

Curriculum Vitae – Ido Barth

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Education

2006 - 2012 Ph.D. in Physics, Hebrew University of Jerusalem.
Thesis: *Autoresonance in Dynamical Systems of Many Degrees of Freedom*.
Advisor: Prof. Lazar Friedland.

2003 – 2005 B.Sc. (*magna cum laude*) in Physics and Mathematics, Hebrew University of Jerusalem.
Thesis ("Amirim" Honors program): *Magnetic Monopoles*.
Advisor: Prof. Shmuel Elitzur.

Appointments

2022 – 2023 Visiting Researcher – UC Berkeley

2018 – Senior Lecturer – The Hebrew University of Jerusalem

2014 – 2017 Postdoctoral research associate – Princeton University

2013 – 2014 Postdoctoral research associate – The Hebrew University of Jerusalem

Honors, Awards, and Fellowships

2018 The Grunbaum prize for young plasma scientist.

2014 The Rothschild postdoctoral fellowship.

2011 The Racah prize for excellent graduate student.

2006 Rector's prize due to first year graduate achievements.

2004 – 2005 Amirim Scholarship for outstanding students, Hebrew University of Jerusalem.

2003 Dean's prize due to first year undergraduate achievements.

2003 Entrance prize for excellent undergraduate candidate (full tuition).

Teaching Experience

2018 – 2022 Advance analytical mechanics (new course)

2005 – 2011 Teacher Assistant in the following courses:

- Wave and Optics
- Analytical Mechanics
- 3rd year undergraduate physics lab (new experiment on autoresonant pendulum)

Professional Memberships

- The Israel Physics Society
- The American Physics Society
- The Israel Plasma Science and Technology Association

Journal Reviewer

- Physica D
- Physics of Plasmas
- Europhysics Letters
- Communications in Nonlinear Science and Numerical Simulation
- Nature Physics
- J. of Fusion Energy
- MDPI Physics

Academic Interests

- Basic plasma theory
- Autoresonance in classical and quantum systems
- Laser-plasma interaction
- Raman and Brillouin amplifiers
- Magnetic mirrors

Other Academic Activities

- Secretary of the Israel Plasma Science and Technology Association
- Chair of the plasma session at IVS-IPSTA 2020 conference
- Chair of the Grunbaum Award Committee IVS-IPSTA 2018

Non-Academic Activities

Basketball, reading, and hiking.

Languages

Hebrew, English

List of Publications

1. I. Barth and L. Friedland,
Multiresonant control of two-dimensional dynamical systems,
Phys. Rev. E **76**, 016211 (2007).
2. I. Barth, L. Friedland, and A.G. Shagalov,
A water bag model of driven phase space holes in non-neutral plasmas,
Phys. Plasmas **15**, 082110 (2008).
3. I. Barth, L. Friedland, E. Sarid, and A.G. Shagalov,
Autoresonant transition in the presence of noise and self-fields,
Phys. Rev. Lett. **103**, 155001 (2009).
4. K.W. Murch, R. Vijay, I. Barth, O. Naaman, J. Aumentado, L. Friedland, and I. Siddiqi,
Quantum fluctuations in the chirped pendulum,
Nature Physics **7**, 105 (2011).
5. I. Barth, L. Friedland, O. Gat, and A.G. Shagalov,
Quantum versus classical phase-locking transition in a frequency-chirped nonlinear oscillator,
Phys. Rev. A **84**, 013837 (2011).
(Selected to PRA Kaleidoscope Images, July 2011, <http://pra.aps.org/kaleidoscope/July2011>)
6. Y. Shalibo, Y. Rofe, I. Barth, L. Friedland, R. Bialczack, J. M. Martinis, and N. Katz,
Quantum and Classical Chirps in an Anharmonic Oscillator,
Phys. Rev. Lett. **108**, 037701 (2012).
7. I. Barth and L. Friedland,
Two-photon ladder climbing and transition to autoresonance in a chirped oscillator,
Phys. Rev. A **87**, 053420 (2013).
8. I. Barth and L. Friedland,
Quantum phenomena in a chirped parametric anharmonic oscillator,
Phys. Rev. Lett. **113**, 040403 (2014).
9. I. Barth, I. Y. Dodin, and N. J. Fisch,
Ladder Climbing and Autoresonant Acceleration of Plasma Waves,
Phys. Rev. Lett. **115**, 075001 (2015).
10. I. Barth, Z. Toroker, A. A. Balakin, and N. J. Fisch,
Beyond nonlinear saturation of backward Raman amplifiers,
Phys. Rev. E **93**, 063210 (2016).
11. Q. Jia, I. Barth, M. R. Edwards, J. M. Mikhailova, and N. J. Fisch,
Distinguishing Raman from Strongly-Coupled Brillouin Amplification for Short Pulses,
Phys. Plasmas **23**, 053118 (2016).

12. I. Barth and N. J. Fisch,
Reducing parametric backscattering by polarization rotation,
Phys. Plasmas **23**, 102106 (2016).
13. K. Qu, I. Barth, and N. J. Fisch,
Plasma Wave Seed for Raman Amplifiers,
Phys. Rev. Lett. **118**, 164801 (2017).
14. K. Hara, I. Barth, E. Kaminski, I. Y. Dodin, and N. J. Fisch,
Kinetic simulations of ladder climbing by electron plasma waves,
Phys. Rev. E **95**, 053212 (2017).
15. I. Barth and N.J. Fisch,
Multi-frequency Raman amplifiers,
Phys. Rev. E **97**, 033201 (2018).
16. I. Barth and N.J. Fisch,
Spectral Manipulation of Raman Amplifiers,
J. Phys.: Conf. Ser. **1206**, 012015 (2019).
17. T. Miller, I. Be'ery, and I. Barth,
Rate equations model for multiple magnetic mirrors in various thermodynamic scenarios,
Accepted for publication in Phys. Plasmas (2021).
18. T. Miller, I. Be'ery, Eli Gudinetsky, and I. Barth,
Enhanced confinement in multi-mirror machines via RF fields
(in preparation) (2022).

Conferences and Seminars

1. The 53rd Annual Meeting of the Israel Physics Society, Dec. 9th, 2007, Rehovot, Israel. (talk)
2. Dynamics Days Europe, Aug. 25-29, 2008, Delft, the Netherlands. (poster)
3. The 54th Annual Meeting of the Israel Physics Society, Dec. 28th, 2008, Beer-Sheva, Israel. (poster)
4. The 55th Annual Meeting of the Israel Physics Society, Dec. 13th, 2009, Ramat Gan, Israel. (talk)
5. The 51st Annual Meeting of the Division of Plasma Physics, Nov. 2-6, 2009, Atlanta GA, USA. (poster)
6. The 12th Israeli Conference on Plasma Science and Applications, Jan. 25th, 2010, Haifa, Israel. (talk)
7. The 56th Annual Meeting of the Israel Physics Society, Dec. 5th, 2010, Tel Aviv, Israel. (poster)
8. The 48th Culham Plasma Physics Summer School, July 11-22, 2011, Oxford, GB. (poster)
9. Nonlinear Seminar, The Hebrew University, Aug 12th, 2011, Jerusalem, Israel.
10. The 57th Annual Meeting of the Israel Physics Society, Dec. 25th, 2011, Haifa, Israel.
11. Theor. / Math. Physics Seminar, Technion, April 15th, 2012, Haifa, Israel.
12. Gordon Research Conference - Quantum Control of Light and Matter, Jul. 28-31, 2013, Mt. Holyoke College in South Hadley MA, USA. (poster)
13. Seminar, Aug. 1st 2013, University of Maryland, College Park MD, USA.
14. Seminar, Aug. 2nd 2013, Princeton Plasma Physics Laboratory, Princeton NJ, USA.
15. Seminar, Aug. 5th 2013, University of Texas, Austin TX, USA.
16. The 55th Annual Meeting of the APS Division of Plasma Physics, Nov. 11-15, 2013, Denver CO, USA.
17. French-Israeli Symposium in Physics, *Light-Matter Interaction*, Mar. 19-20, 2014, Jerusalem, Israel. (poster)
18. The 56th Annual Meeting of the APS DPP, Oct. 27-31, 2014, New Orleans, LA, USA.
19. The 57th Annual Meeting of the APS DPP, Nov. 16-20, 2015, Savannah, GA, USA. (talk)
20. "Solved and Unsolved Problems in Plasma Physics" – A symposium in honor of Nathaniel J. Fisch, March 28-30, 2016, Princeton, NJ, USA. (poster)
21. The 46th Annual Anomalous Absorption Conference, May 1-6, 2016, Old Saybrook, CT, USA. (poster)
22. The 19th Israeli Conference on Plasma Science and Applications, Feb. 5th, 2017, Jerusalem, Israel. (talk)
23. The 2nd conference on Extremely High-Intensity Laser Physics (ExHILP 2017), Sep. 5-8, 2017, Lisbon, Portugal. (poster)
24. The 5th Conference on High Intensity Laser and attosecond science in Israel (CHILI 2017), Dec. 11-13, 2017, Tel Aviv, Israel. (poster)
25. The 20th Israeli Conference on Plasma Science and Applications, Jan. 29, 2018, Tel Aviv, Israel. (The recipient of the Grunbaum prize for young plasma scientist)
26. The 27th Annual International Laser Physics Workshop (LPHYS'18), July 16-20, 2018, Nottingham, UK. (invited talk).
27. IVS 36 annual meeting & IPSTA 2018, Sep. 6, 2018, Ramat Gan, Israel. (talk)
28. Colloquium at the Physics Department, Bar-Ilan University, May 13, 2019, Ramat Gan, Israel. (invited talk).
29. Vlasovia 2019, July 22-25, 2019, Strasbourg, France. (poster)
30. Seminar, Nov. 2nd 2022, UC Berkeley, Berkeley CA, USA.