Amir Sagiv

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Current position

Columbia University, New York - Chu Assistant Professor of Applied Mathematics (*2019- current)*

Education

Tel Aviv University

Ph.D. in Applied Mathematics, *2016-2019*

M.Sc. in Mathematics, *2014-2016*

Hebrew University of Jerusalem

B.Sc. in Mathematics and Physics, *2006-2009*

"Talpiot" excellence program

Previous academic and professional experience

Yale University - visiting graduate student *(2018-2019)*

Tel Aviv University - Teaching and Teaching Assistant (*2016-2018)*

Military Service - *2009-2016*

Awards and Honors

1. **AMS-Simons Travel Grant** ($5,000), 07/21-07/23
2. **SIAM Early Career Travel Award,** CSE21, 3/21
3. **SIAM Student Travel Award**, CSE19, 2/19
4. **Israel's Ministry of Science and Technology** Ph.D. Student Travel Award, 11/18
5. **Distinguished Ph.D. Award**, School of Mathematics, Tel Aviv University, Israel, 06/18
6. **SIAM Student Travel Award,** NWCS18, 06/18
7. **Distinguished M.Sc. Award**, School of Mathematics, Tel Aviv University, Israel, 05/15.
8. **Dean's List Excellence Award** Hebrew University of Jerusalem, Israel, 03/09

Personal information

Married. Legal Permanent Resident in the US (Green Card holder). Citizen of Israel and France.

Publications and Preprints

1. (with MI Weinstein) Effective Gaps in Continuous Floquet Hamiltonians. arXiv 2105.00958 (in review)
2. Spectral convergence of probability densities for forward problems in uncertainty quantification. arXiv 2101.07395, 2021 (in review).
3. (with O Lindenbaum, G Mishne, & R Talmon) Kernel-based parameter estimation of dynamical systems with unknown observation functions. **Chaos** 31, 043118, 2021.
4. (with S Steinerberger) Transport and Interface: an uncertainty principle for the Wasserstein Distance, **SIAM Journal on Mathematical Analysis** 52, 3039-3051, 2020
5. The Wasserstein Distances Between Pushed-Forward Measures with Applications to Uncertainty Quantification, **Communications in Mathematical Sciences,** 18, 707-724, 2020
6. (with A Ditkowski, RH Goodman, & G Fibich) Loss of Physical Reversibility in Reversible Systems, **Physica D**, 410, 132515, 2020
7. (with A Ditkowski & G Fibich) Density Estimation in Uncertainty Propagation Problems Using a Surrogate Model, **SIAM/ASA Journal on Uncertainty Quantification** 8, 261-300, 2020
8. (with Patwardhan, Gao, Dutt, Ginsberg, Ditkowski, Fibich, & Gaeta) Loss of Polarization in Elliptically Polarized Collapsing Beams, **Physical Review A** 99, 033824, 2019
9. (with A Ditkowski & G Fibich) Loss of Phase and Universality of Stochastic Interactions Between Laser Beams, **Optics Express** 20, 24387-24399, 2017

Invited Talks

1. **Workshop on Perturbation of Spectral Bands and Gaps,** TU Dortmund (online) 07/21
2. **SIAM MS21** invited talk, Mathematical Aspects of Materials Science, online, 05/21
3. **IMACS11** invited talk, International Conference for Nonlinear Evolution Equations and Wave Phenomena, University of Athens, GA, 04/19
4. **SIAM CSE19** invited talk, Conference of Computational Science and Engineering, Spokane, WA, 02/19
5. **SIAM NWCS18** invited talk, Conference of Nonlinear Waves and Coherent Structures, Orange, CA, 06/18
6. **IMU18**, invited talk, Israel Mathematical Union annual meeting, Technion, Haifa, Israel 05/18
7. **Nonlinear Waves and Integrable Systems**, invited talk, Rosh Pina, Israel, 05/17

Seminar Talks

1. **Hebrew University of Jerusalem,** Analysis seminar, 06/21
2. **Tel Aviv University,** Applied Mathematics seminar, 06/21
3. **UC San Diego,** Applied Mathematics Seminar, 03/21
4. **Southern Methodist University,** Applied Mathematics Colloquium 03/21
5. **University of Minnesota,** IMA Data Science seminar, 01/21
6. **University of Maryland,** CSCAMM seminar, online 11/20
7. **California Institute of Technology** CMX Seminar, 02/20
8. **UC Berkeley/LBNL** Applied Mathematics Seminar, 01/20
9. **Flatiron Institute** Numerical Analysis and CCM seminar, 12/19
10. **Rensselaer Polytechnic Institute** Mathematical Sciences Colloquium, 10/19
11. **New Jersey Institute of Technology** Fluid Mechanics and Waves, 09/19
12. **Bar Ilan University** Applied Mathematics seminar, Israel, 05/19
13. **Tel Aviv University** Applied Mathematics seminar, Israel, 06/19
14. **Technion** PDEs and Applied Mathematics seminar, Israel, 04/19

15. **Weizmann Institute** Mathematical analysis and applications seminar, Israel, 03/19
16. **Columbia University** Applied Mathematics Colloquium, 01/19
17. **Stanford** Applied Mathematics seminar, 10/18
18. **UC Irvine** Applied Mathematics seminar, 10/18
19. **UC Merced** Applied Mathematics seminar, 10/18
20. **University of Colorado, Boulder**, Nonlinear Waves seminar, 09/18
21. **Yale University** Applied Mathematics seminar, 09/18

Contributed talks

1. **SIAM AN21** minisymposium talk, SIAM Annual Meeting, Spokane WA 07/21
2. **SIAM CSE21** minisymposium talk, Conference of Computational Science and Engineering, online, 03/21
3. **Second Symposium on Machine Learning and Dynamical Systems** online contributed talk hosted by the Fields Institute, 09/20
4. **Dynamics Days Digital,** contributed online talk, 08/20
5. **One World Waves,** contributed talk, online and hosted by ICMS, Edinburgh 06/20
6. **Dynamics Days 2020**, contributed flash talk, Hartford, CT 01/20
7. **Brown-BU-UMass Dynamics and PDE Seminar,** invited talk, Brown, Providence RI 11/19
8. **Young Researchers Workshop, Ki-Net network**, contributed talk, CSCAMM 10/19
9. **OASIS7** contributed talk, International Conference for Optics and Electro-Optics, Tel Aviv, Israel, 04/19
10. **IPS17**, contributed talk, Israel Physics Society annual meeting, Technion, Haifa, Israel 12/17
11. **Frontiers in Optics**, contributed talk, OSA 101st annual meeting, Washington D.C., 09/17

Peer-Reviewed Conference Proceedings

(with Ditkowski A, Fibich G) “Universality of stochastic interactions between laser beams”, in:

- Frontiers in Optics 2017, Optical Society of America. Washington DC, USA (2017)
- Nonlinear Optics 2017, Optical Society of America. Waikaloa, HI, USA (2017)

Students Supervised

- Jerry Qu (Columbia Applied Math ‘22) “Data-driven discovery of phase transitions”, summer 2021 (with MI Weinstein)
- Sameh Hameedi (Columbia Applied Math M.Sc. with research specialization ‘21), “Edge mode decay in Floquet media”, 2020-2021 (with MI Weinstein)
- Ho Jia Xu Dion (Yale-NUS ‘21), undergraduate summer research “Solitary waves interactions in extremely nonintegrable medium”, 2019-2020 (with W Schlag)

Teaching Experience

Columbia University - Teaching

- Applied Mathematics III: Dynamical Systems APMA4101E (Spring 2021)
- Multivariate Calculus for Engineering and Applied Sciences APAM2000E (Fall 2020)
- Principles of Applied Mathematics APMA4001E (Spring 2020)
- Multivariate Calculus for Engineering and Applied Sciences APAM2000E (Fall 2019)

Tel Aviv University - Teaching

- Numerical Analysis for Engineering (Spring 2018)

Tel Aviv University - Teaching Assistant

- Numerical Analysis (Fall 2017)
- Ordinary Differential Equations (Spring 2017)
- Calculus I (Fall 2016)
- Ordinary Differential Equations for Engineering (Spring 2016)

Service and Organization

1. Referee for:
    - Physical Review Letters
    - SIAM Journal on Mathematical Analysis
    - Communications in Mathematical Physics
    - Physical Review A
    - Wave Motion
    - Bulletin of the London Mathematical Society
    - International Journal of Uncertainty Quantification
    - Computational Statistics and Data Analysis
    - Journal of the Optical Society of America B (JOSA B)

    Organization

    - Mini-symposium titled “Machine Learning for Scientific Discovery” for SIAM Annual Meeting, 07/21 (with Ofir Lindenbaum)
    - Mini-symposium titled “Recent Advances in Computational Probability” for SIAM CSE, 03/21 (with Bamdad Hosseini)
    - Convened sessions titled “Theory of Optical Waves in Novel Media” for Metamaterials 2020 Congress, 09/20 (with Michael I. Weinstein)
2. Summer school teaching - 3 hours mini-course on dynamical systems at “Columbia Summer Undergraduate Research Experiences in Mathematical Modeling”, July 2021.
3. Conference referee for Metamaterials 2020 and Metamaterials 2021.
4. Seminar organizer of the Friday Research Conference at the Department of Applied Physics and Applied Mathematics, Columbia University, Spring 2020 & spring 2021.
5. Tutoring (Tel Aviv University’s Dean of Students Affairs) 2016-2017. one-on-one sessions with undergraduate students with physical disabilities and non-native Hebrew speakers.