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PERSONAL INFORMATION

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WORK EXPERIENCE

April 2023 – Present
Full Professor
Applied Mathematics and Informatics Course,
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April 2023 – Present
Emeritus Professor
Kyoto University of Education
1 Fujinomori-cho, Fukakusa, Fushimi-ku, Kyoto 612-8522 Japan

April 2016 – March 2023
Full Professor
Department of Mathematics, Kyoto University of Education
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April 2009 – March 2016
Associate Professor
Department of Mathematics, Kyoto University of Education
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April 2005 – March 2009
Lecturer
General Education, Gifu National College of Technology
2236-2 Kamimakuwa, Motosu-shi, Gifu 501-0495 Japan

April 2004 – March 2005
Lecturer
Department of Maritime Technology, Toba National College of Maritime Technology
1-1 Ikegami-cho, Toba-shi, Mie 517-8501 Japan

EDUCATION AND TRAINING

2000–2003
Doctor of Science - Thesis Title: “Mathematical analysis of phase transition phenomena” ISCED 6
Graduate School of Science and Technology, Chiba University, Japan
Supervisor: Professor Nobuyuki Kenmochi

1998–2000
Master of Education ISCED 6
Graduate School of Education, Gifu University, Japan
Supervisor: Professor Toyohiko Aiki

1994–1998
Bachelor of Education ISCED 5A
Department of Mathematics, Faculty of Education, Gifu University, Japan
Supervisor: Professor Toyohiko Aiki

LONG VISITS

Nov 2001 - Aug 2012 Dipartimento di Matematica, Università degli Studi di Pavia

RESEARCH ACTIVITY

Interests

- Evolution equation
- Nonlinear partial differential equation
- Mathematical modelling

Recent Publications (2016–2022)

- P. Colli, T. Fukao, and L. Scarpa, A Cahn–Hilliard system with forward-backward dynamic boundary condition and non-smooth potentials, J. Evol. Equ., **22** (2022), Article number: 89, 31pp. DOI: 10.1007/s00028-022-00847-x
- P. Colli, T. Fukao, and L. Scarpa, The Cahn–Hilliard equation with forward-backward dynamic boundary condition via vanishing viscosity, SIAM J. Math. Anal., **54** (2022), 3292–3315. DOI: 10.1137/21M142441X
- M. Okumura, T. Fukao, D. Furihata, and S. Yoshikawa, A second-order accurate structure-preserving scheme for the Cahn–Hilliard equation with a dynamic boundary condition, Commun. Pure Appl. Anal., **21** (2022), 355–392. DOI: 10.3934/cpaa.2021181
- M. Okumura and T. Fukao, A new structure-preserving scheme with the staggered space mesh for the Cahn–Hilliard equation under a dynamic boundary condition, Adv. Math. Sci. Appl., **30** (2021), 347–376.
- T. Fukao and H. Wu, Separation property and convergence to equilibrium for the equation and dynamic boundary condition of Cahn–Hilliard type with singular potential, Asymptotic Anal., **124** (2021), 303–341. DOI: 10.3233/ASY-201646
- T. Fukao, On a perturbed fast diffusion equation with dynamic boundary conditions, Adv. Math. Sci. Appl., **29** (2020), 365–392.
- P. Colli and T. Fukao, Vanishing diffusion in a dynamic boundary condition for the Cahn–Hilliard equation, NoDEA Nonlinear Differential Equations Appl., **27** (2020), Article number: 53, 27pp. DOI: 10.1007/s00030-020-00654-8
- P. Colli, T. Fukao, and H. Wu, On a transmission problem for equation and dynamic boundary condition of Cahn–Hilliard type with nonsmooth potentials, Math. Nachr., **293** (2020), 2051–2081. DOI: 10.1002/mana.201900361
- P. Colli, and T. Fukao, Cahn–Hilliard equation on the boundary with bulk condition of Allen–Cahn type, Adv. Nonlinear Anal., **9** (2020), 16–38. DOI:10.1515/anona-2018-0055
- P. Colli, T. Fukao, and K. F. Lam, On a coupled bulk-surface Allen–Cahn system with an affine linear transmission condition and its approximation by a Robin boundary condition, Nonlinear Anal., **184** (2019), 116–147. DOI:10.1016/j.na.2018.10.018
- T. Fukao and T. Motoda, Abstract approach to degenerate parabolic equations with dynamic boundary conditions, Adv. Math. Sci. Appl., **27** (2018), 29–44.
- T. Fukao, S. Kurima, and T. Yokota, Nonlinear diffusion equations as asymptotic limits of Cahn–Hilliard systems on unbounded domains via Cauchy's criterion, Math. Methods Appl. Sci., **41** (2018), 2590–2601. DOI:10.1002/mma.4760
- T. Fukao and T. Motoda, Nonlinear diffusion equations with Robin boundary conditions as asymptotic limits of Cahn–Hilliard systems, J. Elliptic Parabol. Equ., **4** (2018), 271–291. DOI:10.1007/s41808-018-0018-1
- T. Fukao, S. Yoshikawa, and S. Wada, Structure-preserving finite difference schemes for the Cahn–Hilliard equation with dynamic boundary conditions in the one-dimensional case, Commun. Pure Appl. Anal., **16** (2017), 1915–1938. DOI:10.3934/cpaa.2017093
- T. Fukao, Y. Tsuzuki, and T. Yokota, Solvability of p-Laplacian parabolic equations with constraints coupled with Navier–Stokes equations in 3D domains by using largeness of p, Funkcial. Ekvac., **60** (2017), 1–20. DOI:10.1619/fesi.60.1
- M. H. Farshbaf-Shaker, T. Fukao, and N. Yamazaki, Lagrange multiplier and singular limit of double-obstacle problems for the Allen–Cahn equation with constraint, Math. Methods Appl. Sci., **40** (2017), 5–21. DOI:10.1002/mma.3905
- T. Fukao, Cahn–Hilliard approach to some degenerate parabolic equations with dynamic boundary conditions, pp.282–291 in "*System Modeling and Optimization*", IFIP Advances in Information and Communication Technology, Springer, 2016. DOI:10.1007/978-3-319-55795-3_26
- T. Fukao, Convergence of Cahn–Hilliard systems to the Stefan problem with dynamic boundary conditions, Asymptot. Anal., **99** (2016), 1–21. DOI:10.3233/ASY-161373
- P. Colli and T. Fukao, Nonlinear diffusion equations as asymptotic limits of Cahn–Hilliard systems, J. Differential Equations, **260** (2016), 6930–6959. DOI:10.1016/j.jde.2016.01.032