
ORIT PELEG

University of Colorado at Boulder
Department of Computer Science
BioFrontiers Institute
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Academic Appointments

University of Colorado at Boulder, USA

2023-Present Associate Professor (with tenure)

2024-2027 Marvin H. Caruthers Endowed Chair

2018-2023 Assistant Professor

Department of Computer Science and at the Biofrontiers Institute

Affiliated Faculty at the Dept. of Physics, Applied Math, and Ecology and
Evolutionary Biology

Weizmann Institute of Science, Israel

2024 (Oct-Dec) Visiting Faculty Program, Department of Physics of Complex Systems

Santa Fe Institute, USA

2019-Present External Professor

Harvard University, USA

2014-2017 Postdoctoral Fellow at the John A. Paulson School Of Engineering And
Applied Sciences

2012-2013 Postdoctoral Fellow at the Department of Chemistry and Chemical Biology

ETH Zürich and University of Zürich, Switzerland

2012 Research assistant at the Institute of Neuroinformatics

Education

PhD in Materials Science, ETH Zürich, Switzerland – 2008-2012

MSc degree in Physics, Bar-Ilan University, Israel, *summa cum laude* – 2006-2007

BSc degree in Physics & Computer Science, Bar-Ilan University, Israel – 2003-2007

Selected Honors and Awards

2025 [Scialog Fellow](#), Research Corporation for Science Advancement
2024 [Schmidt Science Polymath](#), Schmidt Futures
2023 [Sloan Fellow](#) in Physics, Sloan Foundation
2022 [CAREER Award](#) of the National Science Foundation
2022 [Cottrell Scholar Award](#) of the Research Cooperation for Science Advancement
2022 Selected as a [Timmerhaus Ambassador](#) by the University of Colorado [President's Teaching Scholars Program](#)

2021	Junior Scientific Award of the Complex Systems Society “for her contributions to the understanding of collective dynamics”
2021	Selected as Research & Innovation Office Faculty Fellow at CU Boulder
2021	Junior Scientific Award of the Complex Systems Society “for her contributions to the understanding of collective dynamics”
2021	Selected as a National Geographic Explorer
2016	Selected to participate in the Rising Stars in Physics workshop , MIT

Selected [Journal Articles](#)

1. O. Martin, C. Nguyen, R. Sarfati, M. Chowdhury, M.L. Iuzzolino, D.T. Nguyen, R.M. Layer, **O. Peleg** *Embracing firefly flash pattern variability with data-driven species classification* [Scientific Reports](#) **14**:3432 (2024)
2. H. Tuazon, C. Nguyen, E. Kaufman, I. Tiwari, J. Bermudez, D. Chudasama, **O. Peleg**, S. Bhamla *Collecting-Gathering Biophysics of the Blackworm *L. variegatus** [Integrative and Comparative Biology](#) icad080 (2023)
3. G. G. Fard, D. Zhang, F. López Jiménez, **O. Peleg** *Honeycomb crystallography: comb formation under geometric frustrations* [Proceedings of the National Academy of Sciences, USA](#) **119** (48) e2205043119 (2022)
4. R. Sarfati, **O. Peleg** *Chimera states among synchronous fireflies* [Science Advances](#) **8**, eadd6690 (2022)
5. O. Shishkov, **O. Peleg** *Beyond social insects: Soft, dense, and active invertebrate aggregations* [Collective Intelligence](#) **1**(2), 1-18 (2022)
6. O. Shishkov, C. Chen, C.A. Madonna, Kaushik Jayaram, **O. Peleg** *Strength-mass scaling law governs mass distribution inside honey bee swarms* [Scientific Reports](#) **12**, 17388 (2022)
7. R. Sarfati, J. Hayes, **O. Peleg** *Self-organization in natural swarms of *Photinus carolinus* synchronous fireflies* [Science Advances](#) **7** (28), eabg9259 (2021)
8. D.M. T. Nguyen, M. L. Iuzzolino, A. Mankel, K. Bozek, G. J. Stephens, **O. Peleg** *Flow-mediated olfactory communication in honey bee swarms* [Proceedings of the National Academy of Sciences, USA](#) **118** (13) (2021)
9. **O. Peleg**, J. Peters, M. Salcedo, L. Mahadevan *Collective mechanical adaptation of honeybee swarms* [Nature Physics](#) **14**, 1193–1198 (2018)
10. **O. Peleg**, L. Mahadevan *Optimal switching between geocentric and egocentric strategies in navigation* [Journal of the Royal Society Open Science](#) **3**, 160128 (2016)

Selected [Funding Sources](#)

2024–2029	Schmidt Science Polymath Program 2.5M USD ; PI, Peleg
2024–2027	Human Frontiers Science Program (HFSP) 1.5M USD (my portion: 375K USD), Temporal structures in complex deep-sea versus surface

marine life: from molecules to communities; PI, K. Tessmar-Raible (University of Vienna), co-PIs Peleg, M. Matabos (IFREMER) and T. Oakley (UCSB)

- 2022–2027 [National Science Foundation \(NSF\), Physics of Living Systems Program](#) **900K USD**, CAREER: Principles of Firefly Rhythmic Synchronization; PI, Peleg
- 2022–2025 [Research Cooperation for Science Advancement \(RCSA\), Cottrell Scholar Award](#) **100K USD**, Physics of Firefly Communication; PI, Peleg
- 2022–2023 [CU Boulder, President's Teaching Scholars Program, Timmerhaus Fund Ambassadors](#) **50K USD**, Firefly Conservation in Colorado; PI, Peleg
- 2022–2025 [National Science Foundation \(NSF\), Physics of Living Systems Program](#) **499K USD** (my portion: **270K USD**), Bee-honeycomb Formation under Geometric Frustration; PI F. L. Jimenez (CU Boulder), co-PI, Peleg
- 2021–2022 [National Geographic Society \(NGS\), AI for Earth Innovation](#) **150K USD**, High-throughput Automatic Monitoring Tools for Firefly Conservation, (including 50K USD cloud computing credit from [Microsoft](#)); PI, Peleg
- 2019–2023 [Human Frontiers Science Program \(HFSP\), Young Investigator Grant](#) **1.1M USD** (my portion: **350K USD**), The Dynamics of Information Flow in a Social Network of Mutually Shading Plants, PI, Peleg, co-PIs Y. Meroz (Tel-Aviv University) and A. Jordan (Max Planck Institute)
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Selected [Press and Outreach](#)

- 2024 Interviewed for a story on synchronous fireflies for [NPR](https://www.npr.org/2024/05/24/g-s1-935/synchronous-fireflies-congaree-endangered) <https://www.npr.org/2024/05/24/g-s1-935/synchronous-fireflies-congaree-endangered>; also featured on [All Things Considered](#) <https://tinyurl.com/273x653h> and on [Short Wave](#) <https://tinyurl.com/yc3m6yjj>
- 2023 Gave a [TEDx](#) talk on lab's work with synchronous fireflies tinyurl.com/ycxhwxyj
- 2022 Coverage of paper on collective comb construction in honeybee swarms (*PNAS*, 2022) [PNAS Science Sessions Podcast](#) (tinyurl.com/5djvhap5) [Physics Today](#) (tinyurl.com/2k6jfyne) [Physics World](#) (tinyurl.com/3e7mwr3c)
- 2022 Interviewed for a [Quanta Magazine](#) feature of the Peleg Lab: "How Do Fireflies Flash in Sync? Studies Suggest a New Answer" tinyurl.com/3p28dmyh
- 2020 Coverage of spatiotemporal firefly flash patterns methods paper (*J. R. Soc. Interface*, 17:170, 2020) [Smithsonian Magazine](#) (tinyurl.com/yx9dqaew) [Haaretz](#) (tinyurl.com/y2y2796t) [New York Times](#) (tinyurl.com/3vfud734) [Science](#) (tinyurl.com/4jye5wk2)
- 2021 Featured as a [Comic Strip](#) character at Science News for Students on "How bees play telephone to form a swarm" <https://www.sciencenewsforstudents.org/article/bees-play-telephone-swarm-pheromones-comic>
- 2019 Wrote a science article, directed to undergraduate students, for [Physics Today](#) on "Mechanical Hive Mind" <https://physicstoday.scitation.org/doi/10.1063/PT.3.4191>
- 2019 Gave a public talk about honeybee research at [Ignite Boulder](#) event: "Shaking the Swarm", Ignite Boulder 40 at Boulder Theater <https://youtu.be/HY0CBmlTmZs>