

HA YOUN LEE

174 W. 18th Avenue
Department of Physics
The Ohio State University
Columbus, OH 43210

Tel: 614-292-0374

Fax: 614-292-7557

E-mail: hayoun@mps.ohio-state.edu

Born on January 26, 1971, Seoul, Korea.

Gender: Female

Marital Status: Married

Education

Mar. 1989 - Feb. 1993 Undergraduate studies at Seoul National University.
Bachelor of Physics Education (magna cum laude).

Mar. 1993 - Feb. 1995 Graduate studies at Seoul National University.
Master of Science in Physics
Advisor : Prof. Moo Young Choi
Dissertation : Traffic flow and $1/f$ fluctuations

Mar. 1995 - Feb. 2000 Graduate studies at Seoul National University.
Doctor of Philosophy in Physics
Advisor : Prof. Doochul Kim
Dissertation : Dynamic states and phase diagram
of traffic flow

Academic Positions

Sep. 1996 - Feb. 1997 Lecturer, University of Seoul

Mar. 2000 - May. 2001 Postdoctoral Fellow, Massachusetts Institute of Technology

Jun. 2001 - Jun. 2002 Postdoctoral Fellow, University of California, Los Angeles

Jul. 2002 - Dec. 2002 Visiting Scholar, The Ohio State University

Jan. 2003 - Aug. 2003 Postdoctoral Fellow, Massachusetts Institute of Technology

Oct. 2003 - present Postdoctoral Fellow, The Ohio State University

Visiting Positions

Jul. 1997 - Aug. 1997 Research collaborator, Duisburg University, Germany.

Teaching Experience

Undergraduate courses: Computational Physics.

Honors and Awards

Sep. 1993 - Feb. 1997 Teaching Assistantship, Seoul National University

Mar. 1995 - Feb. 1996 Scholarship from Haksan

Mar. 1995 - Aug. 1999 Research Assistantship, Seoul National University

Mar. 1998 - Feb. 1999 Predoctoral Fellowship from DaeWoo Foundation

Mar. 2000 - Feb. 2001 Postdoctoral Fellowship from Korea Science and Engineering Foundation

Oct. 2003 - present The Ohio State University Postdoctoral Fellowship

Computation Skills

Numerical integration

Monte Carlo simulation

Parallel computing using MPI, PVM

Image analysis using MATLAB

Publications

Journal

1. **H. Y. Lee**, M. Yahyanejad, and M. Kardar, *Symmetry considerations and development of pinwheels in visual maps*, Proc. Acad. Natl. Sci. **100**, 16036 (2003).
2. M. W. Deem and **H. Y. Lee**, *Sequence space localization in the immune system response to vaccination and disease*, Phys. Rev. Lett. **91**, 068101 (2003).
3. J. Kim, Y. Park, B. Kahng, and **H. Y. Lee**, *Self-organized patterns in mixtures of microtubules and motor proteins*, J. Korean Phys. Soc. **42**, 162 (2003).
4. **H. Y. Lee** and M. Kardar, *Macroscopic equations for pattern formation in mixtures of microtubules and motors*, Phys. Rev. E, **64** 056113 (2001).
5. **H. Y. Lee**, H.-W. Lee, and D. Kim, *Phase diagram of congested traffic flow: an empirical study*, Phys. Rev. E **62**, 4737 (2000).
6. **H. Y. Lee**, H.-W. Lee, and D. Kim, *Traffic states of a model highway with on-ramp*, Physica A **281**, 78 (2000).
7. L. Neubert, **H. Y. Lee**, and M. Schreckenberg, *Density waves and jamming transition in cellular automaton models for traffic flow*, J. Phys. A **32**, 6517 (1999).
8. **H. Y. Lee**, H.-W. Lee, and D. Kim, *Dynamic states of a continuum traffic equation with on-ramp*, Phys. Rev. E **59**, 5101 (1999).
9. **H. Y. Lee**, H.-W. Lee, and D. Kim, *Recurring hump state near on-ramp on highways*, Sae Mulli (New Physics) **38**, S123-127 (1998).
10. H.-W. Lee, **H. Y. Lee**, and D. Kim, *Traffic flow theory*, Physics and High Technology **8**, 33 (1998).
11. **H. Y. Lee**, H.-W. Lee, and D. Kim, *Origin of synchronized traffic flow on highways and its dynamic phase transition*, Phys. Rev. Lett. **81**, 1130 (1998).
12. **H. Y. Lee**, D. Kim, and M.Y. Choi, *Genetic polymorphism in evolving population*, Phys. Rev. E **57**, 4842 (1998).
13. M.Y. Choi, **H. Y. Lee**, D. Kim, and S.H. Park, *Entropic Sampling and Natural Selection in Biological Evolution*, J. Phys. A **30**, L749 (1997).
14. M.Y. Choi and **H. Y. Lee**, *Traffic flow and $1/f$ fluctuations*, Phys. Rev. E **52**, 5979 (1995).

15. **H. Y. Lee** and D. Stroud, *T-cell proliferation model for asymmetric responses of cytotoxic T lymphocytes*, submitted to Phys. Rev. E.
16. **H. Y. Lee** and M. Kardar, *Transversality of nature images and cortical connections*, in preparation.
17. **H. Y. Lee**, A. Lee, and M. Kardar. *Symmetry breaking of bead by actin polymerization*, in preparation.

Conference Proceedings

1. H.-W. Lee, H. K. Lee, **H. Y. Lee**, and D. Kim, *Continuum traffic equations from microscopic car-following models* in "Traffic and granular flow '01", edited by M. Fukui, Y. Sugiyama, M. Schreckenberg, and D. E. Wolf (Springer, Berlin, 2003)
2. **H. Y. Lee**, H.-W. Lee, and D. Kim, *Phase diagram of congested traffic flow on a highway with one on-ramp*, In *AIP conference Proceeding* **519**, 547-556 (2000).
3. **H. Y. Lee**, H.-W. Lee, and D. Kim, *Empirical phase diagram of traffic flow on highways with on-ramp*, In *Traffic and granular flow '99: social, traffic, and granular dynamics* (Springer, Berlin, in press).
4. L. Neubert, **H. Y. Lee**, and M. Schreckenberg, *Quantitative properties of the cellular automaton model for traffic flow*, In *Proceedings of Traffic and Granular Flow '97* (Springer-Verlag, Singapore, 1998).
5. **H. Y. Lee**, D. Kim, and M.Y. Choi, *Continuum Model for Two-Lane Traffic Flow*, In *Proceedings of Traffic and Granular Flow '97* (Springer-Verlag, Singapore, 1998).
6. M. Y. Choi, **H. Y. Lee**, and D. Kim, *Criticality by mutation and selection in biological evolution* in "Progress of Statistical Physics", p276-282 edited by W. Sung et al. (World Scientific, 1998).

Popular Press featuring my work

1. NBC and ABC On-camera Interview with Prof. Deem, Nationwide Distribution (<http://www.mwdeem.rice.edu/mwdeem>)
2. Hankyoreh (newspaper in Korea) July 19 (1998)
Recurring hump state on highways
(<http://search.hani.co.kr/data/news/1998/0719/1013103048.html>)

Article featuring my work

1. D. Helbing and M. Treiber, *Traffic Theory: James, Waves, and Clusters*, Science **282**, pp.2001-2003 (in Perspectives) (1998).

References

Prof. Mehran Kardar

Department of Physics, Massachusetts Institute of Technology,
Cambridge, Massachusetts 02139

Tel: 617-253-3259

kardar@mit.edu

Prof. David Stroud

Department of Physics, The Ohio State University, Columbus, Ohio 43210

Tel: 614-292-8140

stroud@mps.ohio-state.edu

Prof. Ralf Bundschuh

Department of Physics, The Ohio State University, Columbus, Ohio 43210

Tel: 614-688-3978

bundschuh@mps.ohio-state.edu

Prof. Doochul Kim

Department of Physics, Seoul National University, Seoul 151-742, Korea

Tel: +82-2-880-6592

dkim@snu.ac.kr

Prof. Hyun-Woo Lee

Department of Physics, Pohang University of Science and Technology,
Pohang 790-784, Korea

Tel: +82-54-279-2092

hwl@postech.ac.kr