Professor Hiroyuki Shima

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Associate Professor
Department of Environmental Sciences
University of Yamanashi, Kufu, Yamanashi, Japan

Education:
1997.3 B.S. Hokkaido University (awarded Yoshimachi Prize by Department of Engineering)
1999.3 M.S. Hokkaido University
2005.3 Ph.D. Hokkaido University

Experience:
1999.4 Fellowships from Japan Society for Promotion of Science (DC1)
1999.9 Research Associate in Hokkaido University (Sapporo, Japan)
2007.4 Assistant Professor in Hokkaido University (Sapporo, Japan)
2009.9 Academic Visitor in Universitat Politecnica de Catalunya (Barcelona, Spain)
2012.4 Associate Professor of University of Yamanashi (Kofu, Japan)

Editorships:
Editorial Board Member of the Journal: Coupled Systems Mechanics (issued by Techno Press, Korea)
Editorial Board Member of the Journal: Dataset Papers in Physics (Condensed Matter Section)
Editorial Board Member of the Journal: American Journal of Modern Physics
Editorial Board Member of the Journal: International Journal of Physics

Courses Taught:
Analytical and Computational Approach to Complex Systems (2012.04-present, University of Yamanashi)
Environmental Physics (2012.10-present, University of Yamanashi)
Calculus (2012.10-present, University of Yamanashi)
Linear Algrbra (2012.10-present, University of Yamanashi)

Monographs and Books Written:
H. Shima and T. Nakayama: Higher Mathematics for Physics and Engineering (Springer-Verlag, 2010)
H. Shima and M. Sato: Elastic and Plastic Deformation of Carbon Nanotubes (Pan Stanford Publishing, 2013)
H. Shima: "Geometry-property relation in corrugated nanocarbon cylinders", in Modeling of Carbon Nanotubes, Graphene and Their Composites, edited by K. Tserpes and N. Silvestre, to be published by Springer-Verlag
H. Shima: "Condensed Matter Physics on Curved Surfaces", in Advances in Science, March 2013, ISBN: 978-098695542-6, to be published by Science Network Publications:

Original Papers:

H. Shima, M. Sato, T. Sekizawa and M. A. Wadee
Symmetry breaking in buckling of spherical multilayers (=tempolary title)
in preparation

M. Tanimoto and H. Shima
Rennet coagulation properties of milk (=tempolary title)
in preparation

H. Taira, H. Shima and Y. Umeno
Band-gap modification of radially corrugated carbon nanotubes
in preparation

M. Sato, H. Taira, T. Ikeda and H. Shima
Embedding effect on mechanical stability of pressurized carbon nanotubes
in preparation

H. Taira and H. Shima
Optical conductivity of semiconductor crystals with a screw dislocation
submitted

A. Kijima, K. Yokoyama, H. Shima and Y. Yamamoto
Emergence of self-similarity in football dynamics
submitted

H. Shima
Elementary algebra for origami: The trisection problem revisited
submitted

S. Ono, H. Shima and Y. Toda
Revealing the anomalous nonequilibrium carrier relaxation dynamics in C60-related materials
Trans. Mater. Res. Soc. Jpn. submitted

M. Sato, H. Shima and S. J. Park
Stiffener insertion based variance in radial stiffness of multi-concentric hollow tubes
J. Mech. (2013) in press

H. Shima
Geometry-property relations in physics on curved surfaces
J. Soc. Surf. Sci. Jpn. (2013) in press

H. Shima, Y. Umeno and M. Sato
Molecular dynamics study of radial corrugation in carbon nanotubes
Mech. Adv. Mater. Str. (2013) in press

S. Ono, H. Shima and Y. Toda
Theory of photoexcited carrier relaxation across the energy gap of phase-ordered materials
Phys. Rev. B 86, 104512 [8 pages] (2012)

H. Shima
How far can Tarzan jump?
Eur. J. Phys. 33, pp.1687-1693 (2012)

H. Shima
Persistent current in quantum torus knots
Phys. Rev. B 86, 035415 [4 pages] (2012)

J. Onoe, T. Ito, H. Shima, H. Yoshioka and S. Kimura
Observation of Riemannian geometric effects on electronic states
EPL (Europhys. Lett.) 98, 27001 [5pages] (2012)

H. Shima
Buckling of Carbon Nanotubes: A State of the Art Review

Materials 5, pp.47-84 (2012)

J. Onoe, A. Takashima, S. Ono, H. Shima and T. Nishii
Anomalous enhancement in the infrared phonon intensity of one-dimensional uneven peanut-shaped C60 polymer
J. Phys.: Condens. Mat. 24, 175405 [6pages] (2012)

M. Sato, M. A. Wadee, K. Iiboshi, T. Sekizawa and H. Shima
Buckling patterns of complete spherical shells filled with an elastic medium under external pressure
Int. J. Mech. Sci. 59, pp.22-30 (2012)

H. Shima, S. Ghosh, M. Arroyo, K. Iiboshi and M. Sato
Thin-shell theory based analysis of radially pressurized multiwall carbon nanotubes
Comp. Mater. Sci. 52, pp.90-94 (2012)

S.J. Park, M. Sato, T. Ikeda and H. Shima
Hard-to-soft transition in radial buckling of multi-concentric nanocylinders
World J. Mech. 2, pp.42-50 (2012)

J. Onoe, T. Ito, S.I. Kimura, H. Shima, Y. Toda and H. Yoshioka
One-dimensional uneven peanut-shaped C60 polymer: A quantum electronic system in Riemannian space
Fullerenes, Nanotubes, Carbon Nanostruct. 20, pp.1-16 (2012)

H. Shima and H. Yoshioka
Electronic spectral shift of oxygen-filled (6,6) carbon nanotubes
Chem. Phys. Lett. 513, pp.224-228 (2011)

S. Ono and H. Shima
Flexible control of the Peierls transition in metallic C60 polymers
EPL (Europhys. Lett.) 96, 27011 [4pages] (2011)

H. Yoshioka and H. Shima
Density of states anomalies in multichannel quantum wires
Phys. Rev. B 84, 075443 [8 pages] (2011)

M. Sato, M. A. Wadee, T. Sekizawa, K. Iiboshi and H. Shima
Hydrostatically pressurized buckling of complete spherical shells filled with an elastic medium
J. Appl. Mech.-JSCE, 14, pp.I15-I22 (2011)

S. Ono and H. Shima
Phonon dispersion and electron-phonon interaction in peanut-shaped fullerene polymers
J. Phys. Soc. Jpn. 80, 064704 [8pages] (2011)

I. Hasegawa and H. Shima
Continuous transition of defect configuration in a deformed liquid crystal film
Mod. Phys. Lett. B 25, pp.581-588 (2011)

H. Shima, M. Sato, K. Iiboshi, S. Ghosh and M. Arroyo
Diverse corrugation pattern in radially shrinking carbon nanotubes
Phys. Rev. B 82, 085401 [7pages] (2010)

I. Hasegawa and H. Shima
Point-defect haloing in curved nematic films
J. Phys. Soc. Jpn. 79, 074607 [6pages] (2010)

H. Shima
Growth of aqueous foam on flexible membranes
J. Phys. Soc. Jpn. 79, 074601 [5pages] (2010)

H. Shima, S. Ono and H. Yoshioka
Manipulating the Tomonaga-Luttinger exponent by electric field modulation
Eur. Phys. J. B 71, pp.481-488 (2010)

S. Ono and H. Shima
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Physica E 42, pp.1224-1227 (2010)

H. Shima, H. Yoshioka and J. Onoe
Curvature effects on collective excitations in dumbbell-shaped hollow nanotubes
Physica E 42, pp.1151-1154 (2010)

H. Taira and H. Shima
Anomalous phase shift in a twisted quantum loop
J. Phys. A: Math. Theor. 43, 354013 [11pages] (2010)

H. Taira and H. Shima
Flux-free conductance modulation in a helical Aharonov-Bohm interferometer
J. Phys.: Condens. Mat. 22, 245302 [5pages] (2010)

M. Sato, H. Shima and K. Iiboshi
Core-tube morphology of multiwall carbon nanotubes
Int. J. Mod. Phys. B 24, pp.288-294 (2010)

H. Taira and H. Shima
Torsion-induced persistent current in a twisted quantum ring
J. Phys.: Condens. Mat. 22, 075301 [5pages] (2010)

Y. Sakaniwa and H. Shima
Survival of short-range order in the Ising model on negatively curved surfaces
Phys. Rev. E 80, 021103 [6pages] (2009)

S. K. Baek, P. Minnhagen, H. Shima and B. J. Kim

Phase transition of q-state clock models on heptagonal lattices
Phys. Rev. E 80, 011133 [8pages] (2009)

S. Ono and H. Shima
Tuning the electrical resistivity of semiconductor thin films by nanoscale corrugation
Phys. Rev. B 79, 235407 [6pages] (2009)

H. Shima, H. Yoshioka and J. Onoe
Geometry-driven shift in the Tomonaga-Luttinger exponent of deformed cylinders
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S. K. Baek, H. Shima and B. J. Kim
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S. Nishino, K. Yakubo and H. Shima
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Phys. Rev. B 79, 033105 [4pages] (2009)

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Phys. Stat. Sol. A 206, pp.2228-2233 (2009)

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Inter. Multi. Mech. 2, pp.209-222 (2009)

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Phys. Rev. A 70, 013401 [7pages] (2004)

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Phys. Rev. B 69, 035202 [5pages] (2004)

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Anderson transition in 3D systems - the finite-time scaling approach to dynamic conductivity
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Critical behavior of ac conductivity near the Anderson transition
Phys. Rev. B 60, pp.14066-14071 (1999)

T. Nakayama and H. Shima
Computing the Kubo formula for large systems
Phys. Rev. E 58, pp.3948-3992 (1998)

H. Shima and T. Nakayama
Finite-time scaling approach for the ac conductivity near the Anderson transition
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