper Spectral Microwave Sounder (HYMS)."

PA2. Bertrand Thomas [1], M. Berrada [1], J. Ceru [1], F. Villa [2], A. Walber [1], P. Yagoubov [3], *[1] Radiometer Physics GmbH, Werner-von-Siemens Strasse 4, 53340 Meckenheim, Germany; [2] INAF / IASF Bologna via Gobetti, 101, 40129, Bologna, Italy; [3] European Southern Observatory, Karl-Schwarzschild-Str. 2, 85748 Garching, Germany.*
"A dual-polarized sideband separating Schottky based receiver for ALMA Band 2+3 Warm Cartridge Assembly."

PA3. Ronald Hesper [1], A. Khudchenko [1], M.F Lindemulder [2], M.E. Bekema [1], L.H.R. de Haan-Stijkel [1], J. Barkhof [1], J. Adema [1], and A.M. Baryshev [1] , *[1] Kapteyn Astronomical Institute, University of Groningen, 9747 AD Groningen, The Netherlands; [2] KVI - Center for Advanced Radiation Technology, 9747 AA Groningen, The Netherlands.*
"A Deployable 600-720GHz ALMA-Type Sideband-Separating Receiver Cartridge".

PA4. Sean Bryan, Philip Mauskopf, and Christopher Groppi, *Arizona State University, Tempe, AZ 85281, USA.*
"A Low-Power Compact Millimeter-wave Radiometer for a Weather Cubesat".

PA5. Weidong Hu [1], Shi Chen [1], Wenlong Zhang [1], Fen Yue [1], and Leo P. Ligthart [2], *[1] Beijing Institute of Technology, Beijing Key Laboratory of Millimeter wave and Terahertz Technique, Beijing, 100081, China; [2] Delft University of Technology, Faculty of Electrical Engineering, Delft, 2600 AA, Netherlands.*
"The 220GHz Terahertz Cloud Radar System for Atmosphere Observation".

PB6. Jonathan R. Hoh [2], Paul F. Goldsmith (PI) [1], Jose V. Siles [1], Adrian J. Tang [1], Christopher E. Groppi [2], and Jeremy Whitton [2], *[1] Jet Propulsion Laboratory, California Institute of Technology, Pasadena CA 91109, USA; 2 Arizona State University School of Earth and Space Exploration, Tempe AZ 85287, USA.*
"Technology Development for Long Wavelength Satellites".

PD7. Alexey Pavolotsky, Vincent Desmaris, Victor Belitsky, *Chalmers University of Technology, Group for Advanced Receiver Development, Department of Space, Earth and Environment, Göteborg, 412 96, Sweden;*
"Nb/Al-AlN/Nb superconducting tunnel junctions: fabrication process and characterization results".

PD8. Jing Li [1,2], Zhen-Hui Lin [1,2,3], Jin-Ping Yang [1,2], Dong Liu [1,2], Wen-Ying Duan [1,2], Zheng Lou [1,2], Qing Shi [1,2,4], Zhi Li [1,2,4], Wen Zhang [1,2], Wei Miao [1,2], Qi-Jun Yao [1,2], and S.C. Shi [1,2], *[1] Purple Mountain Observatory, Chinese Academy of Sciences, Nanjing, China; [2] Key Laboratory of Radio Astronomy, Chinese Academy of Sciences, Nanjing, China; [3] University of Chinese Academy of Sciences, Beijing 100049, China; [4] University of Science and Technology of China, Hefei 230026, China.*
"Development of the Terahertz Superconducting Imaging Array (TeSIA)".

PD9. Ivan Tretyakov, N. Kaurova, B. M. Voronov, and G. N, Goltsman, *Moscow State University of Education, Moscow, 119991. Russia.*
"About effect of the temperature operating conditions on the Noise Temperature and Noise Bandwidth of the Terahertz Range NbN Hot-Electron Bolometers".

PD10. Nicholas J. Rommelfanger, Bruce Bumble, and Boris S. Karasik, *Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA.*
"Bandwidth Measurements of NbN HEB Devices with GaN Buffer Layers".

PD11. M. Merker, A. Schmid, C. Bohn, K. Ilin, M. Siegel, *Karlsruhe Institute of Technology, Institute of Micro- and Nanoelectronic Systems, Karlsruhe, 76135, Germany.*
"NbN/AlN/NbN technology on sapphire substrates for SIS based THz receivers".

PD12. Shibo Shu[1], M. Calvo [2,3], J. Goupy [2,3], A. Monfardini [2,3], and E.F.C. Driessen[1], *[1] Institut de RadioAstronomie Millimétrique, 300 rue de la Piscine, 38406 Saint Martin d'Hères, France; [2] Université Grenoble Alpes, 621 avenue Centrale, 38400 Saint Martin d'Hères, France; [3] Institut Néel, CNRS, BP 166, 38042 Grenoble, France.*
"Optical Response of Lumped-Element Kinetic-Inductance-Detectors".

PD13. Akira Kawakami [1], Yoshihisa Irimajiri [1], Taro Yamashita [1,2], Satoshi Ochiai [1], Yoshinori Uzawa [1], *[1] National Institute of Information and Communications Technology (NICT), Kobe, Hyogo, 651-2492, Japan; [2] PRESTO, Japan Science and Technology Agency, 4-1-8 Honcho, Kawaguchi, Saitama 332-0012, Japan.*
"Extension of IF band of THz hot electron bolometer mixer using magnetic thin film".

PD14. Hajime Ezawa [1], Hiroshi Matsuo [1], Masahiro Ukibe [2], Go Fujii [2], and Shigetomo Shiki [2], *[1] National Astronomical Observatory of Japan, Tokyo 181-8588, Japan; [2] National Institute of Advanced Industrial Science and Technology, Ibaraki 305-8568, Japan.*
"SIS Photon Detectors for Terahertz Astronomy".

PD15. T. Kojima [1], M. Kroug [1], A. Gonzalez [1], K. Uemizu [1], K. Kaneko [1], A. Miyachi [1], Y. Kozuki [2,1], W. Shan [1], and S. Asayama [1], *[1] National Astronomical Observatory of Japan, Mitaka, 181-8588, Japan; [2] Osaka Prefecture University, Sakai, 599-8531, Japan.*
"Development of a waveguide SIS mixer in the 275-500 GHz band and dual band evaluation system".

PD16. Andrey Khudchenko, R. Hesper, J. Barkhof, and A.M. Baryshev, *NOVA/Kapteyn Astronomical Institute, University of Groningen, Groningen, The Netherlands.*
"Contribution of IF Chain Reflections in the Image Rejection Ratio of 2SB SIS receivers".

PD17. J. Zdanevičius [1], K. Ikamas [1], M. Bauer [2,3], J. Matukas [1], A. Lisauskas [1,2], H. Richter [4], H.-W. Hübers [4,5], and H. G. Roskos [2], *[1] Institute of Applied Electrodynamics and Telecommunications, Vilnius University, Vilnius, 10257, Lithuania; [2] Physikalisches Institut, Goethe-University Frankfurt am Main, Frankfurt am Main, 60438, Germany; [3] Center for Materials Characterization and Testing, Fraunhofer ITWM, Kaiserslautern, 67663, Germany; [4] Institute of Optical Sensor Systems, German Aerospace Center (DLR), 12489 Berlin, Germany; [5] Humboldt-Universität zu Berlin, Department of Physics, 12489 Berlin, Germany.*
"TeraFET detector for measuring power fluctuations of radiation from a 4.75-THz QCL".

PD18. Daniel Cunnane [1], Narendra Acharya [2], Wenura K. Withanage [2], Xiaoxing Xi [2], and Boris S. Karasik [1], *[1] Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA; [2] Temple University, Philadelphia, PA 19122, USA.*
"THz performance of MgB_2 HEB mixer with non-uniform thickness profile".

PD19. Changyun Yoo [1], M. Huang [1], J. Kawamura [2], B. S. Karasik [2], L. Pfeiffer [3], and M. S. Sherwin [1], *[1] Physics Department and Institute for Terahertz Science and Technology, University of California at Santa Barbara, Santa Barbara, CA 93106, USA; [2] Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA; [3] Department of Electrical Engineering, Princeton University, Princeton, NJ 08544, USA.*
"A Tunable Antenna-coupled Intersubband Terahertz Detector".

PD20. Roger O'Brient [1,2], James Bock [2,1], Hien Nguyen [1], Bryan Steinbach [2], Anthony Turner [1], Albert Wandui [2], Jonas Zmuidzinas [2,1], *[1] Jet Propulsion Laboratory, California Institute of Technology Pasadena, CA 91109, USA; [2] California Institute of Technology, Pasadena, CA 91125, USA.*
"TKIDs for Cosmic Microwave Background Studies". -- Not presented

PD21. Boris Karasik, *Jet Propulsion Laboratory, California Institute of Technology Pasadena, CA 91109, USA*.
"An array scalable far-IR detector with NEP < 10^{-20} W/Hz$^{1/2}$".

PD22. Matthias Kroug [1], T. Kojima [1], Y. Fujii [1], K. Ohtawara [1], A. Miyachi [1], and Y. Uzawa [2], *[1] National Astronomical Observatory of Japan, Mitaka, 181-8588, Japan; [2] National Institute of Information and Communications Technology, Koganei, 184-0015, Japan.*
"Noise Performance of ALMA Band10 Receivers Employing High-Jc SIS Mixers".

PD23. Ghassan Yassin [1], Boon-Kok Tan [1], Andre Hector [1], Sumedh Mahashabde [1], Andrey Khudchenko [2], Andrey M. Baryshev [2], Ronald Hesper [2], and Valery P. Koshelets [3], *[1] Department of Physics (Astrophysics), University of Oxford, Keble Road, Oxford OX1 3RH, UK; [2] University of Groningen, Kapteyn Astronomical Institute, 9747 AD, Groningen, The Netherlands; [3] Kotel'nikov Institute of Radio Engineering and Electronics RAS, 125009 Moscow, Russia.*
"Investigation of the performance of an SIS mixer with Nb-AlN-NbN tunnel junctions in the 780-950 GHz frequency band".

PD24. Omid Noroozian [1, 2, 3], P. K. Day [4], H.G. Leduc [4], D. Woody [5], J. Zmuidzinas [5], A. R. Kerr [1], J. G. Mangum [1], M. Cyberey [3], A. W. Lichtenberger [3], *[1] National Radio Astronomy Observatory, Charlottesville, VA 22903, USA; [2] NASA Goddard Space Flight Center, 20771, Greenbelt, MD, USA; [3] University of Virginia, Charlottesville, VA 22903, USA; [4] Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA; 5 California Institute of Technology, Pasadena, CA 91125, USA*.
"Superconducting Parametric Amplifiers: the Next Big Thing in (Sub)Millimeter-wave Receivers".

PD25. Jake A. Connors [1], Paul K. Grimes [2], Raymond Blundell [2], Young Jae Shin [1], and Philip Kim [1], *[1] Department of Physics, Harvard University, Cambridge, MA 02138, USA; [2] Smithsonian Astrophysical Observatory, Cambridge, MA 02138, USA.*
"Graphene Field Effect Transistors for Microwave and mm-Wave Applications".

PD26. Lorenza Ferrari [1], S. J. C. Yates [1], M. Eggens [1], A. M. Baryshev [2], and J. J. A. Baselmans [3,4], *[1] SRON Netherlands Institute for Space Research, Groningen, 9747AD, The Netherlands; [2] Kapteyn Institute, University of Groningen, Groningen, 9747 AD The Netherlands; [3] SRON Netherlands Institute for Space Research, Utrecht, 3584CA, The Netherlands; [4] Terahertz Sensing Group, Delft University of Technology, Delft 2628CD, The Netherlands.*
"MKID large format array testbed".

PL27. Artem A. Kuzmin, Steffen Doerner, Stefan Singer, Ilya Charaev, Konstantin S. Ilin, Stefan H. Wuensch, and Michael Siegel, *Institute of Micro- and Nanolectronic Systems of Karlsruhe Institute of Technology, Karlsruhe, Germany.*
"TES readout using an NbN-based Microwave Kinetic-Inductance Nanowire Galvanometer at 4.2 K".

PL28. Takafumi Kojima [1], Y. Uzawa [2,1], and W. Shan [1], *[1] National Astronomical Observatory of Japan, Mitaka, 181-8588, Japan; [2] National Institute of Information and Communications Technology, Koganei, Tokyo 184-0015, Japan.*
"Observation of positive gain by a combination of quasiparticle SIS up and down frequency converters".

PL29. Peter J. Sobis [1], Niklas Wadefalk [2], Joel Schleeh [2], Christina Emrich [1], Mats Lindgren [1], and Anders Emrich [1], *[1] Omnisys Instruments AB, Västra Frölunda, SE-421 32, Sweden; [2] Low Noise Factory AB, Göteborg, SE-412 63, Sweden.*
"Low Power Cryogenic Rad-hard LNAs for Space".

PL30. Boon-Kok Tan and Ghassan Yassin, *Department of Physics (Astrophysics), University of Oxford, Keble Road, Oxford OX1 3RH, UK.*
"The travelling wave parametric amplifiers - Design considerations". -- Not presented

PM31. Yoshihisa Irimajiri [1], Alvaro Gonzalez [2], Satoshi Ochiai [1], Akira Kawakami [1], and Yoshinori Uzawa [1], *[1] National Institute of Information and Communications Technology (NICT), Koganei, Tokyo, 184-0015 Japan; [2] National Astronomical Observatory of Japan (NAOJ), Mitaka, Tokyo, 181-8588, Japan.*
"Beam pattern measurements of a quasi-optical HEB mixer at 2 THz".

PM32. Junhan Kim and Daniel P. Marrone, *Department of Astronomy and Steward Observatory, University of Arizona, 933 N. Cherry Avenue, Tucson, AZ 85721, USA.*
"Tilted beam measurement of VLBI receiver for the South Pole Telescope".

PM33. Grigoriy M. Bubnov [1,2], Vyacheslav F. Vdovin [1,2], Dmitriy S. Martynov [2] and Igor I. Zinchenko [1], *[1] Institute of Applied Physics RAS, N.Novgorod, 603950, Russia; [2] Nizhniy Novgorod State Technical University, N.Novgorod, 603950, Russia.*
"A refined method of the data processing for astroclimate measurements at millimeter waves".

PM34. Yuki Sakurai [1], T. Matsumura [1], N. Katayama [1], H. Kanai [2], T. Iida [3], *[1] Kavli Institute for The Physics and Mathematics of The Universe (WPI), The University of Tokyo, Kashiwa, Japan; [2] Yokohama National University, Yokohama, Kanagawa, Japan; [3] ispace inc., Japan.*
"Development of a cryogenic remote sensing thermometer for CMB polarization experiments".

PM35. Jacob W. Kooi [1], Rodrigo A. Reeves [2], Arthur W. Lichtenberger [3], Theodore J. Reck [1], Andy K. Fung [1], Sander Weinreb [4], James. W. Lamb [4], Rohit S. Gawande [1], Kieran. A. Cleary [4], and Goutam Chattopadhyay [1], *[1] Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA; [2] CePIA, Astronomy Department, Universidad de Concepcion, Chile; [3] University of Virginia, Charlottesville, VA 22904, USA; [4] California Institute of Technology, Pasadena, CA 91125, USA.*
"A Programmable Waveguide Calibration Load".

PM36. Axel Murk [1], Karl Jacob [1], David Marote [2], *[1] University of Bern, Institute of Applied Physics, Sidlerstr. 5 Bern, 3012, Switzerland; [2] Airbus Defence and Space SAU (ASE), Avenida de Aragon 404, 28022 Madrid, Spain.*
"Characterization of low-loss reflectors for spaceborne microwave radiometers".

PO37. Hao-Tian Zhu [1,2,4,5], Dong Liu [2], Jie Hu [2], Sheng Li [2], Sheng-Cai Shi [2], and Quan Xue [1,3,4], *[1] State Key Laboratory of Millimeter Waves, City University of Hong Kong, Hong Kong SAR, China; [2] Purple Mountain Observatory, Key Laboratory of Radio Astronomy, Chinese Academy of Sciences, Nanjing, 210008, China; [3] School of Electronic and Information Engineering, South China University of Technology, Guangzhou, 510640, China; [4] Shenzhen Key Lab of Millimeter-Wave and Wideband Wireless Communications, Shenzhen Research Institute, City University of Hong Kong, Shenzhen, 518057, China; [5] Poly-Grames, Ecole Polytechnique de Montreal, Montreal, QC, H3T 1J4, Canada.*
"Flexible, Thermal Isolating and Low-loss Rectangular Dielectric Waveguide for THz Superconducting Receivers".

PO38. C. Jarufe [1], R. Rodriguez [2], V. Tapia [2], P. Astudillo [2], D. Monasterio [2], R. Molina [1], F. P. Mena [1], N. Reyes [1], and R. Bronfman [2], *[1] Electrical Engineering Department, Universidad de Chile, Av. Tupper 2007, Santiago, Chile; [2] Astronomy Department, Universidad de Chile, Camino el Observatorio 1515, Santiago, Chile.*
"Compact optimized slot antenna for mm (and sub-mm?) applications". **-- Not presented**

PO39. Kristina Davis [1], Chris Groppi [1], Jose Siles [2], Imran Mehdi [2], Jon Kawamura [2], Craig Kulesa [3], and Phil Mauskopf [1], *Arizona State University, Tempe, AZ 85282, USA; [2] Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA; [3] University of Arizona, Tucson, AZ 85721, USA.*
"THz Suborbital Payload Optical System Pointing Stability for Target Studies of Compact Sources".

PO40. Jun Ren, Yijing Deng, Zhenguo Jiang, Md. Itrat Bin Shams, Patrick Fay, and Lei Liu, *University of Notre Dame, Notre Dame, IN 46556, USA.*
"Tunable and Reconfigurable Terahertz Devices Based on Photo-Induced Electromagnetic Band Gap Structures".

PO41. Peter J. Sobis [1], Vladimir Drakinskiy [2], Arvid Hammar [1], Johanna Hanning [2], Anders Emrich [1], Elena Saenz [3], and Jan Stake [2], *[1] Omnisys Instruments AB, Västra Frölunda, SE-421 32, Sweden; [2] Chalmers University of Technology, Göteborg, SE-412 96, Sweden; [3] European Space Agency – ESA/ESTEC, Noordwijk, PO Box 299, NL-2200 AG, The Netherlands.*
"Membrane Integrated Asymmetric Dual E-plane Probe Ortho Mode Transducer at 424 GHz".

PO42. Y. J. Deng, M. I. B. Shams, J. Ren, P. Fay, and L. Liu, *Department of Electrical Engineering, University of Notre Dame, Notre Dame, IN 46556, USA.*
"High performance Photo-Induced Substrate-Integrated-Waveguide for tunable and reconfigurable THz circuits".

PO43. Duccio Delfini [1], Martina Wiedner [1], Massimiliano Casaletti [2], Julien Serrazin [2], François Joint [1], Thibaut Vacelet [1], and Yan Delorme [1], *[1] LERMA, Observatoire de Paris, PSL Research University, CNRS, Sorbonne Universités, UPMC Univ. Paris 06, F-75014, Paris, France; [2] Sorbonne Universités, UPMC Univ Paris 06, UR2, L2E, F-75005, Paris, France.*
"Development of a transmit-array for heterodyne receiver".

PO44. Daniel Koller, Jeffrey L. Helser, Eric W. Bryerton, *Virginia Diodes, Inc., Charlottesville, VA, 22903, USA.*
"WM380 (675-700GHz) Band-Pass Filters in Milled Split-Block Construction".

PO45. Hawal Rashid, V. Desmaris, and V. Belitsky, *Chalmers University of Technology, Gothenburg, 412 96, Sweden.*
"Wideband Passive Circuits for Sideband Separating Receivers".

PO46. Jeremy D. Whitton [1], Philip D. Mauskopf [1], Paul F. Goldsmith [2], Kristina K. Davis [1], and Christopher E. Groppi [1], *[1] Arizona State University, Tempe, AZ 85281, USA; [2] Jet Propulsion Laboratories, California Institute of Technology, Pasadena, CA 91109, USA.*
"Prototype of a Dielectrically Embedded Mesh Lens".

PO47. Paul K. Grimes [1], Scott N. Paine [1], Ramprasad Rao [2], Tirupati K. Sridharan [1], and Lingzhen Zeng [1], *[1] Harvard-Smithsonian Center for Astrophysics, Cambridge, MA 02138, USA; [2] Institute of Astronomy and Astrophysics, Academia Sinica, Submillimeter Array Observatory, Hilo, HI 96720, USA;*
"Tolerancing of the Submillimeter Array Optics using Physical Optics Simulations".

PO48. Fabien Defrance [1], G. Chattopadhyay [2], J. Connors [3], S. Golwala [1], M. I. Hollister [4], C. Jung-Kubiak [2] , E. Padilla [5], S. Radford [3], J. Sayers [1], E. C. Tong [3], and H. Yoshida [1], *[1] California Institute of Technology, Pasadena, CA 91125, USA; [2] Jet Propulsion Laboratories, California Institute of Technology, Pasadena, CA 91109, USA; [3] Harvard–Smithsonian Center for Astrophysics, Cambridge, MA 02138, USA; [4] Fermi National Accelerator Laboratory, Batavia, IL 60510, USA; [5] Cal State San Bernardino, San Bernardino, CA 92407, USA.*
"Wafer-bonded Antireflection Layers for Silicon optics".

PS49. Diego Moro-Melgar, O. Cojocari, I. Oprea, M. Rickes & M. Hoefle, *ACST GmbH, Hanau, 63457, Germany.*
"Single-Chip 150 GHz Doubler with more than 150 mW Output Power based on Flip-Chip Schottky Diodes".

PS50. Carlos G. Pérez-Moreno and Jesús Grajal, *Information Processing and Telecommunications Center, Universidad Politécnica de Madrid, E.T.S.I. Telecomunicación, Av. Complutense 30, 28040 Madrid, Spain.*
"Broadband frequency triplers for radar applications in the THz range".

PS51. Deacon J. Nemchick [1], Brian J. Drouin [1], Adrian J. Tang [2], Yanghyo Kim [2], Gabriel Virbila [3], and Mau-Chung Frank Chang [3], *[1] Laboratory Studies and Atmospheric Observations, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA; [2] Submillimeter Wave Advanced Technology, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA; [3] Department of Electrical Engineering, University of California at Los Angeles, Los Angeles, CA 90025 USA.*
"Pure-Rotational Molecular Spectroscopy with a Low-Power CMOS-Based W-Band Transmitter".

PS52. François Joint [1,2], Gregory Gay [1], Thibaut Vacelet [1], L. Li [3], E. Linfield [3], Yan Delorme [1], Raffaele Colombelli [2], *[1] LERMA, Laboratoire d'Études du Rayonnement et de la Matière en Astrophysique et Atmosphères, Observatoire de Paris, Paris, France; [2] Centre de Nanosciences et de Nanotechnologies, CNRS, Univ. Paris-Sud, Université Paris-Saclay, C2N – Orsay, 91405 Orsay cedex, France; [3] School of Electronic and Electrical Engineering, University of Leeds, Leeds LS2 9JT, UK.*
"Low power consumption quantum cascade lasers at 2.7 THz for compact and sensitive heterodyne detectors".

PT53. Peter J. Sobis [1], Vladimir Drakinskiy [2], Tony Pellikka [1], Slavko Dejanovic [1], Anders Emrich [1], and Jan Stake [2], *[1] Omnisys Instruments AB, Västra Frölunda, SE-421 32, Sweden; [2] Chalmers University of Technology, Göteborg, SE-412 96, Sweden.*
"Discrete GaAs Schottky beamlead mixer diodes for space-borne receiver applications".

PT54. Christopher E. Groppi [1], Paul F. Goldsmith [2], Jose V. Siles [2], Philip Mauskopf [1], Christopher K. Walker [3], Daniel C. Jacobs [1], Adrian Tang [2], and Paul Scowen [1], *[1] Arizona State University, Tempe, AZ 85287, USA; [2] Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA; [3] University of Arizona, Tucson, AZ 85721, USA.*

"CubeSat Interferometry for THz Astrophysics, Planetary Science and Earth Observing".

PT55. Jonathan Hoh [1], Christopher Groppi [1], Choonsup Lee [2], Robert Lin [2], Philip Mauskopf [1], Phil Putman [3], and Jose Siles [2], *[1] Arizona State University School of Earth and Space Exploration, Tempe AZ 85287, USA; [2] Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA; [3] Sierra Lobo Inc., Fremont OH 43429, USA.*
"Integrated Schottky Receiver for Small Satellite Deployment".

PT56. Jeanne Treuttel [1,2], E. Schlecht [1], C. Lee [1], J-V. Siles [1], D. Hayton [1], R.Lin [1], and I. Mehdi [1], *[1] Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA; [2] Observatory of Paris, LERMA, Paris, 75014, France.*
"All Solid-State Receiver Designs at 2 THz for Atmospheric Sounding".

PD57. Faouzi Boussaha, Samir Beldi, Christine Chaumont, Piercarlo Bonifacio, *Galaxies, Etoiles, Physique et Instrumentation (GEPI), Observatoire de Paris, 77 avenue Denfert-Rochereau, 75014 Paris – France.*
"Development of Parallel Capacitor Based Kinetic Inductance Detectors (KIDs)."

PD58. Gert de Lange [1], Peter Roelfsema [1,2], Martin Giard [3], Francisco Najarro [4], KeesWafelbakker 1, Brian Jackson [1], Lee Armus [5], Marc Audard [6], Matt Bradford [7], Yasuo Doi [8], Matt Griffin [9], Frank Helmich [1,2], Inga Kamp [2], Franz Kerschbaum [10], Oliver Krause [11], Bengt Larsson [12], Suzanne Madden [13], David Naylor [14], Takahashi Onaka [8], Luigi Spinoglio [15], Floris van der Tak [1,2], *[1] SRON Netherlands Institute for Space Research, Groningen, The Netherlands; [2] Kapteyn Astronomical Institute, Groningen, The Netherlands; [3] IRAP, Toulouse, France; [4] CAB-INTA, Madrid, Spain; [5] IPAC/Caltech, USA; [6] ISDC, Geneva, Switzerland; [7] JPL/Caltech, USA; [8] University of Tokyo, Tokyo, Japan; [9] University of Cardiff, Cardiff, United Kingdom; [10] University of Vienna, Vienna, Austria; [11] MPIA, Heidelberg, Germany; [12] Stockholm University, Stockholm, Sweden; [13] CEA, Saclay, France; [14] University of Lethbridge, Lethbridge, Canada; [15] IAPS-INAF, Rome, Italy.*
"The SAFARI grating spectrometer for SPICA."

PD59. Narendra Acharya, Usman Ul-Haq, Sergey Cherednichenko, *Terahertz and Millimetre Wave Laboratory, Department of Microtechnology and Nanoscience, Chalmers University of Technology, SE-412 96 Gothenburg, Sweden.*
"Wide bandwidth measurements of microwave and millimeter wave impedance in MgB_2 HEB mixers."

5:30 pm Break

6:00 pm Banquet

March 28, 2018 (Wednesday)

Session W1: **Invited IV**
Chair: *Andrey Baryshev*

9:00 am **W1.1.** Martina C. Wiedner [1], Andrey Baryshev [2], Victor Belitsky [3], Yan Delorme [1], Vincent Desmaris [3], Anna Di Giorgio [4], Brian Ellison [5], Juan-Daniel Gallego [6], Maryvonne Gerin [1], Paul Goldsmith [11], Christophe Goldstein [7], Frank Helmich [8], Fabrice Herpin [9], Jean-Michel Huet [10], Willem Jellema [8,2], Jean-Michel Krieg [1], Philippe Laporte [10], André

Laurens [7], Imran Mehdi [11], Gary Melnick [12], Benjamin Quertier [9], René Plume [13], Christophe Risacher [14], Russel Shipman [8], OST STDT and NASA Goddard Engineering Team [15], *[1] LERMA, Observatoire de Paris, ENS, PSL Research University, CNRS, Sorbonne Universités, UPMC Univ. Paris 06, avenue de l'Observatoire, 75014 Paris, France; [2] Kapteyn Astronomical Institute, University of Groningen, P.O. Box 800, 9700 AV, Groningen, NL; [3] Group for Advanced Receiver Development, Chalmers University of Technology, Gothenburg, SE 41296, Sweden; [4] Istituto Fisica Spazio Interplanetario INAF, via Fosso del Cavaliere 100, 00133 Roma, Italy; [5] Rutherford Appleton Laboratory, Space Department, Harwell Campus, Didcot, OX11 0QX, UK; [6] Observatorio de Yebes, CDT-IGN, Apdo. 148, Guadalajara 19080, Spain; [7] CNES, 18 Avenue Edouard Belin, 31400 Toulouse, France; [8] SRON Netherlands Institute for Space Research, Landleven 12, 9747 AD Groningen, The Netherlands & Kapteyn Astronomical Institute, University of Groningen, Groningen, The Netherlands; [9] Laboratoire d'Astrophysique de Bordeaux, Pessac, 33615, France; [10] GEPI, Observatoire de Paris, PSL Research University, CNRS, Paris,75014, France; [11] Jet Propulsion Laboratory, California Institute of Technology, 4800 Oak Grove Drive, Pasadena CA 91109, USA; [12] Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA 02138, USA; [13] University of Calgary, T2N1N4, Canada; [14] Max-Planck-Institut für Radioastronomie, Auf dem Hügel 69, 53121, Bonn, Germany; [15] NASA Goddard Space Flight Center, 8800 Greenbelt Rd., Greenbelt, MD 20771, USA*
"HEterodyne Receiver for OST (HERO)."

Session W2: **Large Systems and Applications**
Chair: *Jonathan Kawamura*

9:30 am **W2.1.** A. Smirnov [1], E. Golubev [1], M. Arhipov [1], V. Pishnov [1], T. Kosmovich [1], E. Filina [1], A. Baryshev [1,2], Thijs de Graauw [1], S. Pilipenko [1], S. Likhachev [1] and N. Kardashev [1] on behalf of the Millimetron team, *[1] Astro Space Center of P.N. Lebedev Physical Institute, Moscow, Russia; [2] University of Groningen, Kapteyn Astronomical Institute, Groningen, The Netherlands.*
"Millimetron Space Observatory – Large-Aperture and Cooled Space Telescope."

9:50 am **W2.2.** Ken B. Cooper, Raquel R. Monje, Robert J. Dengler, Corey J. Cochrane, Stephen L. Durden, Adrian Tang, and Mathieu Choukroun, *Jet Propulsion Laboratory, California Institute of Technology, 4800 Oak Grove Drive, Pasadena CA 91109, USA.*
"The Gas and Ice Spectrometer/Radar (GAISR): A Millimeter/Submillimeter-Wave Multi-Functional Instrument for Cometary Jet Observations."

10:10 am **W2.3.** Sean Bryan [1], Amanda Clarke [1], Loÿc Vanderkluysen [2], Christopher Groppi [1], Scott Paine [3], Daniel W. Bliss [1], James Aberle [1], and Philip Mauskopf [1], *[1] Arizona State University, Tempe, AZ, 85281, USA; [2] Drexel University, Philadelphia, PA, 19104, USA; [3] Smithsonian Astrophysical Observatory, Cambridge, MA, 02138, USA.*
"Measuring Volcanic Eruption Dynamics with WAMS, a Millimeter-wave Radar and Imager."

10:30 am **W2.4.** A. M. Baryshev [1], R. Hesper [1], A. Khudchenko [1], K. Rudakov [1,2], *[1] NOVA/Kapteyn Astronomical Institute, University of Groningen, Groningen, The Netherlands; [2] Institute of Radioengineering and Electronics, Moscow, Russia.*
"High Frequency High Spectral Resolution Focal Plane Arrays for ATLAST."

10:50 am Coffee Break

Session W3: **Sources and Local Oscillator Systems II**
Chair: *Jeffrey Hesler*

11:20 am **W3.1.** Jose V. Siles, Ken B. Cooper, Choonsup Lee, Robert Lin, Goutam Chattopadhyay, and Imran Mehdi, *Jet Propulsion Laboratory, California Institute of Technology, 4800 Oak Grove Drive, Pasadena CA 91109, USA.*
"Next Generation of Room-Temperature Broadband Frequency Multiplied LO Sources with 10 times Higher Output Power in the 100 GHz – 1.9 THz Range."

11:40 am **W3.2.** Christopher A. Curwen [1], John L. Reno [2], Tatsuo Itoh [1], Benjamin S. Williams [1], [1] *Department of Electrical Engineering, University of California, Los Angeles, CA 90095, USA;* [2] *Sandia National Laboratories, Center of Integrated Nanotechnologies, MS 1303, Albuquerque, NM 97185, USA.*
"Broadband metasurface external-cavity QC-lasers."

12:00 pm **W3.3**. Oleg Cojocari, Diego Moro-Melgar, and Ion Oprea, *ACST GmbH, Hanau, 63457, Germany.*
"Diamond-Substrate Schottky Diodes for high-power MM-wave Multipliers."

12:20 pm **W3.4.** Diego Moro-Melgar, O. Cojocari, I. Oprea, M. Hoefle & M. Rickes, *ACST GmbH, Hanau, 63457, Germany.*
"High Power Flip-Chip Schottky Diodes based 275-305 GHz Transceiver for FMCW-Radar."

12:40 pm Lunch Break

Session W4: **Invited V**
Chair: *Jose Siles*

2:00 pm **W4.1**. Christopher Walker, *University of Arizona, 933 N. Cherry Ave., Tucson, AZ 85721, USA.*
"Terahertz Astronomy from Near Space and Beyond."

Session W5: **Superconducting Heterodyne Detectors II**
Chair: *Jenna Kloosterman*

2:30 pm **W5.1.** Wenlei Shan, Shohei Ezaki, Shinichiro Asayama, Takashi Noguchi, and Satoru Iguchi, *National Astronomical Observatory of Japan, Tokyo, 181-8588, Japan.*
"Planar-integration of Arrayed SIS Receiver Frontends."

2:50 pm **W5.2**. Jacob W. Kooi, Darren J. Hayton, Bruce Bumble, Rick Leduc, Pierre Echternach, Anders Skalare, Jonathan Kawamura, Goutam Chattopadhyay, and Imran Medhi, *Jet Propulsion Laboratory, California Institute of Technology, 4800 Oak Grove Drive, Pasadena CA 91109, USA.*
"Submillimeter and Terahertz Receiver Technology for the Detection of Water Isotopes on Cometary Bodies."

3:10 pm **W5.3.** John D. Garrett [1], Jamie Leech [1], Brian Ellison [2], and Ghassan Yassin [1], [1] *University of Oxford, Oxford, OX1 3RH, UK;* [2] *Rutherford Appleton Laboratory, Didcot, OX11 0QX, UK.*
"A 1x4 Focal Plane Array Using 230 GHz SIS Mixers."

3:30 pm **W5.4.** Denis Sych [1,2,3], Michael Shcherbatenko [3,4], Michael Elezov [3], Gregory N. Goltsman [3,5],

[1] P.N. Lebedev Physical Institute of the Russian Academy of Sciences, 119991 Moscow, Russia; [2] Russian Quantum Center, 143025 Moscow, Russia; [3] Moscow State Pedagogical University, 119992, Moscow, Russia; [4] Moscow Institute of Physics and Technology, Moscow Oblast, Russia; [5] Zavoisky Physical-Technical Institute of the Russian Academy of Sciences, 420029, Kazan, Russia.
"Towards the improvement of the heterodyne receiver sensitivity beyond the quantum noise limit."

3:50 pm **W5.5.** C. Edward Tong [1], Paul Grimes [1], Lingzhen Zeng [1], Wei-Chun Lu [2], Tse-Jun Chen [2], Yen-Pn Chang [2], and Ming-Jye Wang [2], *[1] Harvard-Smithsonian Center for Astrophysics, Cambridge, MA 02138, USA; [2] ASIAA, Taipei, 10617, Taiwan ROC*
"Development of SIS Receivers with Ultra-wide Instantaneous Bandwidth for wSMA."

Session W6: **Optical Design, Systems, and Components II**
Chair: *Christopher Groppi*

4:10 pm Coffee Break

4:40 pm **W6.1.** Stephen J. C. Yates [1], Kristina K. Davis [2], Willem Jellema [3,4], Jochem J. A. Baselmans [4,5], Lorenza Ferrari [1], Ronald Hesper [3], and Andrey M. Baryshev [3], *[1] SRON Netherlands Institute for Space Research, Groningen, 9747AD, The Netherlands; [2] Arizona State University, 781 Terrace Rd., Tempe, AZ, USA; [3] Kapteyn Institute, University of Groningen, Groningen, 9747AD, The Netherlands; [4] SRON Netherlands Institute for Space Research, Utrecht, 3584CA, The Netherlands; [5] Terahertz Sensing Group, Delft University of Technology, Delft 2628CD, The Netherlands.*
"Vector Beam Pattern measurements of an 850 GHz wide field Microwave Kinetic Inductance Detector camera."

5:00 pm **W6.2.** Maria Alonso-delPino, Cecile Jung-Kubiak, Theodore Reck, Choonsup Lee, and Goutam Chattopadhyay, *Jet Propulsion Laboratory, California Institute of Technology, 4800 Oak Grove Drive, Pasadena CA 91109, USA.*
"Integrated Micro-Lens Antennas for THz Heterodyne Receivers."

5:20 pm **W6.3.** Jeffrey Hesler, *Virginia Diodes Inc., Charlottesville, VA 22902, USA.*
"Sensitivity limits and design of THz absorption spectrometers."

5:40 pm **W6.4.** Thierry Wiertz [1], S. Carpentier [1], Y. Pennec [1], J-M Niot [1], W. Zhang [2], Q.J. Yao [2], K. Zhang [2], J. Li [2], S.C. Shi [2], *[1] Air Liquide Advanced Technologies, Sassenage, 38360, France; [2] Purple Mountain Observatory, Nanjing, 210008, China.*
"HiPTC: a compact, efficient and low vibration cooler for Terahertz detection."

6:00 pm Wrap-up and Farewell

6:10 pm Symposium ends