

No. 30 A
NATURAL SCIENCE

CONTENTS

[Mathematics]

YOSHIDA, K., ODA, S. : On Pseudo-Affine Domains	1
FUKUHARA, Y., NAKAGAWA, S., NIKI, N., ICIMURA, M. : Higher Order Cumulants of Distribution of $\sqrt{b_1}$ for Nonnormal Populations	7
TANAKA, H. : Subordinate Biharmonic Spaces	15
FUNAKURA, T. : Mathematics as Liberal Arts — ability of mathematical thinking —	23

[Physics · Physical Properties]

KOIKE, T., KADOWAKI, S. : Quantum Monte Carlo Simulation of the one-dimensional Exchange Interaction Model	39
TACHIBANA, H. : Octonion Formulation of Eight-Dimensional Cartan's Pure Spinors.....	51
MURAMOTO, T., YAMAMURA, Y. : Simulation of Heavy-Ion Cluster Impact Fusion	65
OHKAME, M., MORIWAKI, M. : The Wind Above the Top of Mt. Nagi	75
HOSHIKAWA, Y., NINAGAWA, K. : Low-Temperature Thermoluminescence System.....	83
OHKURA, H. : Loosing Energy Mechanism of the Optically Excited F Centers in KCl.....	91
TEI, M., MOTOYASU, R., MANMOTO, Y., SATO, M., SAKAMOTO, H., MIZOGUCHI, K., KUME, K. : Transverse Relaxation of Nuclear Quadrupole Resonance in High- Temperature Superconductor $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$	103

[Chemistry]

MORI, S., KAKITANI, S., MIYAKE, H., YAMAGUCHI, K. : Phase Changes and Fluorescent Spectra of $(\text{Zn}_{1-x}\text{Mn}_x)_2\text{SiO}_4$	115
--	-----

[Biology · Environment]

SUMIYOSHI, H., IKEDA, S., ODA, T. : cDNA Cloning of Human Mitochondrial Transcription Factor 1 with Polymerase Chain Reaction and Overexpression of the Factor in <i>Escherichia coli</i>	121
NAOHARA, J., YAMASHITA, E. : Determination of Trace Elements in Environmental Samples by ICP-MS — (3) Determination of trace elements in water reference material by ICP-MS —	131
KAWABE, S. : Inference of Life Pattern on " <i>Parantica sita niphonica</i> Moore" in OKAYAMA Prefecture	141
FUJIKI, T., MIYOSHI, N., NAKAMURA, T. : Palynological Studies of Marine Sediments in Japan 1. The Sea of Hiuchi in the Inland Sea (Ehime Pref.)	153

[Mechanical Engineering · Control]

UMADA, A., KANADANI, T. : Age Hardening and Reversion of Al-Ag Alloys	161
KANADANI, T., HOSOKAWA, N., TANIMOTO, T. : Effect of Surface Layer on the Fatigue Strength of an Al-3mass%Mg Alloy	169
OOUCHIDA, M., DOHTA, S., MATSUSHITA, H. : Development of Handling Machine using Pneumatic Soft Gripper	177
KATOH, N., MARUYAMA, Y. : Numerical Calculations of Steady Supersonic Flow around a Wing-Body Configuration Using a Boundary Element Method Program	193

MAEDA, K. : The Design of Structually Stable Finite Settling Time Control System with Backlash	207
MIYAMOTO, H., IIDA, T. : New Calculation Method of DC Output Power for the Boost type Switched Mode Rectifier	215
[Information Engineering · Communication]	
IWASAKI, A., KAMETAKE, T., OHTAGAKI, H., NAKAGAWA, Y., NARIHISA, H. : An Application of Surrogate Constraints Method to Multi-Dimensional Nonlinear Knapsack Problem	225
LEE, Q., MIYAGAKI, Y. : Antimultipath Characteristics of Simple Commutation Signaling Systems	231
SHIMADA, H., NISHINAGA, M., SHIONO, M., MIYAGAKI, Y. : Generation of One's Expected Aged Face Image	249
SHIMADA, Y., AKIYAMA, S., IKEDA, H., SHIONO, M. : 3-D Shape Input Using Ultrasonic Distance Sensor	259
OKADA, Y., NARIHISA, H. : An Efficiency of Genetic Algorithm	269
SENOO, Y., NARIHISA, H. : Parallel Methods for the Linear Problem	279
KATAYAMA, K., NARIHISA, H. : The Efficiency of Heuristic Algorithms for Traveling Salesman Problem	289
IRIE, K. : Rain Attenuation Measurements on 12 GHz Satellite Link	299
TAKAHASHI, N. : Polirization Analysis of All-single mode-fiber Ring Interferometers	309
OHKURA, M., SHIONO, M., HASHIMOTO, R. : A Classification of Handwritten HIRAGANA Characters by 3-Layer Neural Networks.....	319
IDEBATA, T., TADA, A. : A Benefit of Operating Frequency for $0.8 \mu\text{m}$ BiCMOS G/A Using Bipolar-PMOS Merged Basic Cells	329
SHIONO, M., ONUYE, H. : A License Number Plate Extraction in a Car Image and Recognition of All Characters.....	339
KAJIURA, F., KIMURA, H. : Development of an F9430 Emulator	349
[Physical Training]	
KAWAKAMI, M., INOKIHARA, K., MATSUBARA, T., IWASAKI, H. : The Correlation between Work Load and Mixed Training in the Mountains Inferred from Heart Rate by the Long-distance Runner of Female	359
INOKIHARA, K. : Study of Physical Fitness — The Freshman of Okayama University of Science (1991) —	373
[Earth Science]	
KAKITANI, S. : Landform and Weathering of the Chugoku Mountainous Region (Japan)	383