Award Presentations p. 1
Relativity in the Future of Engineering p. 2
Precise Timing in Electric Power Systems p. 15
Analysis of the Frequency Stability of On-Orbit GPS Navstar Clocks p. 23
Using a New GPS Frequency Reference in Frequency Calibration Operations p. 33
Use of the Navstar Global Positioning System (GPS) in the Defense Communications System (DCS) p. 40
3S Navigation R100 Preliminary Implementation of GPS/GLONASS Time Transfer p. 45
Precise Time Dissemination Using the INMARSAT Geostationary Overlay p. 55
Comparative Analysis of Parameters of GLONASS Spaceborne Frequency Standards When Used Onboard and on Service Life Tests p. 65
NIST-7, The New US Primary Frequency Standard p. 71
An Analysis of Major Frequency Shifts in the LPTF Optically Pumped Primary Frequency Standard p. 75
Reducing the Effect of Local Oscillator Phase Noise on the Frequency Stability of Passive Frequency Standards p. 81
Potential for Improving the Rubidium Frequency Standard with a Novel Optical Pumping Scheme Using Diode Lasers p. 87
Prospects for Developing GLONASS Spaceboard Atomic Beam Frequency Standard with Laser Pumping p. 97
A Dual Frequency Synthesis Scheme for a High C-Field Cesium Resonator p. 105
Prospects for the Use of Multimode Rabi Cavities in Atomic Beam Frequency Standards p. 109
Atomic Phase Delay in a Rubidium Atomic Clock p. 114
Life, Line Q, Spin-Exchange Tuning and Stability of Atomic Hydrogen Maser Frequency Standards p. 120
Recent Investigations with the Harvard-Smithsonian Cryogenic Hydrogen Maser p. 129
Long Term Stability of Hg[superscript +] Trapped Ion Frequency Standards p. 132
Progress at CSIRO Australia Towards a Microwave Frequency Standard Based on Trapped Laser-Cooled [superscript 171]Yb[superscript +] Ions p. 139
Improved Linear Ion Trap Physics Package p. 144
Doppler Sideband Spectra for Ions in a Linear Trap p. 148
Traceability in Atomic Frequency Standards p. 155
Subminiature Rubidium Frequency Standard for Commercial Applications p. 164
Dependence of SAW Resonator f/f Noise on Device Size p. 178
Measured vs. Volume Model-Predicted Flicker-of-Frequency Instability in VHF Quartz Crystal Resonators p. 186
A Thermodynamic Resonance in Piezoelectric Crystal Plates of Thickness-Shear Vibrations p. 193
A High Performance VHF Oscillator with Optimized Crystal Drive Power p. 209
A High Isolation Low Noise Amplifier with Near Unity Gain Up to 100 MHz p. 216
A New High-Isolation Environmentally Insensitive, Wideband Distribution Amplifier p. 220
Spur Reduction Techniques in Direct Digital Synthesizers p. 230
Discrete Spurious Signals and Background Noise in Direct Digital Frequency Synthesizers p. 242
A New Technique of Frequency Synthesis p. 251
The Composite DDS - A New Direct Digital Synthesizer Architecture p. 255
Induced End-of-Life Errors in a Fast Settling PLL p. 261
A Digital Equivalent of an Analog Spectrum Analyzer p. 270
Measurement of the Phase Noise Characteristics of an Unlocked Communications Channel Identifier p. 283
Reducing Errors, Complexity, and Measurement Time of PM Noise Measurements p. 289
Relationship of AM to PM Noise in Selected RF Oscillators p. 298
Investigations of AM and PM Noise in X-Band Devices p. 303
Cross Correlation Analysis Improves Time Domain Measurements p. 312
Flicker Noise Process Analysis p. 321
A New Approach to Clock Modeling and Kalman Filter Time and Frequency Prediction p. 331
A Simple Precision Frequency Standard Comparator p. 335
A Study of the Time-Dependence of Electrodiffusion in Quartz p. 371
Quartz Crystals for Monolithic Piezoelectric Filters p. 377
Controlled Dissolution Applied to Berlinite and Quartz Materials p. 381
Etching of Quartz Crystal Spheres p. 390
Bi- and Three-Dimensional Prediction of Etching Shapes in Quartz Micromachined Structures p. 397
Defects in Surface Layers of Lapped Crystal Plates and their Influence on Q-Factors of Crystal Units p. 407
The Use of an X-Ray Three Beam Technique to Improve the Adjustment of Bars for Cutting p. 416
Thermoluminescence (TL) Related to [actual symbol not reproducible] Defects (M = Li or Na) in Quartz p. 420
The Determination of Internal Stress in the Quartz Crystals p. 427
An Analysis of Transversely Varying Thickness Modes in Quartz Resonators with Bevelled Cylindrical Edges p. 431
Calculated Orientations and Aspect Ratios of Stiffened Rectangular Support Systems of SC-Cut Quartz Resonators Which Minimize the Influence of Fabrication Imperfections on Acceleration Sensitivity p. 442
A Perturbation Analysis on Contoured Crystal Plates p. 448
Effect of Stress on Guided EM Waves in Anisotropic Dielectric Plates p. 461
Calculation of Radiated Electromagnetic Power From Bulk Acoustic Wave Resonators  p. 472
Exact Analysis of the Propagation of Acoustic Waves in Multilayered Anisotropic Piezoelectric Plates  p. 476
Numerical Analysis of Two Dimensional Thin Film Resonators  p. 502
Self-Sustained Acoustoelectric and Photoelectric Oscillations in Systems With Relaxation  p. 509
Rigorous Modeling of Corrugated Surfaces in Microacoustics  p. 514
Frequency Temperature Characteristics of the x-Length Strip Resonators of AT-Cut Quartz  p. 523
Forced Vibrations of KT-Cut Width-Extensional Mode Quartz Crystal Resonators  p. 527
Application of TC-Cut Quartz Resonators Excited by Lateral Electrical Field  p. 535
Thin Rotated Y-Cut Quartz Resonators Vibrating in B-Mode Over a Wide Temperature Range  p. 541

Research Aimed at Designing a Miniature Ruggedized Configuration of BVA-Type Crystal Unit  p. 548
The Effects of Metal Depositions Upon Acceleration Induced Frequency Shifts for Quartz Crystal Units  p. 560
Investigations of Gold Films on Quartz Crystals  p. 574
Precision Frequency Trimming of SAW and STW Resonators Using Xe[superscript +] Heavy Ion Bombardment  p. 582
Application of Quartz Micromachining to the Realization of a Pressure Sensor  p. 587
Enhancement of Quartz Electrical Conductivity by Ion Implantation  p. 597
Measuring Liquid Properties with Smooth- and Textured-Surface Resonators  p. 603
Tactical BVA Quartz Resonator Performance  p. 609
Results of the Quartz Crystal Measurement Data Obtained at the Leadless Resonator Measurement Workshop Held in Japan  p. 614
Eight-Pole Monolithic Filters Using Lithium Tantalate  p. 620
Modelization of Thickness Shear Integrated Filters  p. 626
Observations of the Crystal Perfection and of Surface Acoustic Waves in Lithium Niobate  p. 632
Delta Function Model Analysis of SSBW Spurious Response in SAW Devices  p. 639
Design, Fabrication and Performance of 2 GHz Surface Transverse Wave Resonators  p. 645
An Analysis of Self-Supported Circular Structures for Reduced Stress Sensitivity in SAW Devices  p. 650
Withdrawal Weighted Fan-Shaped SAW Transducers  p. 656
Deformation-Sensitive Cuts for Surface Acoustic Waves in [alpha]-Quartz  p. 660
Precision SAW Pressure Sensors  p. 665
Voltage Controlled S-TCXO's Employing NS-GT Cut Quartz Crystal Resonators  p. 670
Manufacturing Hybrid TCXOs  p. 679
The New Method of Statistic Piesewise-Linear Interpolation and its Application to DTCXO Creation  p. 687
Universal, Computer Facilitated, Steady State Oscillator, Closed Loop Analysis Theory  p. 698
Dynamic Analysis of Modulated Oscillators  p. 706
The Lever Oscillator for Use in High Resistance Resonator Applications  p. 711
Overmoded High Q Resonators for Microwave Oscillators

A Study of a MSW Device Using a Low-Loss Bi,Ga Substituted YIG Film Having a Proper Growth Induced Anisotropy Magnetic Field Characterized by Ultra-Low Frequency-Temperature Dependencies

Extremely High-Loop Power GHz Range Surface Transverse Wave Oscillators Using AB-Class Amplifiers

Phase Noise and Frequency Stability of Ka-Band Harmonic Dielectric Resonator Oscillators

A Temperature Compensated 1 GHz STW Based Multifrequency Oscillator

High-Overtone, Bulk Acoustic Resonator Frequency Stability Improvements

High-Q TE Stabilized Sapphire Microwave Resonators for Low Noise Applications

Improved Sapphire Dielectric Resonators for Ultrastable Oscillators

Microwave Oscillators Incorporating Cryogenic Sapphire Dielectric Resonators

Closed Loop Tests of the NASA Sapphire Phase Stabilizer

An Uncooled Microwave Oscillator with 1-Million Effective Q-Factor

A Thallium-Based Superconducting Cavity for Microwave Oscillator Applications

The Flight Performance of the Galileo Orbiter USO

Factorizational Synthesis of SAW Bandpass Filters

X Ray Topography Study of Gallium Phosphate Crystals and Resonators

Application of Low Cost Frequency Standards for Commercial and Military GPS

Author Index

Proceeding Ordering Information

Specifications and Standards Related to Frequency Control

Table of Contents provided by Blackwell's Book Services and R.R. Bowker. Used with permission.