
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)

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

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

- 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 Selected as a [National Geographic Explorer](#)
- 2016 Selected to participate in the [Rising Stars in Physics workshop](#), MIT

Selected **Journal Articles**

1. **O. Peleg** *A new chapter in the physics of firefly swarms.* [Nature Review Physics](https://doi.org/10.1038/s42254-023-00675-z) doi.org/10.1038/s42254-023-00675-z (2023)
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) e2011916118 (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**

- 2022–2027 [National Science Foundation \(NSF\), Physics of Living Systems Program](#) **900K USD**, CAREER: Principles of Firefly Rhythmic Synchronization, grant #2239331; PI, Peleg
- 2023–2025 [Sloan Fellowship in Physics](#) **75K USD**, Spatiotemporal Dynamics of Collective Communication in Insect Swarms; grant #FG-2023-20488; PI, Peleg
- 2022–2025 [Research Cooperation for Science Advancement \(RCSA\), Cottrell Scholar Award](#) **100K USD**, Physics of Firefly Communication, grant #28219; 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 grant #2210628; 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, grant # NGS-84850T-21 (including 50K USD cloud computing credit from [Microsoft](#)); PI, Peleg