LETTERS

General
Topological Analysis of Rough Surfaces Using Persistent Homology
Ken Yamamoto

Condensed matter: structure and mechanical and thermal properties
Hydroxyl Motion in Mg(OH)$_2$
Yutaka Itoh and Masahiko Isobe

Condensed matter: electronic structure and electromagnetic, and optical properties
Large Diamagnetic Susceptibility from Petit Fermi Surfaces in La$_2$V$_2$O$_7$
Takahiro Hirose, Yoshikiko Okamoto, Jun-ichi Yamaura, and Zenji Hiroi

Photoinduced Phase Transition in Charge Order Systems—Charge Frustration and Interplay with Lattice—
Hiroshi Hashimoto, Hiroki Matsueda, Hitoshi Soe, and Sumio Ishihara

FULL PAPERS

General
Can We Swim in Superfluids?: Numerical Demonstration of Self-Propulsion in a Bose–Einstein Condensate
Hiroki Saito

Self-Elongation with Sequential Folding of a Filament of Bacterial Cells
Ryojiro Honda, Jun-ichi Wakita, and Makoto Katori

Fractional and Small-World Networks Formed by Self-Organized Critical Dynamics
Akitomo Watanabe, Shogo Mizutaka, and Koosuke Yakubo

Nuclear physics
Equation of State and Symmetry Energy at High Densities for Zero and Finite Temperatures—
Khalaf Gad and Hesham Mansour

Atomic and molecular physics
Transmission of Laser Beam Through Tapered Glass Capillaries for Light Microbeams—
Wei-Guo Jia, Tatsuya Minowa, and Yoshito Ikeda

Condensed matter: structure and mechanical and thermal properties
Dependence of the Apex Angle of an Inverted Pyramidal-Shaped Container on Crystallization of Brownian Particles—
Youhei Kanatsu and Masahide Sato

Scaling Crossover in Crack-Tip Stresses and a Robust Scaling Law for Fracture Strength—
Narumi Takahashi and Ko Okumura

Nuclear Physics
Specific Heat of Ba$_{13}$K$_{1}$Fe$_{23}$O$_{41}$, an Fe-Pnictide Superconductor with $T_c = 36.9$ K, and a New Method for Identifying the Electron Contribution—
Costel R. Rotundu, Thomas R. Forrest, Norman E. Phillips, and Robert J. Birgeneau

The Electronic Structure of Structurally Strained Mn$_2$O$_3$ Postspinel and the Relationship with Mn$_3$O$_4$ Spinel—
Shigeto Hirai, Yosuke Goto, Yuki Sakai, Atsushi Nakatani, Yoichi Kamiura, and Masanori Matoba

Magnetization Jump in the Magnetization Process of the Spin-1/2 Heisenberg Antiferromagnet on a Distorted Square-Kagome Lattice—
Hiroki Nakano, Yasumasa Hasegawa, and Toru Sakai

Theory of Valley Hall Conductivity in Bilayer Graphene—
Tsunea Ando

The Theory of Valley Hall Conductivity in Graphene with Gap—
Tsunea Ando

Direct Evidence of the Symmetry Change of Co-3d Orbital Associated with the Spin-State Transition in LaCoO$_3$ by X-ray Compton Scattering—
Yoshikiko Kobayashi, Yoshiharu Sakurai, Masayoshi Ito, Keisuke Sato, and Kichizo Asai

Effect of Spin-Orbit Coupling on Kondo Phenomena in $f$-Electron Systems—
Takashi Hotta

Hole-like Mixed Conduction of Orientation-Controlled BaPbO$_{3-x}$Ti$_x$F$_2$ Thin Film with Mixed Valence States—
Tohru Higuchi, Asuka Oda, Takashi Tsujiya, Takaki Suzuki, Naoya Suzuki, Chouhei Yamaguchi, Makoto Mimohara, Masaki Kobayashi, Koji Horiba, and Hiroshi Kugimishita

Charge Order in (TMTTF)$_3$TaF$_6$ by Infrared Spectroscopy—
Yuki Oka, Noriaki Matsumaga, Kazushige Nomura, Atsushi Kawamoto, Ken Yamamoto, and Kyuya Yakushi

Nuclear Physics
Effects of Weak and Strong Scattering on the Spectra of Vortex Andreev Bound States in Two-Dimensional Chiral $p$-Wave Superconductors—
Noriyuki Kurosawa, Nobuhiko Hayashi, and Yusuke Kato

Two-Photon Absorption by Impurity Scattering and Amplitude Mode in Conventional Superconductors—
Takanobu Jujo

Structural Domain Switching by Magnetic Flickering in Rare-Earth Double Structural Exchange—
Takeshi Matsumura, Yuya Hayashi, Shun Takai, Toru Osutso, Saori Matsuda, and Akira Ochias

Coupied Cluster Treatment of the Alternating Bond Diamond Chain—
Jian-Jun Jiang, Yong-Jun Liu, Fei Tang, and Cui-Hong Yang

Non-Fermi Liquid and Fermi Liquid in Two-Channel Anderson Lattice Model: Theory for Peierls$\Delta_0$ ($\Delta = V, T$) and Peierls$\Delta_0$ —
Atsushi Tsutsumi and Kazumasa Miyake

X-ray Absorption Spectroscopy in the Heavy Fermion Compound $\alpha$-YbAlB$_4$ at High Magnetic Fields—
Taku T. Terashima, Yusuhiro H. Matsuda, Kentaro Kuga, Shintaro Suzuki, Yosuke Matsumoto, Satoru Nakatsuji, Akihiro Kondo, Koichi Kindo, Naomi Kawamura, Masahichir Mizumaki, and Toshiya Inami

Progress of Theoretical and Experimental Physics
Vol. 2015, No. 9, 2015

Letters

Theoretical Particle Physics
Saddle point inflation in string-inspired theory—
Yuta Hamada, Hikaru Kawai, and Kiyoharu Kawana

Nuclear Physics
$\Sigma(1690)$ as a $\Sigma\Sigma$ molecular state—
Takayasu Sekihara

Papers

General and Mathematical Physics
Yangian associated with 2D $\mathcal{N} = 1$ SCFT—
Rui-Dong Zhu and Yutaka Matsuo

A transmon-based quantum half-adder scheme—
Dibyendu Chatterjee and Arijit Roy

Stochastic variational method as quantization scheme: Field quantization of the complex Klein-Gordon equation—
T. Koida and T. Kodama

Theoretical Particle Physics
Scale and electroweak first-order phase transitions—
Jiukhe Kubo and Masatoshi Yamada

Symmetries and Feynman rules for the Ramond sector in heterotic string field theory—
Hiroshi Kunitomo

Inflation from radion gauge-Higgs potential at Planck scale—
Yugo Abe, Takeo Inami, Yoshiharu Kawamura, and Yoji Koyama

SU(5) orbifold GUT in noncommutative geometry—
Masaki J. S. Yang

Vacuum stability in the $U(1)_e$ extended model with vanishing scalar potential at the Planck scale—
Naoyuki Haba and Yuya Yamaguchi

A superspace description of Friedmann-Robertson-Walker models—
Sudhaker Upadhyay

NII-Electronic Library Service
Nuclear Physics
Low-lying continuum states of drip-line oxygen isotopes
..........Koshiro Tsukiyama, Takaharu Otsuka, and Rintaro Fujimoto
Photon-photon interaction under light localization in a system of conducting nanoparticles
...............V. V. Maksimenko, V. A. Zagaynov, and I. E. Agranovski

Theoretical Astrophysics and Cosmology
Search for dark energy potentials in quintessence
.........................Yusuke Muromachi, Akira Okabayashi,
Daiki Okada, Tetsuya Hara, and Yutaka Itoh

Beam Physics
Free-energy formula for emittance-growth estimation in intense mismatched beams..............Kazuya Osaki and Hiromi Okamoto

訂正
当学会誌70巻（2015）p. 83「一般相対論の成立」に誤りがありましたので、以下の通り訂正いたします。
右頁14行目:
（誤）1915年11月アインシュタインは自宅にこもりきりで計算した。1週間おきに学士院で講演し、その結果はいずれも1週間後に出版された。
（正）1915年11月アインシュタインは自宅にこもりきりで計算した。1週間おきに論文を発表した。11月18日付の論文については学士院で講演した。