32nd International Symposium on Space Terahertz Technology

Baeza, Spain | October 16 – 20, 2022

IEEE Advancing Technology for Humanity

Ayuntamiento de BAEZA

Ciudades Patrimonio de la Humanidad
ESPAÑA | UNESCO

Preliminary Technical Program

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TK INSTRUMENTS TK SPACE

ACST
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Pacific MicroCHIP Corp.
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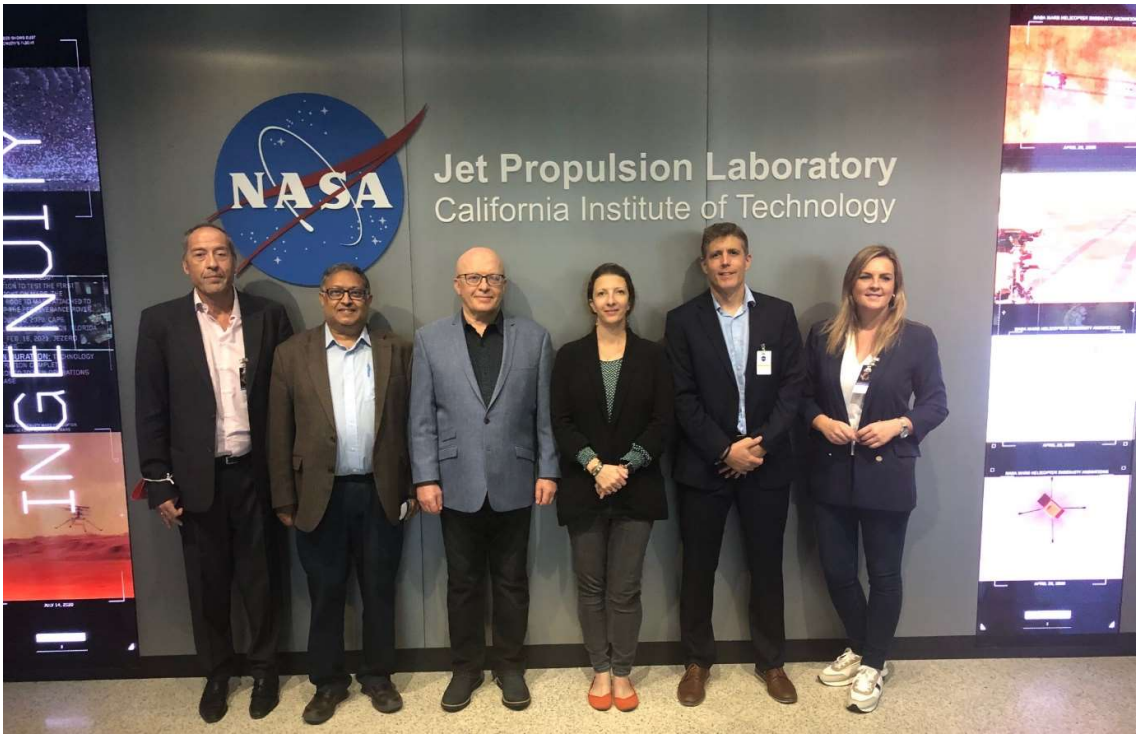
ISSTT 2022 LOCAL ORGANIZING COMMITTEE WELCOME

"On behalf of the Local Organizing Committee, the City of Baeza, and the Tourism Office of Spain it is an honor to welcome all of you to Spain, for the first time in more than 30 years of ISSTT, and in particular to my hometown, Baeza. A city full of Renaissance buildings and cobbled streets that you will be surprised to see in the south, and one of the 15 UNESCO World Heritage cities in Spain. Definitely, a city full of art, culture and diversity, and thus a perfect place to welcome science and technology innovation. All these together represent indeed the best heritage of the human kind. This will be also the first conference after the Covid-19 pandemic and we are looking forward to meeting again so many colleagues after all this long and difficult time. We are convinced ISSTT 2022 will be a very special conference."

Jose V. Siles, ISSTT 2022 General chair



Local Organizing Committee:

Jose V. Siles, Goutam Chattopadhyay, Imran Mehdi, Alain Maestrini, Boris Karasik, Cecile Jung-Kubiak (NASA Jet Propulsion Laboratory), F. Javier Rodríguez Mañas (Tourism Office of Spain in Los Angeles, Spanish Ministry of Tourism), Lola Marín Torres, Ana Rodríguez (Baeza City Hall).

ISSTT 2022 SCIENTIFIC ORGANIZING COMMITTEE

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 will also decide on the place and dates for the next ISSTT.

Victor Belitsky
Chalmers University of Technology
Sweden

Andrey Baryshev
University of Groningen
The Netherlands

Brian Ellison
Rutherford Appleton Laboratory
United Kingdom

Jian-Rong Gao
SRON
The Netherlands

Gregory Goltsman
Moscow State Pedagogical University
Russia

Christopher Groppi
Arizona State University
USA

Jeffrey Hesler
Virginia Diodes Inc.USA

Heinz-Wilhelm Hübers
DLR
Germany

Boris Karasik
Jet Propulsion Laboratory
USA

Valery Koshelets
IRE RAS
Russia

Alain Maestrini
Jet Propulsion Laboratory
USA

Hiroshi Matsuo
NAOJ
Japan

Imran Mehdi
Jet Propulsion Laboratory
USA

Patricio Mena
University of Chile
Chile

Netty Honingh
University of Cologne
Germany

Christophe Risacher
IRAM
France

Sheng-Cai Shi
Purple Mountain Observatory
China

Jan Stake
Chalmers University of Technology
Sweden

Edward Tong
Smithsonian Astrophysics Observatory
USA

Yoshinori Uzawa
NAOJ
Japan

Ghassan Yassin
University of Oxford
United Kingdom

CONFERENCE VENUES

Registration will be open during the Welcome Reception which will be held in the Baeza City Hall from 7.00 pm to 9.30 pm, on Sunday, October 16, 2022.

The Symposium will utilize three venues located for the technical sessions:

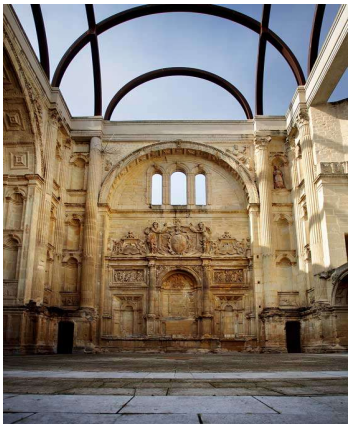
- All oral sessions will be at the **Ruinas de San Francisco Auditorium**.
- The **poster session** will take place at the cloister patio of **Palacio de Jabalquinto**.
- The **plenary talks** will be at Baeza's main auditorium, **Teatro Montemar**

There will be WIFI access in all the venues. A Registration & Information desk will be set outside the Ruinas de San Francisco Auditorium and be open from 8:00 am on October 17, and from 8:30 am on October 18-19.

Baeza City Hall - *Pasaje Cardenal Benavides,10, 23440 Baeza, Spain*
Ruinas de San Francisco - *Plaza San Francisco, 10, 23440 Baeza, Spain*
Palacio de Jabalquinto - *Calle Conde Romanones, 1, 23440 Baeza, Spain*
Teatro Montemar - *Calle Cózar, 23440 Baeza, Spain*
Hotel Puerta de la Luna - *Calle Canónigo Melgares Raya, 7, 23440 Baeza, Spain*

Baeza City Hall

Ruinas de San Francisco



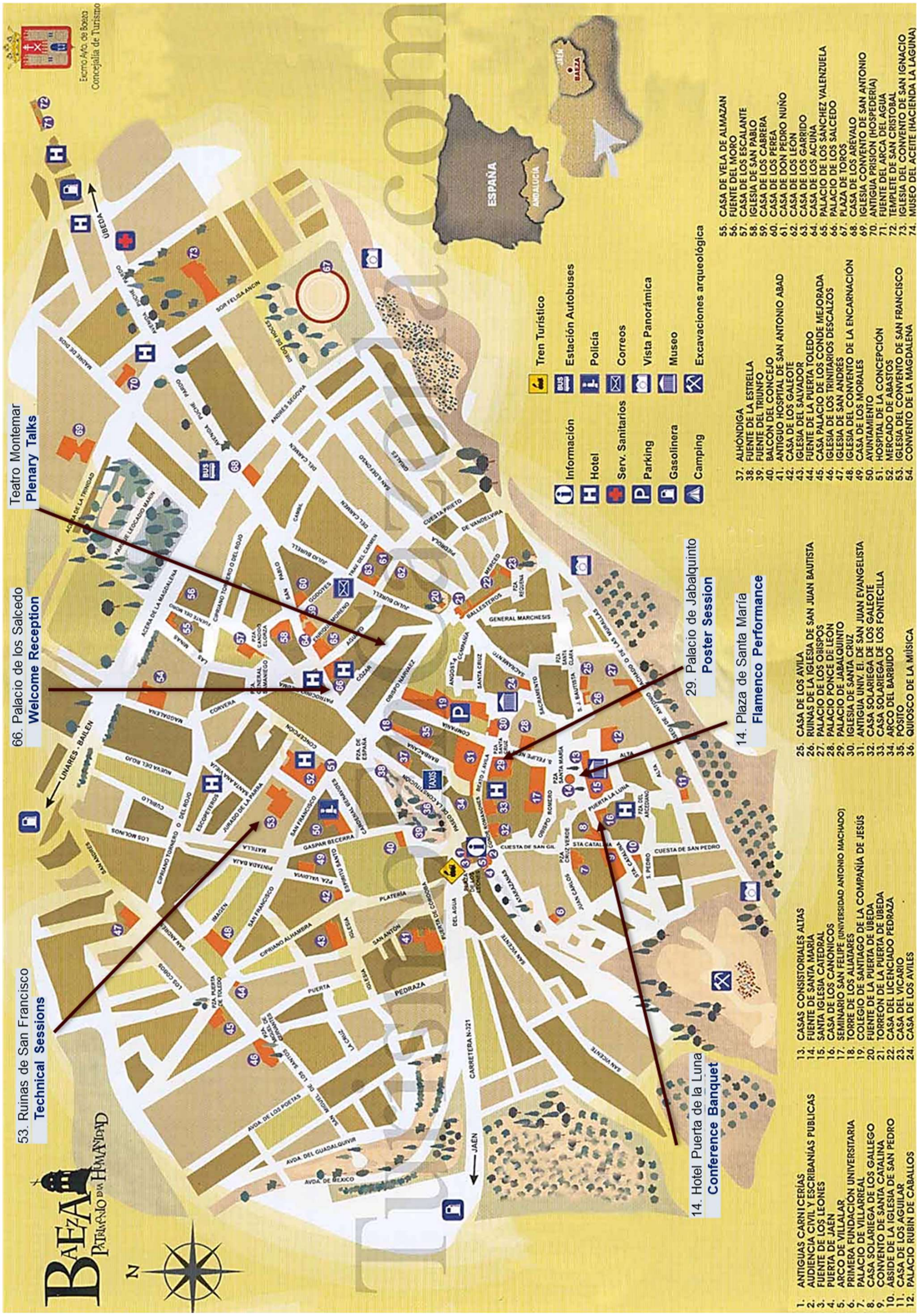
Palacio de Jabalquinto

Teatro Montemar

Hotel Puerta de la Luna

Plaza de Santa María

The Symposium banquet will be held on October 18, 2022, (cocktail reception at 9:00 pm, dinner at 9:30 pm) at the Hotel Puerta de la Luna. A special flamenco performance under the starts by Latin Grammy's Award Winner "Arcangel" will be offered to the attendees at Plaza de Santa María (7:45pm), before the banquet


BAEZA
PATRIMONIO DE LA HUMANIDAD
N
Excmo Ayto. de Baeza
Concejalía de Turismo
53. Ruinas de San Francisco
Technical Sessions
66. Palacio de los Salcedo
Welcome Reception
Teatro Montemar
Plenary Talks
14. Hotel Puerta de la Luna
Conference Banquet
29. Palacio de Jabalquinto
Poster Session
14. Plaza de Santa María
Flamenco Performance
LINARES - BAILEN
ÚBEDA
JAÉN
CARRETERA N-321
ESPAÑA
ANDALUCÍA
JAÉN
BAEZA
Tren Turístico
Información
Estación Autobuses
Hotel
Policía
Serv. Sanitarios
Correos
Parking
Vista Panorámica
Gasolinera
Museo
Camping
Excavaciones arqueológica
1. ANTIGUAS CARNICERÍAS
2. AUDIENCIA CIVIL Y ESCRIBANÍAS PUBLICAS
3. FUENTE DE LOS LEONES
4. PUERTA DE JAÉN
5. ARCO DE VILLALAR
6. PRIMERA FUNDACIÓN UNIVERSITARIA
7. PALACIO DE VILLARREAL
8. CASA SOLARIEGA DE LOS GALLEGO
9. CONVENTO DE SANTA CATALINA
10. ÁBSIDE DE LA IGLESIA DE SAN PEDRO
11. CASA DE LOS AGUILAR
12. PALACIO RUBÍN DE CABALLOS
13. CASAS CONSISTORIALES ALTAS
14. FUENTE DE SANTA MARÍA
15. SANTA IGLESIA CATEDRAL
16. CASA DE LOS CANÓNICOS
17. SEMINARIO SAN FELIPE (UNIVERSIDAD ANTONIO MACHADO)
18. TORRE DE LOS ALIATARES
19. COLEGIO DE SANTIAGO DE LA COMPAÑÍA DE JESÚS
20. FUENTE DE LA PUERTA DE ÚBEDA
21. TORREÓN DE LA PUERTA DE ÚBEDA
22. CASA DEL LICENCIADO PEDRAZA
23. CASA DEL VICARIO
24. CASA DE LOS AVILES
25. CASA DE LOS AVILA
26. RUINAS DE LA IGLESIA DE SAN JUAN BAUTISTA
27. PALACIO DE LOS OBISPOS
28. PALACIO PONCE DE LEÓN
29. PALACIO DE JABALQUINTO
30. IGLESIA DE SANTA CRUZ
31. ANTIGUA UNIV. EI. DE SAN JUAN EVANGELISTA
32. CASA SOLARIEGA DE LOS GALEOTE
33. CASA SOLARIEGA DE LOS FONTECILLA
34. ARCO DEL BARBUDO
35. PÓSITO
36. QUIOSCO DE LA MÚSICA
37. ALHÓNDIGA
38. FUENTE DE LA ESTRELLA
39. FUENTE DEL TRIUNFO
40. BALCÓN DEL CONCEJO
41. ANTIGUO HOSPITAL DE SAN ANTONIO ABAD
42. CASA DE LOS GALEOTE
43. IGLESIA DEL SALVADOR
44. FUENTE DE LA PUERTA TOLEDO
45. CASA PALACIO DE LOS CONDE MEJORADA
46. IGLESIA DE LOS TRINITARIOS DESCALZOS
47. IGLESIA DE SAN ANDRÉS
48. IGLESIA DEL CONVENTO DE LA ENCARNACIÓN
49. CASA DE LOS MORALES
50. AYUNTAMIENTO
51. HOSPITAL DE LA CONCEPCIÓN
52. MERCADO DE ABASTOS
53. IGLESIA DEL CONVENTO DE SAN FRANCISCO
54. CONVENTO DE LA MAGDALENA
55. CASA DE VELA DE ALMAZAN
56. FUENTE DEL MORO
57. CASA DE LOS ESCALANTE
58. IGLESIA DE SAN PABLO
59. CASA DE LOS CABRERA
60. CASA DE LOS PEREA
61. CASA DE DON PEDRO NUÑO
62. CASA DE LOS LEÓN
63. CASA DE LOS GARRIDO
64. CASA DE LOS ACUÑA
65. PALACIO DE LOS SÁNCHEZ VALENZUELA
66. PALACIO DE LOS SALCEDO
67. PLAZA DE TOROS
68. CASA DE LOS ARÉVALO
69. IGLESIA CONVENTO DE SAN ANTONIO
70. ANTIGUA PRISIÓN (HOSPEDERÍA)
71. FUENTE DEL ARCA DEL AGUA
72. TEMPLETE DE SAN CRISTOBAL
73. IGLESIA DEL CONVENTO DE SAN IGNACIO
74. MUSEO DEL ACEITE (HACIENDA LA LAGUNA)

CONFERENCE PROGRAM

For this year's ISSTT, 126 abstracts have been accepted, 5 of which will be Invited Presentations, 2 Plenary Talks, 44 regular contributes Oral Presentations, 10 short Oral Presentations for the Student Competition Finalists, and 65 contributed Poster Presentations.

The review process was carried out by SOC members with each abstract been reviewed by at least three reviewers. The conference schedule (see next page) consists of 4 Invited Sessions, 2 Plenary Talk Sessions 12 Oral Sessions and 1 Poster Session.

The **ISSTT 2022 Student Paper Competition, sponsored by Virginia Diodes**, is also being held to identify and recognize outstanding technical contributions from individual students. 10 contributions have been selected as finalists (see table below) and will have the opportunity to do a ~8 min oral presentation during the conference. The finalists will also receive a travel grant, which will include waived registration fee, lodging support during the days of the conference and access to all conference social activities at no extra charge. First, second, and third prizes will be awarded based on content and presentation where the criteria are ranked in the following order:

1) Creativity or novelty of the ideas presented in the paper
2) Paper quality and technical soundness of the presented work
3) Oral presentation of the paper at the conference and response to audience questions.

To be considered for an award, the student must be the lead author, personally present the paper at ISSTT 2022, and their advisor must confirm that the paper was mostly the students work (>80%).

First Name	Last Name	Institution	Abstract title
Mohamed Aniss	Mebarki	Chalmers University of Technology, Sweden	A Cryogenic Scalable Small-Signal & Noise Model of GaN HEMTs
Coralie	Elmaleh	Université du Littoral Côte d'Opale, France	CEAS and CRDS with Fabry-Perot spectrometry between 550-650 GHz
Joseph	Longden	University of Oxford, UK	Experimental characterisation of titanium nitride transmission lines for applications as kinetic inductance travelling wave parametric amplifiers
Divya	Jayasankar	Chalmers University of Technology, Sweden	Design and Characterisation of a 3.5-THz Fundamental Schottky Mixer
Jeremy	Scott	University of Lethbridge, Canada	Design, Operation, and Characterization of a Laboratory Spatial-Spectral Fourier Transform Interferometer
Jakob	Wenninger	University of Oxford, UK	A Compact 240 GHz SIS Polarimeter for Large Array Applications
David	Monasterio	Universidad de Chile, Chile	Development of an instantaneous multiband digital 2SB receiver for the 67–116-GHz band
Javier	Carrasco	University of Chile, Chile	The effect of complex dispersion and impedance in the gain of superconducting traveling-wave kinetic inductance parametric amplifiers
Javier	Navarro Montilla	University of Oxford, UK	Exploring the Limits of the Tunnel Junction Fabrication Technique for Josephson Junctions TWPA and the Preliminary Characterisation Results
Chris	Benson	University of Lethbridge, Canada	Performance and characterization of a novel PID controlled TES detector array for use in a double-Fourier far-infrared interferometer

32nd IEEE International Symposium on Space Terahertz Technology (ISSTT 2022)

October 16-20, 2022, Baeza, Spain

Technical Program

TIME	MINS	Sunday, October 16, 2022	TIME	MINS	Monday, October 17, 2022	TIME	MINS	Tuesday, October 18, 2022	TIME	MINS	Wednesday, October 19, 2022	TIME	MINS	Thursday, October 20, 2022
8:00			8:00			8:00			8:00	0		8:00		
				30	Coffee & Registration		40	Coffee & Registration					30	Departure to Sierra Nevada or Calar Alto
9:00			9:00	0:00	Opening Remarks	9:00	10	Invited Talk II: TBD	9:00	0	Coffee & Registration	9:00		
				30	**Invited Talk I**: Dr. Kartik Seth		30	Platinum Sponsors Session		30				(transit time ~2h30min)
10:00	0	Shuttle Madrid Airport - Baeza	10:00	0	**Session I:** Instruments & Systems for Future Missions I *Auditorio Ruinas de San Francisco*	10:00	0	**Session V:** Novel Devices, Technologies & Components *Auditorio Ruinas de San Francisco*	10:00		**Poster Session** *Palacio de Jabalquinto*	10:00		
11:00		(transit time ~3h30min)	11:00	20	Coffee Break	11:00	20	Coffee Break	11:00	10	Coffee Break	11:00	30	Invited Talk IV: Dr. Antxon Alberdi
12:00			12:00	40	**Session II:** Student Competition Finalists *Auditorio Ruinas de San Francisco*	12:00	40 0	**Session VI:** Instrument & Systems for Ground Telescopes *Auditorio Ruinas de San Francisco*	12:00		**Session IX:** Measurement Techniques *Auditorio Ruinas de San Francisco*	12:00	0	Visit to the Astronomical Institute of Andalusia (IAA)
13:00		Shuttle Madrid Airport - Baeza	13:00	20	Diamond Sponsors Session	13:00	20	Lunch Break / LOC & SOC Lunch	13:00	10	Invited Talk III: Dr. Paul Hartogh	13:00		
14:00		(transit time ~3h30min)	14:00	40	Lunch Break	14:00	40		14:00	40	Lunch Break	14:00	0	Departure to Alhambra, Granada
15:00			15:00	0	**Session III:** THz Sources I *Auditorio Ruinas de San Francisco*	15:00	0	**Session VII:** THz Antennas & Optical Components *Auditorio Ruinas de San Francisco*	15:00	0	**Session X:** Far-Infrared Balloon-Borne Missions *Auditorio Ruinas de San Francisco*	15:00		(transit time ~1h15min)
16:00			16:00	20	Coffee Break	16:00	20	Coffee Break	16:00	20	Coffee Break	16:00	30	Visit to the Alhambra Palace & Generalife Gardens
17:00	30	Baeza Historic City Center Visit	17:00	40	**Session IV:** Solid-State Receivers *Auditorio Ruinas de San Francisco*	17:00	40	**Session VIII:** Cryogenic Receivers, Mixers and Backends *Auditorio Ruinas de San Francisco*	17:00	40	**Session XI:** THz Sources II *Auditorio Ruinas de San Francisco*	17:00		
18:00			18:00	15	**Plenary Talk:** Dr. John Mather, 2006 Nobel Prize in Physics *Teatro Montemar*	18:00	20	Baeza Historic City Center Visit Olive Oil Museum Visit	18:00		**Session XII:** Instruments & Systems for Future Missions II *Auditorio Ruinas de San Francisco*	18:00		
19:00	0	Welcome Reception & Conference Registration Acoustic concert by local artist: **ALIS** *Palacio de los Salcedo*	19:00			19:00	45	Flamenco under the stars with **Arcángel, 2018 Latin Grammy Award Winner** *Plaza de Santa María, Baeza Cathedral*	19:00	20 40	Closing Remarks / Student Award **Outreach Talk:** Dr. Paul Goldsmith, NASA/JPL *Teatro Montemar*	19:00	0	Departure to Baeza
20:00			20:00	0	Ruta de la Tapa (Scavenger Tapas Night)	20:00			20:00			20:00		(transit time ~1h30min)
21:00			21:00			21:00	0	Cocktail & Conference Banquet *Hotel Puerta de la Luna*	21:00			21:00		
22:00			22:00	0	A Night of Magic with **Javi Benitez, 2018 FISM World Champion** *Café Bar Central*	22:00			22:00	30	Typical Spanish Late Social *Burladero de Copas / Cafe Bar Central*	22:00		Typical Spanish Late Social *Burladero de Copas / Cafe Bar Central*
23:00			23:00			23:00			23:00			23:00		

October 17, 2022 (Monday)

Venue: Ruinas de San Francisco Auditorium (Hall)

08:30	*Coffee & Registration*

Venue: Ruinas de San Francisco Auditorium

9:00		**ISSTT 2022 Opening Remarks & Information**

Venue: Ruinas de San Francisco Auditorium

9:30	Invited Talk I - **Dr. Kartik Seth, NASA** Chair: *Jose V. Siles (NASA Jet Propulsion Laboratory)*

Venue: Ruinas de San Francisco Auditorium

Session I – Instruments & Systems for Future Missions I Chair: *TBD*		
10:00	S1.1	"A Direct Up-Conversion G-band Radar Prototype for Atmospheric Measurements" **Raquel R. Monje,** *NASA Jet Propulsion Laboratory*
10:20	S1.2	"MetOp-SG Ice Cloud Imager 183-664 GHz Front-End Receivers Proto-Flight Model Qualification and Acceptance Test Results" **Bertrand Thomas**, *Radiometer Physics GmbH*
10:40	S1.3	"On-Ground Calibration Targets for the Ice Cloud Imager Instrument on the MetOP Second Generation Satellite" **Axel Murk**, *University of Bern*
11:00	S1.4	"Highly-Compact Terahertz Spectrometers on Ultra-Small Platforms" **Goutam Chattopadhyay**, *NASA Jet Propulsion Laboratory*

Venue: Ruinas de San Francisco Auditorium (Hall)

10:20	*Coffee Break*

Venue: Ruinas de San Francisco Auditorium

Session II – Best Student Paper Competition Finalists Chair: *Jeffrey Hesler (Virginia Diodes, Inc.)*		
11:40	S2.1	"Performance and characterization of a novel PID controlled TES detector array for use in a double-Fourier far-infrared interferometer" **Chris Benson**, *University of Lethbridge*
11:50	S2.2	"The effect of complex dispersion and impedance in the gain of superconducting traveling-wave kinetic inductance parametric amplifiers" **Javier Carrasco**, *University of Chile*
12:00	S2.3	"CEAS and CRDS with Fabry-Perot spectrometry between 550-650 GHz" **Coralie Elmaleh**, *Université du Littoral Côte d'Opale*
12:10	S2.4	"Design and Characterisation of a 3.5-THz Fundamental Schottky Mixer" **Divya Jayasankar**, *Chalmers University of Technology*
12:20	S2.5	"Experimental characterisation of titanium nitride transmission lines for applications as kinetic inductance travelling wave parametric amplifiers" **Joseph Longden**, *University of Oxford*
12:30	S2.6	"A Cryogenic Scalable Small-Signal & Noise Model of GaN HEMTs" **Mohamed Aniss Mebarki**, *Chalmers University of Technology*
12:40	S2.7	"Development of an instantaneous multiband digital 2SB receiver for the 67–116-GHz band" **David Monasterio**, *University of Chile*
12:50	S2.8	"Exploring the Limits of the Tunnel Junction Fabrication Technique for Josephson Junctions TWPA and the Preliminary Characterisation Results" **Javier Navarro Montilla**, *University of Oxford*
13:00	S2.9	"Design, Operation, and Characterization of a Laboratory Spatial-Spectral Fourier Transform Interferometer" **Jeremy Scott**, *University of Lethbridge*
13:10	S2.10	"A Compact 240 GHz SIS Polarimeter for Large Array Applications" **Jakob Wenninger**, *University of Oxford*

Venue: Ruinas de San Francisco Auditorium

Diamond Sponsors Session Chair: *TBD*		
13:20	DS1	Virginia Diodes, Inc.
13:30	DS2	Genera Tecnologías, S.A.

13:40 - 15:00	*Launch Break*

Venue: Ruinas de San Francisco Auditorium

Session III – Terahertz Sources I Chair: *TBD*		
15:00	S3.1	"An Upgrade to the 1.9THz Local Oscillator for the SOFIA GREAT Instrument" **Thomas Crowe**, *Virginia Diodes, Inc.*
15:20	S3.2	"Electron Speed Saturation Effects in the Schottky Barrier Diodes Implemented in an 800 – 900 GHz Frequency Tripler" **Diego Moro Melgar**, *ACST GmbH*
15:40	S3.3	"High-Power Compact Sources in the 200 - 300 GHz Frequency Range" **Verónica Laín Rubio**, *ACST GmbH*
16:00	S3.4	"Ultra-broadband integrated room-temperature Schottky diode based local oscillators for line surveys in the 400-2070 GHz range" **José V. Siles**, *NASA Jet Propulsion Laboratory*

Venue: Ruinas de San Francisco Auditorium (Hall)

16:20	*Coffee Break*

Venue: Ruinas de San Francisco Auditorium

Session IV – Solid State Receivers Chair: *TBD*		
16:40	S4.1	"Terahertz Heterodyne Receiver Frontend Based on SiGe BiCMOS Technology for Space Applications" **Nick Rothbart**, *German Aerospace Center (DLR)*
17:00	S4.2	"A Solid-State, Non-Cryogenic Receiver Operating at 2.5THz" **Theodore Reck**, *Virginia Diodes, Inc.*
17:20	S4.3	"THz Receivers for Thermospheric Science" **Alain Maestrini**, *NASA Jet Propulsion Laboratory*

Venue: Teatro Montemar

18:15	Plenary Talk **– Dr. John Mather, 2006 Nobel Prize of Physics, NASA** Chair: *Jose V. Siles (NASA Jet Propulsion Laboratory)*

20:00	*Ruta de la Tapa* *(Scavenger Tapas Night)*

Venue: Café Bar Central

22:00	*A Night of Magic* **Javi Benítez, 2018 FISM World Champion**

October 18, 2022 (Tuesday)

Venue: Ruinas de San Francisco Auditorium (Hall)

08:40	*Coffee & Registration*

Venue: Ruinas de San Francisco Auditorium

9:10	Invited Talk II **– To be confirmed** Chair: *TBD*

Venue: Ruinas de San Francisco Auditorium

Platinum Sponsors Session
Chair: *TBD*

09:40	PS1	ACST
09:45	PS2	Thomas Keating
09:50	PS3	Rohde & Schwarz / RPG

Venue: Ruinas de San Francisco Auditorium

Session V – Novel Devices, Technologies & Components
Chair: *TBD*

10:00	S5.1	"Measurement of Transmission Losses of Superconducting Coplanar Waveguide and Microstrip Lines with On-chip Resonators at 2 mm Wavelength" **Wenlei Shan**, *National Astronomical Observatory of Japan (NAOJ)*
10:20	S5.2	"A Micromachined 1.37 THz Waveguide-based 2X2 Beam Divider for HEB Detectors" **Haotian Zhu**, *National Space Science Center (CAS)*
10:40	S5.3	"A Turnstile Quad-Ridge OMT for Full Octave-Bandwidth Receivers" **Doug Henke**, *NRC Herzberg Astronomy and Astrophysics*
11:00	S5.4	"Recent research on (sub)mm-wave OMTs at NAOJ" **Alvaro González**, *National Astronomical Observatory of Japan (NAOJ)*

Venue: Ruinas de San Francisco Auditorium (Hall)

11:20	*Coffee Break*

Venue: Ruinas de San Francisco Auditorium

Session VI – Instruments & Systems for Ground Telescopes Chair: *TBD*		
11:40	S6.1	"Results from ALMA Band 2 cryogenic LNA pre-production run" **Sener Türk**, *Max Planck Institute for Radio Astronomy*
12:00	S6.2	"ALMA Band 2 Cold Cartridge Assembly Design" **Victor Belitsky**, *Chalmers University*
12:20	S6.3	"ALMA Band 9 Sideband Separating Upgrade" **Ronald Hesper**, *Kapteyn Astronomical Institute - University of Groningen*
12:40	S6.4	"Status of ALMA Band 6v2 Receiver Development" **Joseph Lambert**, *National Radio Astronomy Observatory (NRAO)*
13:00	S6.5	"16-pixel, 3 mm band, Cryogenic Array Receiver for Users of the Sardinia Observatory (CARUSO)" **Hui Wang**, *STFC – RAL Space*

13:20 - 15:00	*Launch Break / LOC & SOC Lunch*

Venue: Ruinas de San Francisco Auditorium

Session VII – Terahertz Antennas & Optical Components Chair: *TBD*		
15:00	S7.1	"Algorithmic Design of Terahertz Silicon Metaoptics" **Conner Ballew**, *NASA Jet Propulsion Laboratory*
15:20	S7.2	"Optics for the TEMPERA-C polarimetric middle atmosphere temperature sounder" **Roland Albers**, *Bern University*
15:40	S7.3	"Monolithic focal plane array concept for space and ground applications" **Andrey Baryshev**, *Kapteyn Astronomical Institute (NOVA, RUG)*
16:00	S7.4	"3D Printed Submillimeter Reflectors: a New Design and Manufacturing Methodology" **Paul Goldsmith**, *NASA Jet Propulsion Laboratory*

Venue: Ruinas de San Francisco Auditorium (Hall)

16:20	*Coffee Break*

Venue: Ruinas de San Francisco Auditorium

Session VIII – Cryogenic Receivers, Mixers & Back-ends Chair: *TBD*		
16:40	S8.1	"Towards the heterodyne receiver for balloons and SmallSats above 2 THz" **Boris Karasik**, *NASA Jet Propulsion Laboratory*
17:00	S8.2	"Performance analysis of superconductor insulator superconductor mixer for 260 GHz atmospheric window" **Andrey Baryshev**, *Kapteyn Astronomical Institute (NOVA, RUG)*
17:20	S8.3	"Low noise, wide band MgB2 hot electron bolometer mixer at 5.3 THz and 20 K" **Behnam Mirzaei**, *Delft University of Technology*
17:40	S8.4	"On embedding of an HEB mixer into a THz photonic integrated circuit" **Alexander Shurakov**, *Moscow Pedagogical State University*
18:00	S8.5	"2-18 GHz Ultra-wideband Cryogenic Amplifier with 4 K Noise Temperature" **Isaac López Fernández**, *Observatorio de Yebes*

18:20	*Baeza Historic City Center Visit* *or Olive Oil Museum Visit*

Venue: Plaza de Santa María (in front of the Cathedral)

19:45	*Flamenco under the stars with* ***Arcángel, 2018 Latin Grammy Award Winner***

Venue: Hotel Puerta de la Luna

21:00	*Conference Banquet*

October 19, 2022 (Wednesday)

Venue: Palacio de Jabalquinto

09:00	*Coffee & Registration / Poster Session*

Venue: Palacio de Jabalquinto

Poster Session Chair: *TBD*	
9:00 - 11:10	Poster Session Presentations (see complete list of poster presentation in the next pages)

Venue: Ruinas de San Francisco Auditorium (Hall)

11:10	*Coffee Break*

Venue: Ruinas de San Francisco Auditorium

Session IX – Measurement Techniques Chair: *TBD*		
11:30	S9.1	"Versatile Radiometric Testbed for the Submillimeter Wave Instrument" **Mikko Kotiranta**, *University of Bern*
11:50	S9.2	"Harmonic phase and amplitude beam characterization of a wideband on-chip spectrometer" **Stephen Yates**, *SRON*
12:10	S9.3	"Characterization of widefield THz optics using phase shifting interferometry" **Nicolás Reyes**, *Max Planck Institue for Radioastronomy*
12:30	S9.4	"CCAT prime: Multi-map Holographic Measurement for FYST Testbed——near-field beam measurement and data análisis" **Xiadong Ren**, *University of Cologne*
12:50	S9.5	"Introducing LORENTZ: A Novel Low-temperature Near-field Terahertz Chamber for Instrument Characterisation" **Paul Moseley**, *European Space Agency*

Venue: Ruinas de San Francisco Auditorium

13:10	Invited Talk II – **Dr. Paul Hartogh** Chair: *TBD*

13:40 - 15:00	*Launch Break*

Venue: Ruinas de San Francisco Auditorium

Session X – Far-Infrared Balloon-Borne Missions Chair: *TBD*		
15:00	S10.1	"GUSTO Payload Design and Performance" **Christopher Walker**, *University of Arizona*
15:20	S10.2	"The Terahertz Intensity Mapper (TIM): design and development status of a far-infrared balloon for spectroscopic galaxy evolution studies" **Christopher Groppi**, *Arizona State University*
15:40	S10.3	"The OSAS-B instrument: a balloon-borne heterodyne spectrometer for atomic oxygen in the mesosphere and lower thermosphere" **Martin Wienold**, *German Aerospace Center (DLR)*
16:00	S10.4	"ASTHROS - Astrophysics Stratospheric Telescope for High-Spectral Resolution Observations at Submillimeter-Wavelengths: Architecture Design and Subsystem Level Integration & Test Status" **Jose V. Siles**, *NASA Jet Propulsion Laboratory*

Venue: Ruinas de San Francisco Auditorium (Hall)

16:20	*Coffee Break*

Venue: Ruinas de San Francisco Auditorium

Session XI – Terahertz Sources II Chair: *TBD*		
16:40	S11.1	"Frequency stabilization of 3.5-THz and 4.7-THz quantum-cascade lasers by a phase-locked loop" **Heiko Richter**, *DLR - Institute of Optical Sensor Systems*
17:00	S11.2	"The ammonia laser: a possible local oscillator for space applications?" **Jean Francois Lampin**, *IEMN CNRS*
17:20	S11.3	"A tunable, high power source for GUSTO's local oscillator at 4.74 THz" **Ali Khalatpour**. *Massachusetts Institute of Technology (MIT)*

Venue: Ruinas de San Francisco Auditorium

Session XII – Instruments & Systems for Future Missions II Chair: *TBD*		
17:40	S12.1	"Kinetic Inductance Detector based focal plane arrays for the Terahertz Intensity Mapper" **Reinier Janssen**, *NASA Jet Propulsion Laboratory*
18:00	S12.2	"Reflector-Based Phased Array for High Power G-band radars" **Alain Maestrini**, *NASA Jet Propulsion Laboratory*
18:20	S12.3	"French contribution on the SWI hardware and flight models acceptance levels" **Jeanne Treuttel**, *Observatory of Paris*

Venue: Teatro Montemar

19:20		**ISSTT 2022 Closing Remarks & Student Award Winner**

Venue: Teatro Montemar

19:40	Public Outreach Talk **– Dr. Paul Goldsmith, NASA** **"The Legacy of the Arecibo Telescope"** Chair: *Jose V. Siles (NASA Jet Propulsion Laboratory)*

Venue: Café Bar Burladero / Bar Central

22:30	*Typical Spanish Late Social*

October 20, 2022 (Friday)

08:30	*Departure to Astronomy Institute of Andalusia (IAA)* **(transit time ~2h30 min)**

Venue: IAA (Sierra Nevada or Calar Alto)

11:30	Invited Talk III - **Dr. Anton Alberdi, Director IAA** Chair: *Jose V. Siles (NASA Jet Propulsion Laboratory)*

12:00	*Visit to the Astronomical Institute of Andalusia (IAA)*

14:00	*Departure to Granada* **(transit time ~1h15 min)**

15:30	*Visit to Alhambra Palace & Generalife Gardens*

08:30	*Departure to Baeza* **(transit time ~1h30 min)**

Venue: Café Bar Burladero / Bar Central

22:30	*Typical Spanish Late Social*

APPENDIX: LIST OF POSTER PRESENTATIONS

Poster Session
Chair: *TBD*

P1. INSTRUMENTS AND SYSTEMS FOR FUTURE MISSIONS	
P1.1	"Architecture of ASTHROS' Spectral Data Collection and Onboard Anomaly Detection Pipeline" **Paul Horton**, *Arizona State University*
P1.2	"Atmospheric Phase Monitoring System Evolution for the NOEMA interferometer" **Sylvain Mahieu**, *IRAM*
P1.3	"Heterodyne Array Receiver Study for the FIRSST Space Mission" **Martina Wiedner**, *Observatory of Paris*
P1.4	"Jupiter Icy Moon Explorer, Submillimeter wave Instrument: Delivery status of the 1200 GHz high spectral resolution receiver front end" **Jeanne Treuttel**, *Observatory of Paris*
P1.5	"Cold Optics on the Terahertz Intensity Mapper (TIM)" **Talia Saeid**, *Arizona State University*
P1.6	"Multipixel 2-color Superconducting Receiver for ASTHROS" **Jonathan Kawamura**, *NASA Jet Propulsion Laboratory*
P1.7	"Progress toward Antarctic Terahertz Intensity Interferometry" **Hiroshi Matsuo**, *National Astronomical Observatory of Japan*
P1.8	"Breaking the 10mW/pixel limit for kinetic inductance detector readout electronics" **Adrian Sinclair**, *University of British Columbia*
P2. BEST STUDENT PAPER COMPETITION	
P2.1	"G-Band Metamaterial-Based Circulator for FCC-Compliant Space-to-Earth Communication" **Ali Alqaraghuli**, *Northeastern University*
P2.2	"Performance and characterization of a novel PID controlled TES detector array for use in a double-Fourier far-infrared interferometer" **Chris Benson**, *University of Lethbridge*
P2.3	"Particle Swarm Algorithm Applied to Quadrature Hybrid Multi-Branch Directional Coupler Optimization for ALMA Band 3" **Jorge Hernán Cárdenas**, *University of Antioquia*
P2.4	"The effect of complex dispersion and impedance in the gain of superconducting traveling-wave kinetic inductance parametric amplifiers" **Javier Carrasco**, *University of Chile*

P2.5	"CEAS and CRDS with Fabry-Perot spectrometry between 550-650 GHz" **Coralie Elmaleh**, *Université du Littoral Côte d'Opale*
P2.6	"A MKID-readout based on a heterogeneous, closely coupled architecture" **Gerrit Grutzeck**, *Max-Planck-Institute for Radio Astronomy*
P2.7	"Development of an FPGA-Based, 1024-Channel Spectrometer with Individual Channel Lock-in Amplification" **Jonathan Hoh**, *Arizona State University*
P2.8	"Design and Characterisation of a 3.5-THz Fundamental Schottky Mixer" **Divya Jayasankar**, *Chalmers University of Technology*
P2.9	"Experimental characterisation of titanium nitride transmission lines for applications as kinetic inductance travelling wave parametric amplifiers" **Joseph Longden**, University of Oxford
P2.10	"Design and Fabrication of All-metal Micromachined Finline Structures for Millimeter and Sub-millimeter Applications" **Cristian López**, *Chalmers University of Technology*
P2.11	"Sub-mm Wave Schottky Mixer Pumped with 170µW Optically Generated Local Oscillator Power" **Javier Martínez Gil**, *ACST GmbH*
P2.12	"CubeSounder: Development of Microwave Radiometer 3D Weather Imaging Sensors" **Kyle Massingill**, *Arizona State University*
P2.13	"Proof-of-concept experiment on a novel microwave circulator based on frequency converters" **Sho Masui**, *Osaka Prefecture Univ. / National Astronomical Observatory of Japan*
P2.14	"A Cryogenic Scalable Small-Signal & Noise Model of GaN HEMTs" **Mohamed Aniss Mebarki**, *Chalmers University of Technology*
P2.15	"Development of an instantaneous multiband digital 2SB receiver for the 67–116-GHz band" **David Monasterio**, *Universidad de Chile*
P2.16	"Exploring the Limits of the Tunnel Junction Fabrication Technique for Josephson Junctions TWPA and the Preliminary Characterisation Results" **Javier Navarro Montilla**, *University of Oxford*
P2.17	"SIS photon detectors for THz observations beyond the gap energy" **Ayako Niwa**, *Univeresity of Tsukuba*
P2.18	"Design, Operation, and Characterization of a Laboratory Spatial-Spectral Fourier Transform Interferometer" **Jeremy Scott**, *University of Lethbridge*
P2.19	"Development of the wide IF 230 GHz SIS mixer design for KVN-Pyeongchang VLBI station" **Naeun Shin**, *Seoul National University / Korea Astronomy & Space science Institute*

P2.20	"4×2 Hot Electron Bolometer mixer arrays for detection at 1.4, 1.9 and 4.7 THz for GUSTO" **Jose Silva**, *SRON/RUG*
P2.21	"Orbiting Astronomical Satellite for Investigating Stellar Systems" **Siddhartha Sirsi**, *University of Arizona*
P2.22	"A Compact 240 GHz SIS Polarimeter for Large Array Applications" Jakob Wenninger, University of Oxford
P2.23	"Study of anti-reflection layer on dielectric lens for the new 72–116 GHz 7-beam receiver of the Nobeyama 45-m telescope" **Yasumasa Yamasaki**, *Osaka Prefecture University/National Astronomical Observatory of Japan*
P2.24	"Tunable Antenna-Coupled Intersubband Terahertz (TACIT) Mixer Integrated with Self-complementary Antenna" **Changyun Yoo**, *University of California Santa Barbara*
P3. SOLID-STATE RECEIVERS	
P3.1	"325 GHz and 650 GHz Dual-polarisation receivers Concept" **Olivier Auriacombe**, *AAC Omnisys*
P4. NOVEL DEVICES, TECHNOLOGIES & COMPONENTS	
P4.1	"SIS technology development to serve Next Generation receivers for ALMA" **Alexei Pavolotsky**, *Chalmers University of Technology*
P4.2	"Integrated Schottky Technology for Supra-THz Applications" **Vladimir Drakinskiy**, *Chalmers University of Technology*
P4.3	"Estimation of Input Power Handling Capability of Next-Generation GaN Schottky Diodes for Millimeter Wave Frequency Multipliers" **Priyanka Mondal**, *Observatory of Paris*
P4.4	"Characterization of a Wide-Band Microstrip Parametric Amplifier Utilizing 4-Wave-Mixing Techniques" **Emily Linden**, *Arizona State University*
P4.5	"Analysis of the low temperature behavior of GaN-on-SiC Schottky barrier diodes" **Beatriz Orfao**, *University of Salamanca*
P4.6	"LO power division circuits for the CCAT-prime Heterodyne Array Instrument (CHAI)" **Ignacio Barrueto**, *University of Cologne*
P4.7	"Characterization of monolithically integrated lithium niobate ring resonator for a high sensitivity room temperature radiometer" **Jessica César Cuello**, *University Carlos III of Madrid*

P4.8	"Characterization of Superconducting NbTiN films using TDS, DFTS and Parallel Plate Resonator" **Fedor Khan**, *Institute of Radioengineering and Electronics of RAS*
P4.9	"A Low Loss Diplexer for Submillimeter-wave Sideband Separating Receivers" **Subash Khanal**, *NASA Jet Propulsion Laboratory*
P4.10	"Design of RF waveguide structure for 2SB SIS receiver for Millimetron 211-275 GHz VLBI channel" **Andrey Khudchenko**, *Astro Space Center of P.N. Lebedev Physical Institute RAS*
P5. INSTRUMENTS & SYSTEMS FOR GROUND TELESCOPES	
P5.1	"A 67-116 GHz MMIC-based dual-polarized 2SB down-converter for the ALMA Band 2 Warm Cartridge Assembly prototype development" **Bertrand Thomas**, *Radiometer Physics GmbH*
P5.2	"SEPIA345: a dual polarization 2SB cartridge receiver for APEX telescope: Design and Performance" **Denis Meledin**, *Chalmers University of Technology*
P5.3	"ALMA Band 2 Receiver Automated Test System" **Jan Barkhof**, *NOVA*
P5.4	"Development of ALMA Band 1 Corrugated Horns based on Metal 3D Printer" **Keiko Kaneko**, *National Astronomical Observatory of Japan*
P5.5	"Demonstrator of Cryogenic Multibeam Receiver with MMIC LNAs for 75-116 GHz" **Patrice Serres**, *IRAM*
P5.6	"Tri-millimeter band receiver in K-Q-W bands for astronomical use at Yebes 40 m radio telescope" **Félix Tercero**, *Observatorio de Yebes*
P5.7	"Study of ALMA Band 2 receiver optical design for ACA 7-m antenna" **Hiroaki Imada**, *National Astronomical Observatory of Japan*
P6. TERAHERTZ ANTENNAS & OPTICAL COMPONENTS	
P6.1	"Measurements of a 480 GHz Metamaterial Flat Lens" **Casssandra Whitton**, *Arizona State University*
P6.2	"A Tunable Linear to Right-Handed Circularly Polarized THz Antenna Based on Graphene Switch" **Mohammad Alibakhshikenari**, *Universidad Carlos III de Madrid*

P6.3	"A broad-band and dual-polarization single-layer dichroic filter for applications in Sub-THz Range" **Daniel Monforte**, *Chalmers University of Technology*
P6.4	"Beam pattern measurements of a log-spiral antenna of a quasi-optical hot electron bolometer mixer at 2.0 THz" **Yoshihisa Irimajiri**, *NICT Japan*
P6.5	"A Compact Dielectrically Loaded Quad-ridge Feed Horn for Octave Band Radio Astronomy Application" **Sara Salem Hesari**, *National Research Council Canada*
P6.6	"A satellite tracking system at 78GHz using the over-moded TE21 ground-station antenna pattern" **Hugh Gibson**, *Gibson Microwave Design (GMD)*
P6.7	"Diffraction efficiency simulation for reflective metallic gratings operating in the THz range: comparison between the RCWA and FEM-based methods" **María Manuela Fernández**, *INTA*
P6.8	"Circularly Polarized Dielectric Resonator Antenna for the Terahertz Band Applications" **Wael Jaafar**, *Carleton University*
P6.9	"Design and Analysis of a Spline-Profile Diagonal Horn Antenna at 104GHz for Microwave Holography" **Daniele Ronso Lima**, *Kapteyn Astronomical Institute*
P7. CRYOGENIC RECEIVERS, MIXERS & BACK-ENDS	
P7.1	"Fabrication of 2 THz Waveguide Type Hot Electron Bolometer Mixer with Si3N4 Membrane Structure" **Akira Kawakami**, *NICT Japan*
P7.2	"Design of a 350 GHz Circular Waveguide Superconductor-Insulator-Superconductor Mixer for Array Applications" **Boon Kok Tan**, *University of Oxford*
P7.3	"Design of RF waveguide structure for 2SB SIS mixer at 210-280 GHz" **Sabrina Realini**, *Kapteyn Astronomical Institute, University of Groningen*
P7.4	"Towards 100% array yield: understanding (and fixing) the causes of KID array inhomogeneity" **Eduard Driessen**, *IRAM*
P7.5	"Design and Performance of the Terahertz Photon Counting System: Detectors and Cryogenics" **Hajime Ezawa**, *National Astronomical Observatory of Japan*
P7.6	"Enhanced sensitivity of THz NbN hot electron bolometer mixers" **Behnam Mirzaei**, *Delft University of Technology*
P7.7	"10.7 THz HEB heterodyne mixer designs" **Johanna Böhm**, *University of Cologne*

P7.8	"Noise temperature and S-parameter measurements of an SIS-based microwave amplifier" **Takafumi Kojima**, *National Astronomical Observatory of Japan*
P7.9	"Lock-In Amplification Spectrometer Firmware for Amplitude Modulated IF Signal Outputs" **Jonathan Hoh**, *Arizona State University*
P8. MEASUREMENT TECHNIQUES	
P8.1	"Development of Broadband Permittivity Measurement System" **Ryo Sakai**, *National Astronomical Observatory of Japan*
P8.2	"Applying Energy Absorption Interferometry to THz direct detectors using photomixers" **Ian Veenendaal**, *SRON*
P8.3	"Numerical and theoretical modeling of a heterodyne noise injection radiometer system" **Tomas Thuroczy**, *IETR, Université de Rennes 1*
P8.4	"Space qualification of MMIC Schottky " diodes chips for SWI instrument of JUICE mission" **Jérôme Valentin**, *Observatory of Paris*
P8.5	"In situ 1-Port Cryogenic Vacuum Device Calibration" **Marko Neric**, *Arizona State University*
P9. TERAHERTZ SOURCES	
P9.1	"Frequency stabilization of a 4.7 THz Quantum Cascade Laser using a delay line frequency discriminator" **Sajjad Mahdizadeh**, *University of Cologne*
P9.2	"Study on Oscillation Characteristics of G-band Gyrotron Traveling Wave Tubes with a Tapered Interaction Circuit" **Yelei Yao**, *University of Electronic Science and Technology of China (UESTC)*

IMPORTANT NOTE:

Late abstract submissions are still welcome for poster presentations.

*Please visit **isstt2022.com** to submit an abstract*