

## 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  $\text{Ca}^+$  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  $\text{Ca}^+$  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<sup>+</sup> 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.
- " $1s(2s2p\ ^1P)^2Pnl$ ,  $1s(2s3s\ ^3\ ^1S)^2Snp$ , and  $1s(2s3p\ ^1P)^2Pns$  K-shell photoexcited Rydberg series of beryllium atoms"  
Fumiko Yoshida, Fumihiko 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  $^{129}\text{I}$ ,  $^{90}\text{Sr}$ , and  $^{137}\text{Cs}$  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  $\text{Ca}^+$  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, Fumihiko Koike, Stephan Fritzsche, Satoshi Obara, Yoshiro Azuma and Tetsuo Nagata  
Phys. Rev. Lett. **97** (2006) 023001 (4 pages).
- "Analysis of  $1s(2s2p^3P)nl$  Rydberg states in the K-shell photoionization of the Be atom"  
Fumiko Yoshida, Leo Matsuoka, Ryuta Takashima, Tetsuo Nagata, Yoshiro Azuma, Satoshi Obara, Fumihiko 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 conditional 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  $^{135}\text{Cs}$  by ultraintense laser"  
R. Takashima, S. Hasegawa, K. Nemoto and K. Kato  
Appl. Phys. Lett. **86** (2005) 011501 (3 pages).