

PERSONAL INFORMATION

Takeshi Fukao

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WORK EXPERIENCE

April 2023 – Present

Full Professor

Applied Mathematics and Informatics Course,
Faculty of Advanced Science and Technology, Ryukoku University
1-5 Yokotani, Seta Oe-cho, Otsu-shi, Shiga 520-2194, Japan

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
1 Fujinomori-cho, Fukakusa, Fushimi-ku, Kyoto 612-8522 Japan

April 2009 – March 2016

Associate Professor

Department of Mathematics, Kyoto University of Education
1 Fujinomori-cho, Fukakusa, Fushimi-ku, Kyoto 612-8522 Japan

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 (2019–2025)
- T. Fukao, M. Ikeda, and S. Uchida, Optimal control of gradient flows via the Weighted Energy-Dissipation method, *J. Evol. Equ.*, **25** (2025), Article number: 54, 22 pp. DOI: 10.1007/s00028-025-01086-6
 - T. Fukao, M. Ikeda, and S. Uchida, Heat equation on the hypergraph containing vertices with given data, *J. Math. Anal. Appl.*, **540** (2024), Article number: 128675, 19 pp. DOI: 10.1016/j.jmaa.2024.128675 (open access)
 - M. Okumura and T. Fukao, Structure-preserving schemes for Cahn–Hilliard equations with dynamic boundary conditions, *Discrete Contin. Dyn. Syst. Ser. S*, **17** (2024), 362–394. DOI: 10.3934/dcdss.2023207
 - T. Fukao and G. Schimperna, On the Cahn–Hilliard–Oono equation with singular potential and volume constraint, *Discrete Contin. Dyn. Syst. Ser. S*, **17** (2024), 285–303. DOI: 10.3934/dcdss.2023198
 - Y. Akagawa, T. Fukao, and R. Kano, Time-dependence of the threshold function in the perfect plasticity model, *Adv. Math. Sci. Appl.*, **32** (2023), 371–398.
 - 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