



Sarah Church

Professor of Physics, Emerita

CONTACT INFORMATION

- **Administrative Contact**

Dana Volponi - Administrative Assistant

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Bio

ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, Physics

ADMINISTRATIVE APPOINTMENTS

- Senior Associate Vice Provost, Vice Provost for Teaching and Learning, (2019-2020)
- Senior Associate Vice Provost, Vice Provost Undergraduate Education, (2016-2018)
- Director, Hanson Experimental Physics Laboratory, (2013-2016)
- Professor, Stanford University, (2012- present)
- Professor by Courtesy, SLAC PPA, (2012- present)
- Chambers Fellow, Stanford University, (2011-2011)
- Associate Professor by Courtesy, SLAC PPA, (2007-2012)
- Associate Professor, Stanford University, (2006-2012)
- Assistant Professor, Stanford University, (1999-2005)
- Terman Fellowship, Stanford University, (1999-1999)
- Senior Research Fellow, California Institute of Technology, (1997-1998)
- Research Fellow, California Institute of Technology, (1994-1997)
- Post-Graduate Research Physicist, University of California, Berkeley, (1994-1994)
- Postdoctoral Research Assistant, Queen Mary Westfield College University of London, (1989-1993)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Selection Committee, DARE fellowships, Stanford University
- Collaborator, The Carbon Monoxide Mapping Array Pathfinder (COMAP) (2015 - present)
- Member, Hansen Experimental Physics Laboratory, HEPL, Stanford University (2013)
- Chair, Committee on Undergraduate Standards and Policies, Stanford University (2013 - 2016)
- Director, Hansen Experimental Physics Laboratory, Stanford University (2013 - 2016)

- Visiting Committee, Dept. Physics, University of Miami (2013 - 2013)
- Chair, Graduate Advising, Stanford University (2012 - present)
- Member, Convener Snowmass 2013 Cosmic Frontier, Particle Physics Astrophysics Community Planning Process (2012 - 2013)
- Member, University Course Evaluation Committee, Stanford University (2012 - 2013)
- Chair, Astronomy Astrophysics Advisory Committee, Astronomy Astrophysics (2011 - 2012)
- Member, JPL Astrophysics Advisory Committee, JPL Astrophysics (2010 - present)
- Member, National Radio Astronomy Users Committee, National Radio Astronomy (2010 - present)
- Principal Investigator, The Argus experiment (90 GHz spectrometer for GBT) (2009 - present)
- Member, Astronomy Astrophysics Advisory Committee, Astronomy Astrophysics (2009 - 2012)
- Visiting Committee, Dept. Experimental Physics, U. Ireland, Maynooth (2009 - 2009)
- Member, SLAC PPA, Stanford University (2007)
- Deputy Director, Kavli Institute for Particle Astrophysics Cosmology, Stanford University (2007 - 2011)
- Member, NSF Office of Polar Programs Advisory Committee, National Science Foundation (2006 - 2008)
- Collaborator, QUIET CMB Polarization Experiment (2005 - 2012)
- Chair, Graduate Studies Committee, Stanford University (2005 - 2008)
- Member, NRC Committee to Review the Science Requirements for the ALMA Array, National Academies of Science (2005 - 2005)
- Member, Experimental Astrophysics Search Committees, Stanford University (2004 - 2006)
- Member, Cosmic Microwave Background Research, NSF/NASA/DOE Taskforce (2004 - 2005)
- Member, Kavli Institute of Particle Astrophysics Cosmology, KIPAC, Stanford University (2003)
- Member, NASA Structure Evolution of the Universe Road-Mapping Team (2001 - 2002)
- Principal Investigator, The QUaD (QUEST at DASI) CMB Polarization Experiment (2000 - 2010)
- Principal Investigator, The Sunyaev-Zel'dovich Infrared Experiment (SuZIE) (1999 - 2006)
- Member, NSF NASA Proposal Review Panels (1998)
- Collaborator, The Planck Satellite (1996 - 2012)
- Collaborator, ISO Long Wavelength Spectrometer Consortium Scientist (1994 - 1997)

PROFESSIONAL EDUCATION

- BA, Cambridge University , Natural Sciences (1986)
- PhD, Cambridge University (1991)

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Experimental & Observational Astrophysics and Cosmology

Teaching

COURSES

2023-24

- Mechanics, Concepts, Calculations, and Context: PHYSICS 41E (Win)
- Why College? Your Education and the Good Life: COLLEGE 101 (Aut)

Publications

PUBLICATIONS

- **COMAP Early Science. VIII. A Joint Stacking Analysis with eBOSS Quasars** *ASTROPHYSICAL JOURNAL*
Dunne, D. A., Cleary, K. A., Breysse, P. C., Chung, D. T., Ihle, H. T., Bond, J., Eriksen, H., Gundersen, J., Keating, L. C., Kim, J., Lunde, J., Murray, N., Padmanabhan, et al
2024; 965 (1)
- **GBT/Argus Observations of Molecular Gas in the Inner Regions of IC 342** *ASTROPHYSICAL JOURNAL*
Li, J., Harris, A. I., Rosolowsky, E., Kepley, A. A., Frayer, D., Bolatto, A. D., Leroy, A. K., Donovan Meyer, J., Church, S., Gundersen, J., Cleary, K.
2024; 963 (2)
- **Dynamics in Star-forming Cores (DiSCo): project overview and the first look towards the B1 and NGC 1333 regions in Perseus** *MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY*
Chen, C., Friesen, R., Li, J., Schmiedeke, A., Frayer, D., Li, Z., Tobin, J., Looney, L. W., Offner, S., Mundy, L. G., Harris, A., Church, S., Ostriker, et al
2023; 527 (4): 10279-10293
- **The Giant Low Surface Brightness Galaxy Malin 1: New Constraints for Its Molecular Gas Mass from GBT/ARGUS Observations** *ASTROPHYSICAL JOURNAL LETTERS*
Galaz, G., Frayer, D. T., Blana, M., Howk, J., Puzia, T., Johnston, E. J., Ordenes-Briceno, Y., Church, S., Gil, S., Joachimi, K., Mora, M.
2022; 940 (2)
- **COMAP Early Science. III. CO Data Processing** *ASTROPHYSICAL JOURNAL*
Foss, M. K., Ihle, H. T., Borowska, J., Cleary, K. A., Eriksen, H., Harper, S. E., Kim, J., Lamb, J. W., Lunde, J. G. S., Philip, L., Rasmussen, M., Stutzer, N., Uzgil, et al
2022; 933 (2)
- **COMAP Early Science. II. Pathfinder Instrument** *ASTROPHYSICAL JOURNAL*
Lamb, J. W., Cleary, K. A., Woody, D. P., Catha, M., Chung, D. T., Gundersen, J., Harper, S. E., Harris, A. I., Hobbs, R., Ihle, H. T., Kocz, J., Pearson, T. J., Philip, et al
2022; 933 (2)
- **COMAP Early Science. VI. A First Look at the COMAP Galactic Plane Survey** *ASTROPHYSICAL JOURNAL*
Rennie, T. J., Harper, S. E., Dickinson, C., Philip, L., Cleary, K. A., Bond, R. J., Borowska, J., Breysse, P. C., Catha, M., Cepeda-Arroita, R., Chung, D. T., Church, S. E., Dunne, et al
2022; 933 (2)
- **COMAP Early Science. VII. Prospects for CO Intensity Mapping at Reionization** *ASTROPHYSICAL JOURNAL*
Breysse, P. C., Chung, D. T., Cleary, K. A., Ihle, H. T., Padmanabhan, H., Silva, M. B., Bond, J., Borowska, J., Catha, M., Church, S. E., Dunne, D. A., Eriksen, H., Foss, et al
2022; 933 (2)
- **COMAP Early Science. V. Constraints and Forecasts at z similar to 3** *ASTROPHYSICAL JOURNAL*
Chung, D. T., Breysse, P. C., Cleary, K. A., Ihle, H. T., Padmanabhan, H., Silva, M. B., Bond, J., Borowska, J., Catha, M., Church, S. E., Dunne, D. A., Eriksen, H., Foss, et al
2022; 933 (2)
- **COMAP Early Science. I. Overview** *ASTROPHYSICAL JOURNAL*
Cleary, K. A., Borowska, J., Breysse, P. C., Catha, M., Chung, D. T., Church, S. E., Dickinson, C., Eriksen, H., Foss, M., Gundersen, J., Harper, S. E., Harris, A., Hobbs, et al
2022; 933 (2)
- **COMAP Early Science. IV. Power Spectrum Methodology and Results** *ASTROPHYSICAL JOURNAL*
Ihle, H. T., Borowska, J., Cleary, K. A., Eriksen, H., Foss, M. K., Harper, S. E., Kim, J., Lunde, J. G. S., Philip, L., Rasmussen, M., Stutzer, N., Uzgil, B. D., Watts, et al
2022; 933 (2)
- **Neutral versus Ion Line Widths in Barnard 5: Evidence for Penetration by Magnetohydrodynamic Waves** *ASTROPHYSICAL JOURNAL*
Pineda, J. E., Schmiedeke, A., Caselli, P., Stahler, S. W., Frayer, D. T., Church, S. E., Harris, A.

2021; 912 (1)

- **Forecasting [C ii] Line-intensity Mapping Measurements between the End of Reionization and the Epoch of Galaxy Assembly** *ASTROPHYSICAL JOURNAL*
Chung, D. T., Viero, M. P., Church, S. E., Wechsler, R. H.
2020; 892 (1)
- **Investigating the complex velocity structures within dense molecular cloud cores with GBT-Argus** *MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY*
Chen, C., Storm, S., Li, Z., Mundy, L. G., Frayer, D., Li, J., Church, S., Friesen, R., Harris, A., Looney, L. W., Offner, S., Ostriker, E. C., Pineda, et al
2019; 490 (1): 527–39
- **Cross-correlating Carbon Monoxide Line-intensity Maps with Spectroscopic and Photometric Galaxy Surveys** *ASTROPHYSICAL JOURNAL*
Chung, D. T., Viero, M. P., Church, S. E., Wechsler, R. H., Alvarez, M. A., Bond, J., Breysse, P. C., Cleary, K. A., Eriksen, H. K., Foss, M. K., Gundersen, J. O., Harper, S. E., Ihle, et al
2019; 872 (2)
- **An Ammonia Spectral Map of the L1495-B218 Filaments in the Taurus Molecular Cloud. II. CCS and HC7N Chemistry and Three Modes of Star Formation in the Filaments** *ASTROPHYSICAL JOURNAL*
Seo, Y., Majumdar, L., Goldsmith, P. F., Shirley, Y. L., Willacy, K., Ward-Thompson, D., Friesen, R., Frayer, D., Church, S. E., Chung, D., Cleary, K., Cunningham, N., Devaraj, et al
2019; 871 (2)
- **On Estimation of Contamination from Hydrogen Cyanide in Carbon Monoxide Line-intensity Mapping** *ASTROPHYSICAL JOURNAL*
Chung, D. T., Li, T. Y., Viero, M. P., Church, S. E., Wechsler, R. H.
2017; 846 (1)
- **CONNECTING CO INTENSITY MAPPING TO MOLECULAR GAS AND STAR FORMATION IN THE EPOCH OF GALAXY ASSEMBLY** *ASTROPHYSICAL JOURNAL*
Li, T. Y., Wechsler, R. H., Devaraj, K., Church, S. E.
2016; 817 (2)
- **Argus: A 16-pixel Millimeter-Wave Spectrometer for the Green Bank Telescope**
Sieth, M., Devaraj, K., Voll, P., Church, S., Gawande, R., Cleary, K., Readhead, A. C. S., Kangaslahti, P., Samoska, L., Gaier, T., Goldsmith, P. F., Harris, A. I., Gundersen, et al
edited by Holland, W. S., Zmuidzinas, J.
SPIE-INT SOC OPTICAL ENGINEERING.2014
- **NOVEL COMPACT WAVEGUIDE DUAL CIRCULAR POLARIZER** *PROGRESS IN ELECTROMAGNETICS RESEARCH-PIER*
Chang, C., Tantawi, S., Church, S., Neilson, J., Larkoski, P. V.
2013; 136: 1-16
- **Low Noise Amplifiers for 140 GHz Wide-Band Cryogenic Receivers**
Larkoski, P. V., Kangaslahti, P., Samoska, L., Lai, R., Sarkozy, S., Church, S. E., IEEE
IEEE.2013
- **The QUIET Instrument** *ApJ*
Bischoff, C., Brizius, A., Buder, I., Chinone, Y., Cleary, K., Dumoulin, R. N., Kusaka, A., Monsalve, R., Naess, S. K., Newburg, L. B., Nixon, G., Reeves, R., Smith, et al
2013; 768: 9
- **Note: Cryogenic microstripline-on-Kapton microwave interconnects** *REVIEW OF SCIENTIFIC INSTRUMENTS*
Harris, A. I., Sieth, M., Lau, J. M., Church, S. E., SAMOSKA, L. A., Cleary, K.
2012; 83 (8)
- **A G-band cryogenic MMIC heterodyne receiver module for astronomical applications** *INTERNATIONAL JOURNAL OF MICROWAVE AND WIRELESS TECHNOLOGIES*
Voll, P., Samoska, L., Church, S., Lau, J. M., Sieth, M., Gaier, T., Kangaslahti, P., Soria, M., Tantawi, S., Van Winkle, D.
2012; 4 (3): 283-289
- **Technology developments for a large-format heterodyne MMIC array at W-band** *INTERNATIONAL JOURNAL OF MICROWAVE AND WIRELESS TECHNOLOGIES*

- Sieth, M., Church, S., Lau, J. M., Voll, P., Gaier, T., Kangaslahti, P., Samoska, L., Soria, M., Cleary, K., Gawande, R., Readhead, A. C., Reeves, R., Harris, et al
2012; 4 (3): 299-307
- **Second Season QUIET Observations: Measurements of the CMB Polarization Power Spectrum at 95 GHz** *Astrophysics Journal*
Araujo, D., Bischoff, C., Brizius, A., Buder, I., Chinone, Y., Cleary, K., Dumoulin, R. N., Kusaka, A., Monsalve, R., Naess, S. K., Newburgh, L. B., Reeves, R., Wehus, et al
2012; 760: 145
 - **W-band heterodyne receiver module with 27 K noise temperature** *2012 IEEE MTT-S International Microwave Symposium Digest (MTT). IEEE, Piscataway, NJ*
Gawande, R., Reeves, R., Cleary, K., Readhead, A. C., Gaier, T., Kangaslahti, P., Samoska, L., Church, S., Sieth, M., Voll, P., Harris, A., Lai, R., Sarkozy, et al
2012: 1-3
 - **Planck early results. IV. First assessment of the High Frequency Instrument in-flight performance** *ASTRONOMY & ASTROPHYSICS*
Ade, P. A., Aghanim, N., Ansari, R., Arnaud, M., Ashdown, M., Aumont, J., Banday, A. J., Bartelmann, M., Bartlett, J. G., Battaner, E., Benabed, K., Benoit, A., Bernard, et al
2011; 536
 - **Planck early results. VI. The High Frequency Instrument data processing** *ASTRONOMY & ASTROPHYSICS*
Ade, P. A., Aghanim, N., Ansari, R., Arnaud, M., Ashdown, M., Aumont, J., Banday, A. J., Bartelmann, M., Bartlett, J. G., Battaner, E., Benabed, K., Benoit, A., Bernard, et al
2011; 536
 - **MEASURING THE GALAXY CLUSTER BULK FLOW FROM WMAP DATA** *ASTROPHYSICAL JOURNAL*
Osborne, S. J., Mak, D. S., Church, S. E., Pierpaoli, E.
2011; 737 (2)
 - **THE QUaD GALACTIC PLANE SURVEY. II. A COMPACT SOURCE CATALOG** *ASTROPHYSICAL JOURNAL SUPPLEMENT SERIES*
Culverhouse, T., Ade, P., Bock, J., Bowden, M., Brown, M. L., Cahill, G., Castro, P. G., Church, S., Friedman, R., Ganga, K., Gear, W. K., Gupta, S., Hinderks, et al
2011; 195 (1)
 - **First Season QUIET Observations: Measurements of Cosmic Microwave Background Polarization Power Spectra at 43 GHz in the Multipole Range $25 \leq \ell \leq 475$** *Astrophysical Journal*
Bischoff, A., Brizius, C., Buder, I., Chinone, Y., Cleary, K., Dumoulin, R. N., Monsalve, A., Naess, S. K., Newburgh, L. B., Smith, K. M., Wehus, I. K., Zuntz, J. A., Zwart, et al
2011; 741: 111
 - **A G-Band Cryogenic MMIC Heterodyne Receiver Module for Astronomical Applications**
Voll, P., Samoska, L., Church, S., Lau, J. M., Sieth, M., Gaier, T., Kangaslahti, P., Soria, M., Tantawi, S., Van Winkle, D., IEEE
IEEE.2011: 523–26
 - **Technology developments for a scalable heterodyne MMIC array at W-band**
Sieth, M., Church, S., Lau, J. M., Voll, P., Gaier, T., Kangaslahti, P., Samoska, L., Soria, M., Cleary, K., Gawande, R., Readhead, A. C. S., Reeves, R., Harris, et al
IEEE.2011: 527–30
 - **THE QUaD GALACTIC PLANE SURVEY. I. MAPS AND ANALYSIS OF DIFFUSE EMISSION** *ASTROPHYSICAL JOURNAL*
Culverhouse, T., Ade, P., Bock, J., Bowden, M., Brown, M. L., Cahill, G., Castro, P. G., Church, S. E., Friedman, R., Ganga, K., Gear, W. K., Gupta, S., Hinderks, et al
2010; 722 (2): 1057-1077
 - **Planck pre-launch status: The Planck mission** *ASTRONOMY & ASTROPHYSICS*
Tauber, J. A., Mandolesi, N., Puget, J., Banos, T., Bersanelli, M., Bouchet, F. R., Butler, R. C., Charra, J., Crone, G., Dodsworth, J., Efstathiou, G., Gispert, R., Guyot, et al
2010; 520
 - **Planck pre-launch status: The HFI instrument, from specification to actual performance** *ASTRONOMY & ASTROPHYSICS*
Lamarre, J., Puget, J., Ade, P. A., Bouchet, F., Guyot, G., Lange, A. E., Pajot, F., Arondel, A., Benabed, K., Beney, J., Benoit, A., Bernard, J., Bhatia, et al

2010; 520

- **Planck pre-launch status: The optical architecture of the HFI** *ASTRONOMY & ASTROPHYSICS*

Ade, P. A., Savini, G., Sudiwala, R., Tucker, C., Catalano, A., Church, S., Colgan, R., Desert, F. X., Gleeson, E., Jones, W. C., Lamarre, J., Lange, A., Longval, et al

2010; 520

- **PARAMETER ESTIMATION FROM IMPROVED MEASUREMENTS OF THE COSMIC MICROWAVE BACKGROUND FROM QUaD** *ASTROPHYSICAL JOURNAL*

Gupta, S., Ade, P., Bock, J., Bowden, M., Brown, M. L., Cahill, G., Castro, P. G., Church, S., Culverhouse, T., Friedman, R. B., Ganga, K., Gear, W. K., Hinderks, et al

2010; 716 (2): 1040-1046

- **CHARACTERIZATION OF THE MILLIMETER-WAVE POLARIZATION OF CENTAURUS A WITH QUaD** *ASTROPHYSICAL JOURNAL*

Zemcov, M., Ade, P., Bock, J., Bowden, M., Brown, M. L., Cahill, G., Castro, P. G., Church, S., Culverhouse, T., Friedman, R. B., Ganga, K., Gear, W. K., Gupta, et al

2010; 710 (2): 1541-1550

- **Development of a 150 GHz MMIC module prototype for large-scale CMB radiation experiments** *Conference on Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy V*

Voll, P., Lau, J. M., Sieth, M., Church, S. E., Samoska, L. A., Kangaslahti, P. P., Soria, M., Gaier, T. C., Van Winkle, D., Tantawi, S.

SPIE-INT SOC OPTICAL ENGINEERING.2010

- **Development of MMIC receivers for cosmic microwave background interferometry** *Conference on Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy V*

Sieth, M., Lau, J. M., Voll, P., Church, S., Kangaslahti, P., Samoska, L., Soria, M., Gaier, T., Van Winkle, D., Neilson, J., Tantawi, S., Cleary, K., Readhead, et al

SPIE-INT SOC OPTICAL ENGINEERING.2010

- **COSMOLOGICAL PARAMETERS FROM THE QUAD CMB POLARIZATION EXPERIMENT** *ASTROPHYSICAL JOURNAL*

Castro, P. G., Ade, P., Bock, J., Bowden, M., Brown, M. L., Cahill, G., Church, S., Culverhouse, T., Friedman, R. B., Ganga, K., Gear, W. K., Gupta, S., Hinderks, et al

2009; 701 (2): 857-864

- **SMALL ANGULAR SCALE MEASUREMENTS OF THE COSMIC MICROWAVE BACKGROUND TEMPERATURE POWER SPECTRUM FROM QUaD** *ASTROPHYSICAL JOURNAL LETTERS*

Friedman, R. B., Ade, P., Bock, J., Bowden, M., Brown, M. L., Cahill, G., Castro, P. G., Church, S., Culverhouse, T., Ganga, K., Gear, W. K., Gupta, S., Hinderks, et al

2009; 700 (2): L187-L191

- **QUaD: A HIGH-RESOLUTION COSMIC MICROWAVE BACKGROUND POLARIMETER** *ASTROPHYSICAL JOURNAL*

Hinderks, J. R., Ade, P., Bock, J., Bowden, M., Brown, M. L., Cahill, G., Carlstrom, J. E., Castro, P. G., Church, S., Culverhouse, T., Friedman, R., Ganga, K., Gear, et al

2009; 692 (2): 1221-1246

- **Coherent detectors** *Journal of Physics: Conference Series*

Lawrence, C. R., Church, S., Gaier, T., Lai, R., Ruf, C., Wollack, E.

2009; 012002

- **Improved Measurements of the Temperature Polarization of the Cosmic Microwave Background from QUaD** *The Astrophysical Journal*

Brown, M. L., Ade, P., Bock, J., Bowden, M., Cahill, G., Castro, P. G., Church, S., Culverhouse, T., Friedman, R., Ganga, K., Gear, W. K., Hinderks, J., Kovac, et al

2009; 705: 978-999

- **Second third season QUaD CMB temperature polarization power spectra** *The Astrophysical Journal*

Pryke, C., Ade, P., Bock, J., Bowden, M., Brown, M. L., Cahill, G., Castro, P. G., Church, S., Culverhouse, T., Friedman, R., Ganga, K., Gear, W. K., Gupta, et al

2009; 692 (2): 1247-1270

- **Parity Violation Constraints Using Cosmic Microwave Background Polarization Spectra from 2006 2007 Observations by the QUaD Polarimeter** *Physical Review Letters*

- Wu, E. S., Ade, P., Bock, J., Bowden, M., Cahill, G., Castro, P. G., Church, S., Culverhouse, T., Friedman, R., Ganga, K., Gear, W. K., Hinderks, J., Kovac, et al
2009; 102 (16): 161302
- **The quasi-optical design of the QUaD telescope** *INFRARED PHYSICS & TECHNOLOGY*
O'Sullivan, C., Cahill, G., Murphy, J. A., Gear, W. K., Harris, J., Ade, P. A., Church, S. E., Thompson, K. L., Pryke, C., Bock, J., Bowden, M., Brown, M. L., Carlstrom, et al
2008; 51 (4): 277-286
 - **First Season QUaD CMB Temperature Polarization Power Spectra** *ApJ*
Ade, P., Bock, J., Bowden, M., Brown, M. L., Cahill, G., Carlstrom, J. E., Castro, P. G., Church, S., Culverhouse, T., Friedman, R., Ganga, K., Gear, W. K., Hinderks, et al
2008; 674: 22–28
 - **Modelling of the optical performance of millimeter-wave instruments in MODAL** *SPIE*
Gradziel, M. L., O'Sullivan, C., Murphy, J. A., Cahill, G., Curran, G. S., Pryke, C., Gear, W., Church, S.
edited by Linden, K. J., Sadwick, L. P.
2007: 64720D
 - **Corrugated waveguide band edge filters for CMB experiments in the far infrared** *INFRARED PHYSICS & TECHNOLOGY*
Gleeson, E., Murphy, J. A., Maffei, B., Lanigan, W., Brossard, J., Cahill, G., Cartwright, E., Church, S. E., Hinderks, J., Kirby, E., O'Sullivan, C.
2005; 46 (6): 493-505
 - **Millimeter-wave profiled corrugated horns for the QUaD cosmic background polarization experiment** *INTERNATIONAL JOURNAL OF INFRARED AND MILLIMETER WAVES*
Murphy, J. A., Gleeson, E., Cahill, G., Lanigan, W., O'Sullivan, C., Cartwright, E., Church, S. E., Hinderks, J., Kirby, E., Thompson, K., Rusholme, B., Gear, W. K., Maffei, et al
2005; 26 (4): 505-523
 - **Recent results from the SuZIE experiment: An investigation of SZ scaling relationships** *Meeting on Observing Dark Energy*
Church, S. E., Benson, B. A., Thompson, K. L.
ASTRONOMICAL SOC PACIFIC.2005: 157–166
 - **Measurements of Sunyaev-Zel'dovich effect scaling relations for clusters of galaxies** *ASTROPHYSICAL JOURNAL*
Benson, B. A., Church, S. E., Ade, P. A., Bock, J. J., Ganga, K. M., Henson, C. N., Thompson, K. L.
2004; 617 (2): 829-846
 - **Effects of submillimeter and radio point sources on the recovery of Sunyaev-Zel'dovich galaxy cluster parameters** *ASTROPHYSICAL JOURNAL*
Knox, L., Holder, G. P., Church, S. E.
2004; 612 (1): 96-107
 - **Scientific optimization of a ground-based CMB polarization experiment** *MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY*
Bowden, M., Taylor, A. N., Ganga, K. M., Ade, P. A., Bock, J. J., Cahill, G., Carlstrom, J. E., Church, S. E., Gear, W. K., Hinderks, J. R., Hu, W., Keating, B. G., Kovac, et al
2004; 349 (1): 321-335
 - **Bandwidth characteristics of corrugated waveguidehorn feeds for CMB experiments** *SPIE*
Gleeson, E., Lanigan, W., Murphy, A. J., O'Sullivan, C., Maffei, B., Church, S. E., Cartwright, E.
2004: 713
 - **Measuring the cosmic microwave background polarization with the QUaD experiment** *SPIE*
Bowden, M., Taylor, A. N., Ganga, K. M., Ade, P. A., Bock, J. J., Cahill, G. A., Carlstrom, J. E., Church, S. E., Gear, W. K., Hinderks, J. R., Hu, W., Keating, B. G., Kovac, et al
2004: 84
 - **The quasi-optical design of the QUaD Telescope** *SPIE*
Cahill, G., O'Sullivan, C., Murphy, A. J., Lanigan, W., Gleeson, E., Ade, P. A. R., Bock, J. J., Bowden, M., Carlstrom, J. E., Church, S. E., Ganga, K., Walter, G., Harris, et al
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- **Recent Results from the SuZIE Experiment: An Investigation of SZ Scaling Relationships** *Observing Dark Energy*
Church, S. E., Benson, B. A., Thompson, K. L.
2004: 157
- **Effects of sub-mm radio point sources on the recovery of Sunyaev-Zeldovich galaxy cluster parameters** *Astrophysical Journal*
Knox, L., Holder, G., Church, S.
2004; 612: 96
- **QUEST on DASI: a South Pole CMB polarization experiment** *Workshop on the Cosmic Microwave Background Radiation and its Polarization*
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