Proceedings of the 14th International Symposium on Space Terahertz Technology

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Tucson, Arizona

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Tucson, Arizona

SOFIA  SAFIR  Herschel  ALMA

AST/RO  GTO  TPF

Steward Observatory Radio Astronomy Lab
University of Arizona
Tucson, Arizona

National Radio Astronomy Observatory
Tucson, Arizona

Georgia Institute of Technology
Atlanta, Georgia

April, 2004
PREFACE

The fields of THz science and technology are now experiencing tremendous growth, both in the public and private sectors. Recent advances in theory, fabrication, and analytical tools permit for the first time the realization of devices, components, and systems that were only imagined just a short time ago. Much of this accelerated growth can be traced directly to the instrument requirements of space missions (e.g. Herschel). We will be benefiting from this work for years to come, both in future missions (e.g. SOFIA and SAFIR) and in enumerable remote sensing applications (spaceborne and terrestrial). THz science and technology is still in its infancy. The next decade should prove to be even more exciting and productive than the last!

The 14th International Symposium on Space TeraHertz Technology was held at the Loews Ventana Canyon Resort in Tucson, Arizona from April 22-24, 2004. There were a total of ∼125 engineers and scientists in attendance from around the world. There were 12 oral sessions and a 3-day long poster session. A total of 55 papers were presented in the oral sessions and 35 in the poster session, for a combined total of 90 papers. The number of contributions in each subject area were roughly as follows:

- Hot Electron Bolometers: 15
- SIS Mixers: 18
- Sources: 18
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- Incoherent/Bolometers: 2
- Waveguide: 9
- Spectrometers: 5
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The Symposium would not have been possible without the support of the NRAO Tucson staff (in particular Jennifer Neighbours) and the students of the Steward Observatory Radio Astronomy Laboratory (Chris Groppi, Dathon Golish, and Abby Hedden). We also wish to thank Dr. John Papapolymerou and Peter Kirby of the Georgia Institute of Technology for their help in organizing the conference and the IEEE MTT Society for their support. Finally, the Chairs thank the SOC, session chairs, presenters, and all participants for making the 14th International Symposium on Space TeraHertz Technology an enjoyable and rewarding experience. We look forward to seeing you all in the future.

Christopher K. Walker
John M. Payne
# 14th International Symposium on Space Terahertz Technology

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**Chair:** Sigfrid Yngvesson  
**University of Massachusetts at Amherst**

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¹California Institute of Technology
²Jet Propulsion Laboratory

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²National Institute for Space Research (SRON), The Netherlands
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¹Department of Astronomy, University of Massachusetts
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California Institute of Technology, Jet Propulsion Laboratory

*Now at the Observatoire de Paris
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²Department of Electrical and Computer Engineering, NCSU
³Department of Physics and Engineering Physics, Stevens Institute of Tech

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Peiji Zhao¹, D. L. Woolard²
¹North Carolina State University
²Army Research Laboratory, Army Research Office
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13.24. Wide Band Cryogenic IF Amplifiers for ALMA and Herschel Receivers
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13.25. Investigation of Superconducting Transition in the Molybdenum-Copper Thin Film Structure Showing the Proximity Phenomenon with the Purpose of Constructing TES Bolometer
S. A. Kovtonyuk, A. G. Kovalenko, A. A. Chebotarev, A. N. Vystavkin
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13.26. Full-Waveguide Band Orthomode Transducer for the 3mm and 1mm Bands
Gopal Narayanan, Neal R. Erickson
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13.27. Precision Measurements of the Properties of Thin-film Superconducting Microstrip Lines at 100-500 GHz
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13.28. Propagation in Lossy and Superconducting Cylindrical Waveguides
Ghassan Yassin, Choy Yoong Tham, Stafford Withington
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13.29. Autocorrelation Spectrometers for (Sub)millimetre Spectroscopy
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13.30. Chip Set for Autocorrelation Spectrometer Applications
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13.31. THIS — A Quantum-Cascade-Laser Pumped Mid-Infrared Heterodyne Receiver
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13.32. Heterodyne Receiver Requirements for the Single Aperture Far-Infrared (SAFIR) Observatory
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2Caltech, MC 320-47

13.33. Cartridge-type receiver system on ASTE
Masahiro Sugimoto1, Yutaro Sekimoto1, Sozo Yokogawa1, Takeshi Okuda1,
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13.34. Current Status of the Antarctic Submillimeter Telescope and Remote Observatory
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Wilfred M. Walsh1, Christopher K. Walker2, Jacob W. Kooi3
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13.35. Efficient Side-band Ratio Measurement of a Submm Wave Mixer Using a Fourier Transform Spectrometer
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13.36. Transmission and Reflection Characteristics of Slightly Irregular Wire-Grids for Arbitrary Angles of Incidence and Grid Rotation
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