

長谷川研究室：論文・受賞リスト（2009年以前）

2009年

【論文】

- "The pushing gate in a planar Coulomb crystal using a flat-top laser beam"
M. Kitaoka, I.M. Buluta, S. Hasegawa
Phys. Lett. A **373** (2009) 2911-2916.
- "The structure of planar Coulomb crystals in RF traps"
I.M. Buluta and S. Hasegawa
J. Phys. B: At. Mol. Opt. Phys. **42** (2009) 154004 (7 pages).
- "Designing an ion trap for quantum simulation"
I.M. Buluta and S. Hasegawa
Quantum Information and Computation **9** (2009) 361-375.
- "Isotope selective manipulation and observation of Ca⁺ ions by ion trap-laser cooling technique"
Y. Hashimoto, D. Nagamoto, S. Hasegawa
Int. J. Mass Spectrom. **279** (2009) 163-169.

【受賞】

- 橋本資教 "A novel method using ion trap - laser cooling technique for ultra trace Ca⁺ isotope analysis"
IMSF Travel Award
Bremen Exhibition and Conference Center (Germany), 2009年9月4日。
- Iulia Buluta "Planar Coulomb Crystals For Quantum Simulation"
工学系研究科長賞
東京大学、2009年3月29日。

- ・鈴木慎太郎 「エネルギー分解機能を伴うイオンガイドの設計およびシミュレーション」
システム創成学科最優秀卒業研究賞
東京大学、2009年3月24日.

2008 年

【論文】

- "Planar Coulomb bicrystals"

I. M. Buluta and S. Hasegawa

Phys. Rev. A **78** (2008) 042340 (7 pages).

- "Hard x-ray generation by low energy, tightly focused laser pulses"

K. Takano, K. Nemoto, T. Nayuki, Y. Oishi, T. Fujii, A. Zhidkov, E. Hotta, M. Todoriki, and

S. Hasegawa

Appl. Phys. Lett. **92** (2008) 251502 (3 pages).

- "Investigation of planar Coulomb crystals for quantum simulation and computation"

I. M. Buluta, M. Kitaoka, S. Georgescu, and S. Hasegawa

Phys. Rev. A **77** (2008) 062320 (8 pages).

- "Observation of single Ca⁺ ions for trace isotope analysis"

Y. Hashimoto, L. Matsuoka, D. Nagamoto, S. Hasegawa

Spectrochimica Acta B **63** (2008) 645-651.

【受賞】

- 北岡雅則 「2 次元イオンクリスタルにおける量子ゲートの提案」

総長賞、工学部長賞

東京大学、2008 年 3 月 24 日.

2007 年

【論文】

- "Two-color resonance ionization spectroscopy of highly excited titanium atoms"
Leo Matsuoka and Shuichi Hasegawa
J. Opt. Soc. Am. B **24** (2007) 2562-2579.
- "Estimation of the heating rate of ions due to laser fluctuations when implementing quantum algorithms"
S. Fujiwara and S. Hasegawa
Quantum Information and Computation **7** (2007) 573-583.
- "1s(2s2p ¹P)²Pnl, 1s(2s3s ^{3,1}S)²Snp, and 1s(2s3p ¹P)²Pns K-shell photoexcited Rydberg series of beryllium atoms"
Fumiko Yoshida, Fumihiro Koike, Satoshi Obara, Yoshiro Azuma, Tetsuo Nagata, and Shuichi Hasegawa
Phys. Rev. A **75** (2007) 012714 (11 pages).
- "Efficient quantum logic with cold trapped ions for maximally entangled states"
S. Fujiwara, H. Osaki, I.M. Buluta, and S. Hasegawa
Phys. Rev. A **75** (2007) 012301 (4 pages).

2006 年

【論文】

- "Two-color resonance ionization spectroscopy of Rydberg states of hafnium atoms"
Leo Matsuoka and Shuichi Hasegawa
Phys. Rev. A **74** (2006) 062515 (9 pages).
- "Numerical evaluation of nuclide analysis of ^{129}I , ^{90}Sr , and ^{137}Cs using bremsstrahlung high energy x ray generated by ultrashort pulse laser"
Ryuta Takashima, Masaru Todoriki, Shuichi Hasegawa, Koshichi Nemoto and Kazuyuki Kato
J. Appl. Phys. **100** (2006) 064906 (7 pages).
- "Trapping Laser Ablated Ca^+ Ions in Linear Paul Trap"
Yoshinori Hashimoto, Leo Matsuoka, Hiroyuki Osaki, Yu Fukushima and Shuichi Hasegawa
Jpn. J. Appl. Phys. **45** (2006) 7108-7113.
- "Photoexcitation of K-shell and L-shell Hollow Beryllium"
Shuichi Hasegawa, Fumiko Yoshida, Leo Matsuoka, Fumihiro Koike, Stephan Fritzsch, Satoshi Obara, Yoshiro Azuma and Tetsuo Nagata
Phys. Rev. Lett. **97** (2006) 023001 (4 pages).
- "Analysis of $1\text{s}(2\text{s}2\text{p } ^3\text{P})\text{n}l$ Rydberg states in the K-shell photoionization of the Be atom"
Fumiko Yoshida, Leo Matsuoka, Ryuta Takashima, Tetsuo Nagata, Yoshiro Azuma, Satoshi Obara, Fumihiro Koike and Shuichi Hasegawa
Phys. Rev. A **73** (2006) 062709 (6 pages).
- "Quantum Games in ion traps"
Iulia Maria Buluta, Shingo Fujiwara, Shuichi Hasegawa
Phys. Lett. A **358** (2006) 100-104.
- "Development of Ion Trap Technique for Rare Isotope Measurement"
Shuichi Hasegawa, Leo Matsuoka, Yu Fukushima, Hiroyuki Osaki and Yoshinori Hashimoto
J. Nucl. Sci. Tech. **43** (2006) 300-304.

- "Observation of perturbed 3snp double photoexcited Rydberg series of beryllium atoms"
Fumiko Yoshida, Leo Matsuoka, Hiroyuki Osaki, Satoshi Kikkawa, Yu Fukushima, Tetsuo Nagata,
Yoshiro Azuma, Satoshi Obara and Shuichi Hasegawa
Phys. Rev. A **73** (2006) 042709 (6 pages).

2005 年

【論文】

- "Scalable networks for discrete quantum random walks"
S.Fujiwara, H.Osaki, I.M.Buluta and S.Hasegawa
Phys. Rev. A **72** (2005) 032329 (4 pages).
- "Temporal fluctuation of singular values caused by dynamical noise in chaos"
Masaru Todoriki, Hiroyuki Nagayoshi and Atsuyuki Suzuki
Phys. Rev. E **72** (2005) 036207 (7 pages).
- "General method for realizing the condiditional phase-shift gate and a simulation of Grover's algorithm in an ion-trap system"
Shingo Fujiwara and Shuichi Hasegawa
Phys. Rev. A **71** (2005) 012337 (6 pages).
- "Possibility of transmutation of ^{135}Cs by ultraintense laser"
R. Takashima, S. Hasegawa, K. Nemoto and K. Kato
Appl. Phys. Lett. **86** (2005) 011501 (3 pages).