



**Professor Hiroshi Yabuno**

See:

<http://yabuno.iit.tsukuba.ac.jp/en/member/t/prof/>

<https://trios.tsukuba.ac.jp/researcher/0000001010>

<https://scholar.google.com/citations?user=WYo67pcAAAJ&hl=en>

[https://www.researchgate.net/profile/Hiroshi\\_Yabuno](https://www.researchgate.net/profile/Hiroshi_Yabuno)

Faculty of Science and Technology, Keio University, Tokyo, Japan

And:

Systems and Information Engineering, University of Tsukuba, Tsukuba, Japan

### **Education:**

1984, B.S., Keio University, Mechanical Engineering, Great Distinction

1986, M.S., Keio University, Mechanical Engineering

1990, Ph.D., Keio University, Mechanical Engineering

### **Selected Publications:**

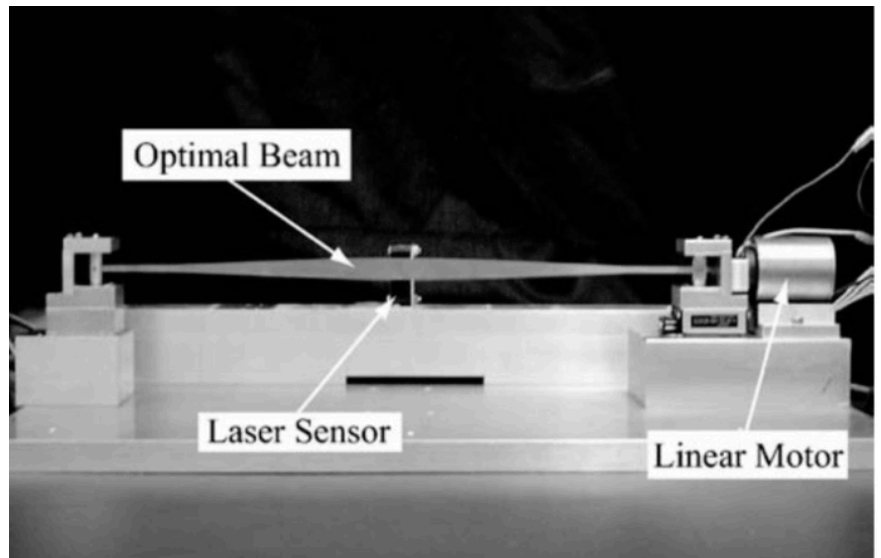
Yabuno H (1994) Nonlinear stability analysis for summed-type combination resonance under parametrical excitation (application of center manifold theory and Grobner basis with computer algebra). *Nippon Kikai Gakkai Ronbunshu C Hen/Trans Jpn Soc Mech Eng C* 60(572): 1151–1158

Yabuno H (1996) Buckling of a beam subjected to electromagnetic force and its stabilization by controlling the perturbation of the bifurcation. *Nonlinear Dynam* 10(3):271–285

Yabuno H, Ide Y, Aoshima N (1998) Nonlinear analysis of a parametrically excited cantilever beam: (Effect of the tip mass on stationary response). *JSME International Journal Series C: Dynamics, Control, Robotics, Design and Manufacturing* 41(3):555–562

Yabuno H, Nayfeh AH (2001) Nonlinear normal modes of a parametrically excited cantilever beam. *Nonlin Dyn* 25:65–77

Yabuno H, Saigusa S, Aoshima N (2001) Stabilization of the parametric resonance of a cantilever beam by bifurcation control with a piezoelectric actuator. *Nonlinear Dynam* 26(2):143–161



**Fig. 8** Experimental setup

From: Mailybaev AA, Yabuno H, Kaneko H (2004) Optimal shapes of parametrically excited beams. *Struct Multidisciplinary Optim* 27(6):435–445

Walter Lacarbonara, Manami Ohkuma and Hiroshi Yabuno, "Experimental investigation of the nonlinear normal modes of a parametrically excited buckled beam", 14th US National Congress of Theoretical and Applied Mechanics, Blacksburg, Virginia, June 23-28, 2002

Walter Lacarbonara, Haruna Okamoto and Hiroshi Yabuno, "Experimental and theoretical investigations of nonlinear vibration characteristics of planar slender beams", publisher and date not given in the pdf file; most recent reference is dated 2004

H. Yabuno, M. Okhuma, and W. Lacarbonara. An experimental investigation of the parametric resonance in a buckled beam. In Proceedings of the ASME DETC'03, pages 2565–2574, Chicago, USA, 2-6 September 2003.

Yabuno H, Murakami T, Kawazoe J, Aoshima N (2004) Suppression of parametric resonance in cantilever beam with a pendulum (Effect of static friction at the supporting point of the pendulum). *J Vib Acoust* 126(1):149–162

Lacarbonara W, Paolone A, Yabuno, H (2004) Modeling of planar nonshallow prestressed beams towards asymptotic solutions. *Mech Res Commun* 31:301–310

Yabuno H, Kanda R, Lacarbonara W, Aoshima N (2004) Nonlinear active cancellation of the parametric resonance in a magnetically levitated body. *J Dyn Syst Meas Contr Tran ASME* 126(3):433–442

Mailybaev AA, Yabuno H, Kaneko H (2004) Optimal shapes of parametrically excited beams. *Struct Multidisciplinary Optim* 27(6):435–445

Lacarbonara, W.; Yabuno, H. Closed-loop non-linear control of an initially imperfect beam with non-collocated input. *J. Sound Vib.* 2004, 273, 695–711.

Walter Lacarbonara, Haruna Okamoto and Hiroshi Yabuno, "Experimental and theoretical investigations of nonlinear vibration characteristics of planar slender beams", publisher and date not given in the pdf file; most recent reference is dated 2004

Seyranian AP, Yabuno H, Tsumoto K (2005) Instability and periodic motion of a physical pendulum with a vibrating suspension point (theoretical and experimental approach). *Dokl Phys* 50(9):467–472

Lacarbonara, W. and Yabuno, H., Refined Models of Elastic Beams Undergoing Large In-plane Motions: theory and experiment, 2006, *Int. J. Solids Structures*, 43, pp. 5066-5084.

Yabuno, H. and Tsumoto, K., Experimental Investigation of a Buckled Beam under High-Frequency Excitation, 2007, *Arch Appl Mech*, 77, pp. 339-351.

Lacarbonara W, Yabuno H, Hayashi K (2007) Nonlinear cancellation of the parametric resonance in elastic beams: theory and experiment. *Int J Solids Struct* 44:2209–2224

In-Soo S, Uchiyama Y, Yabuno H, Lacarbonara W (2008) Simply supported elastic beams under parametric excitation. *Nonlinear Dynam* 53:129–138

Hattori, M. and Yabuno, H., Reachable Area of an Underactuated Space Manipulator Subjected to Simple Spinning: Application of Bifurcation Control under High-Frequency Excitation, 2008, *Nonlinear Dyn*, 51, pp. 345-353.

Yabuno, H., Kunito, Y., and Kashimura, T., Analysis of the van der Pol System With Coulomb Friction Using the Method of Multiple Scales, 2008, *ASME J. Vibr. Acoust.*, 130, pp. 041008-1-041008-7.

Yabuno, H., Stabilization and Utilization of Nonlinear Phenomena Based on Bifurcation Control for Slow Dynamics, 2008, *J. Sound Vib.*, 315, pp. 766-780.

Yabuno, H., Kaneko, H., Kuroda, M., and Kobayashi, T., Van der Pol Type Self-Excited Micro-Cantilever Probe of Atomic Force Microscopy, 2008, *Nonlinear Dyn.*, 54, pp. 137-149.

Yabuno, H., Okada, J.: Stabilization of buckled beam by high-frequency axial excitation. In: IEEE Conference, ICCAS-SICE, Fukuoka, pp. 283–286 (2009)

Dick, A., Balachandran, B., Yabuno, H., Numatsu, M., Hayashi, K., Kuroda, M., and Ashida, K., Utilization Nonlinear Phenomena to Locate Grazing in the Constrained Motion of a Cantilever, 2009, *Nonlinear Dyn.*, 57, pp. 335-349.

Kiyotaka Yamashita, Junji Ajiro, Arata Motoki, Yuuki Hirose, Hiroshi Yabuno and Masatsugu Yoshizawa, Nonlinear stabilities of lateral vibrations of a pipe conveying fluid (in case of a pipe with a spring supported end)", *Transactions of the Japan Society of Mechanical Engineers, Part C*, Vol. 76, pp 236-243, February 2010

Yamashita, K., Nakamura, K., Yabuno, H.: Out-of-plane vibration of a curved pipe due to pulsating flow (nonlinear interactions between in-plane and out-of-plane vibrations). In: ASME 2010 3rd Joint US-European Fluids Engineering Summer Meeting collocated with 8th International Conference on Nanochannels, Microchannels, and Minichannels. American Society of Mechanical Engineers, pp. 1197–1207 (2010)

Furuya, H., Yamashita, K., Yabuno, H.: Nonlinear stability of a fluid-conveying cantilevered pipe with end mass in case of horizontal excitation at the upper end. In: ASME 2010 3rd Joint US-European Fluids Engineering Summer Meeting collocated with 8th International Conference on Nanochannels, Microchannels, and Minichannels, pp. 1219–1227. American Society of Mechanical Engineers, New York (2010)

Yuichi Shimada, Keita Nakamura, Kiyotaka Yamashita and Hiroshi Yabuno, “Nonlinear vibration of curved pipe due to pulsating flow”, the Proceedings of the Dynamics & Design Conference, Vol. 2010, September 2010

Jo, H., Yabuno, H., Amplitude Reduction of Parametric Resonance by Dynamic Vibration Absorber Based on Quadratic Nonlinear Coupling, 2010, *J. Sound and Vib.*, 329, pp. 2205-2217.

Masaaki Yamamoto, Hiroaki Furuya, Kiyotaka Yamashita and Hiroshi Yabuno, “Mixed-modal self-excited oscillation of a pipe conveying fluid with an end mass”, The Proceedings of Conference of Kanto Branch, Vol. 2011.17, March 2011

Yabuno, H., Kashimura, T., Inoue, T., and Ishida, Y., 2011, *Nonlinear Dyn.*, 66, pp. 377-387.

Yabuno, H., Kuroda, M., Someya, T., Nishimura, K., Hayashi, K., Ashida, K., Van der Pol-type Self-Excited Microcantilever Probe for Atomic Force Microscopy, 2011, *Jpn. J. Appl. Phys.*, 50-7, 076601.

Hideaki Kosaki, Yuichi Shimada, Hiroshi Yabuno and Kiyotaka Yamashita, “Nonlinear equation of motion of fluid conveying curved pipe and in-plane motion due to pulsating flow”, The Proceedings of the Dynamics & Design Conference, Vol. 2012, September 2012

Kono, G. Inagaki, Y., Nohara, T., Kasama, M., and Yabuno, H., Analysis of the Frictional Vibration of a Cleaning Blade in Laser Printers Based on 2 DOF Model, *ASME. J. Comput. Nonlinear Dynam.*, 2012, 7-1, 011006.

Hiroshi Yabuno, “Stabilization of buckled beams with Coulomb friction by high-frequency excitation”, *Procedia IUTAM*, Vol. 5, pp 140-143, 2012

Yabuno, H. Seo, Y., and Kuroda, M., Self-Excited Coupled Cantilevers for Mass Sensing in Viscous Measurement Environments, *Applied Physics Letters*, 2013, *Appl. Phys. Lett.*, 103, 6, 063104.

Kiyotaka Yamashita, Hiroshi Yabuno, Yuuki Hirose and Masatsugu Yoshizawa, “Mixed-modal self-excited oscillation of fluid-conveying cantilevered pipe with end mass”, Chapter in a book that is not identified, pp 137-145, November 2013

Kiyotaka Yamashita, Hiroaki Furuya, Hiroshi Yabuno and Masatsugu Yoshizawa, “Nonplanar vibration of a vertical fluid-conveying pipe (Effect of horizontal excitation at the upper end)”, *Journal of Vibration and Acoustics*, Article ID 041005, August 2014

Shibata, A., Ohishi, S., Yabuno, H.: Passive method for controlling the nonlinear characteristics in a parametrically excited hinged-hinged beam by the addition of a linear spring. *J. Sound Vib.* 350, 111–122 (2015).

Kiyotaka Yamashita, Takahiro Yagyu and Hiroshi Yabuno, “Nonlinear interactions between unstable oscillatory modes in a cantilevered pipe conveying fluid”, *Nonlinear Dynamics*, Vol. 98, September 2019

Beiming Yu, Hiroshi Yabuno and Kiyotaka Yamashita, “Stabilization of a flexible pipe conveying fluid with an active boundary control method”, *Journal of Vibration and Control*, February 2020, DOI: 10.1177/1077546320907751