

AMIT DOLEV

Phone: +972-524-869279
amitdtechnion@gmail.com
Web: <http://dynamics.net.technion.ac.il/students/amit-dolev/>

Mailing Address
Haifa, Israel, 14 Rachel ST 3440119

EDUCATION

- Ph.D.** Technion – Israel Institute of Technology, Expected October 2018
Mechanical Engineering
Dissertation: “Parametrically excited mechanisms for selective detection in distributed systems and altering the radiated acoustic spectrum”
- M.S.** Technion – Israel Institute of Technology, June 2015
Mechanical Engineering during a direct doctoral track.
Advisor: Prof. Izhak Bucher
- B.Sc.** Technion – Israel Institute of Technology, September 2013
Mechanical Engineering
Graduated *Summa Cum Laude*

HONORS AND AWARDS

- Excellence Scholarship - Funded by the Faculty** 2107
Awarded for excellence in research and studies
- Vivian Konigsberg Award for Excellence in Teaching** 2107
Awarded to outstanding TAs chosen by students (1000 NIS) (~\$285)
- Ministry of Science, Technology & Space, applied science and engineering scholarship for Ph.D students** 2016
Awarded to the top Israeli graduate students countrywide in all science and engineering fields (250,000 NIS for three years) (~\$71,500)
- KLA-Tencor Award for graduate students** 2106
Awarded to two outstanding Ph.D students each year by KLA-Tencor Company (\$3000)
- The Miriam and Aaron Gutwirth memorial fellowship** 2014
Awarded for special excellence in research and studies (50,000 NIS+\$1,000) (~\$15,000)
- Sidney and Beatrice Wolberg Award** 2014
Awarded to an outstanding *Brakim* program graduate who continued to graduate school (1,000 NIS) (~\$285)

RESEARCH EXPERIENCE

Parametrically excited mechanisms for selective detection in Distributed systems and altering the radiated acoustic spectrum, 2015-2018

Technion – Israel Institute of Technology, Haifa, Israel

Advisor: Prof. Izhak Bucher

- Derived analytical models and their solutions using asymptotic methods
- Verified the analytical models via numerical simulations (SIMULINK)
- Designed experimental rigs using CAD and FEM software
- Executed detailed structural parameters identification via advanced signal processing and identification algorithms
- Validated the models via experiments using a programmable real-time digital signal processor (DSP; dSPACE 1104)

Technion Research & Development Foundation Ltd, Haifa, Israel 2013-2014

Lab Engineer, Dynamics laboratory

- Conceived & designed of experimental systems, electromechanical coupling, DSP operation, nonlinear dynamics

Parametrically excited taut string with tunable boundary conditions 2012-2013

Final research project of *Brakim* program for outstanding undergraduate students in Mechanical Engineering

Technion – Israel Institute of Technology, Haifa, Israel

Advisors: Prof. Izhak Bucher and Dr. Harel Plat

- Collaborated in Dr. Harel Plat's Ph.D research
- Conducted experiments and analyzed the data
- Programmed a FE model of the parametrically actuated string in MATLAB

TEACHING EXPERIENCE

Technion – Israel Institute of Technology, Haifa Israel October 2014 - October 2018

Teaching Assistant, Mechanical Engineering

- Theory of vibrations – recitation 2015-2018
Developed tutorials, homework, quizzes and exams
- Experimental methods laboratory – Lab instructor 2014-2015
Developed lab procedures, experiments and accompanying MATLAB codes

PUBLICATIONS

Journal Publications

Gabai, R., Farkash, B., Plat, H., **Doley, A.**, and Bucher I., “A vibrating mechanism for large amplitude, non-reciprocal motion, exploiting multiple buckling modes,” *Mechanism and Machine Theory* 121 (2018): 613-632.
doi: 10.1016/j.mechmachtheory.2017.11.022

Journal Publications (cont.)

Tresser, S., **Dolev, A.**, and Bucher, I., “Dynamic balancing of super-critical rotating structures using low-speed data via parametric excitation,” *Journal of Sound and Vibration* 415 (2017): 59-77. doi: 10.1016/j.jsv.2017.11.029.

Bucher, I., Gabai, R., Plat, H., **Dolev, A.**, and Setter, E., “Experimental travelling waves identification in mechanical structures,” *Mathematics and Mechanics of Solids* (2017): 1081286517732825. doi: 10.1177/1081286517732825.

Dolev, A., and Bucher, I., “Experimental and Numerical Validation of Digital, Electromechanical, Parametrically Excited Amplifiers,” *Journal of Vibration and Acoustics* 138, no. 6 (2016): 061001. doi:10.1115/1.4033897.

Dolev, A., and Bucher, I., “Tuneable, non-degenerated, nonlinear, parametrically-excited amplifier,” *Journal of Sound and Vibration* 361 (2016): 176-189. doi:10.1016/j.jsv.2015.09.048.

Journal Papers in Review

Dolev, A., and Bucher I., “Dual frequency parametric excitation of a nonlinear multi degree of freedom mechanical amplifier with electronically modified topology,” Submitted to: *Journal of Sound and Vibration*

Dolev, A., and Bucher I., “Optimizing the dynamical behavior of a dual frequency parametric amplifier with quadratic and cubic nonlinearities,” Submitted to: *Nonlinear Dynamics*

Journal Papers in Preparation

Dolev, A., Tresser, S., and Bucher I., “Balancing rotating structures using slow-speed data via parametric excitation and nonlinear feedback theory and experiment,”

Conference Papers

Dolev, A., and Bucher, I., “In situ topology modification for increased sensitivity in a multi-degree-of-freedom parametric amplifier,” ICCES 2017 – International Conference on Computational & Experimental Engineering and Science, Funchal, Madeira Island, Portugal, June 26-30, 2017.

Bucher, I., Tresser, S., and **Dolev, A.**, “Detecting imbalance of high-speed rotors with dual frequency parametric excitation,” ICCES 2017 – International Conference on Computational & Experimental Engineering and Science, Funchal, Madeira Island, Portugal, June 26-30, 2017. doi:10.1115/DETC2015-46273

Conference Papers (cont.)

Dolev, A., and Bucher, I., “Analytical, numerical and experimental investigation of a tunable, nonlinear multi-degree-of-freedom parametrically excited amplifier,” ISMA 2016 – International Conference on Noise and Vibration Engineering, Leuven, Belgium, September 19-21, 2016.

Dolev, A., and Bucher, I., “A parametric amplifier for weak, low-frequency forces,” IDETC/CIE 2015 – Proceeding of the ASME 2015 international design engineering technical conferences and computers & information in engineering conference, Boston, Massachusetts, USA, August 2-5, 2015.

Bucher, I., and **Dolev, A.**, “A new paradigm for parametric mechanical amplifier,” DINAME 2015 - Proceedings of the XVII International Symposium on Dynamic Problems of Mechanics, Natal, RN, Brazil, February 22-27, 2015.

Other conference / workshop contributions

Dolev, A., and Bucher, I., “Dual frequency parametric excitation of a nonlinear multi degree-of-freedom amplifier”, the 1 MOST Conference, Tel-Aviv, Israel, June 18, 2017.

Tresser, S., **Dolev, A.**, and Bucher, I., “Balancing high speed flexible rotors using low rotation speed via parametric excitation”, the 34 ICME, Haifa, Israel, November 22-23, 2016.

Dolev, A., and Bucher, I., “Tunable parametrically excited amplifier for selective detection in distributed systems”, the 33 ICME, Tel-Aviv, Israel, March 2, 2015.

Bucher, I., and **Dolev, A.**, “Balancing a fast rotating system while spinning at low rotation speeds”, Predictive maintenance, harshness monitoring, society meeting, Haifa, Israel, January 8, 2015.

PATENTS

Bucher, I., and **Dolev, A.**, “Method and system for parametric amplification,” Unites States, Patent, No. US 20170040913 A1.

PROFESSIONAL SERVICE

Peer-Reviewed Articles for:

- Journal of Vibration and Acoustics

RESEARCH INTERESTS

Mechanical vibrations and nonlinear dynamics
Parametric resonators and amplifiers
Acoustics and fluid structure interaction, far field acoustic levitation
Experimental identification and modeling of vibrating structures

COMMUNITY SERVICE

Voluntary

Advisor in a special Physics program for outstanding students,
Ironi He Haifa, high school, September 2017 - October 2018.

LANGUAGES

Hebrew (Native Language) and **English**.

OTHER

Israeli Citizen
Captain in the Artillery corps, IDF (Reserve)

REFERENCES

Izhak Bucher, Ph.D.

Department of Mechanical Engineering
Technion – Israel Institute of Technology
Dan Kahn building, Room 222
Haifa, 3200003
Phone: +972-77-887-3153
Email: bucher@technion.ac.il

Eyal Zussman, Ph.D.

Department of Mechanical Engineering
Technion – Israel Institute of Technology
Dan Kahn building, Room 317
Haifa, 3200003
Phone: +972-77-887-2836
Email: meeyal@technion.ac.il

Henryk Flashner, Ph.D.

Department of Aerospace and Mechanical
Engineering
University of Southern California
OHE 430E
Olin Hall of Engineering
3650 McClintock Ave.,
Los Angeles, CA 90089
Phone: +1-213-740-0489
Email: hflashne@usc.edu