Itai Sfaradi, Ph.D.

Physicist

itai.sfaradi@berkeley.edu
esfaradi@gmail.com

RESEARCH INTERESTS

Time domain astronomy - *Tidal Disruption Events, Nuclear Transients, Core-collapse Supernovae.*

High-energy transients - *Relativistic Jets, Fast Outflows, Accretion Physics, and Shock Physics.*

AI research - *Utilizing AI and Large Language Models to advance the field of astronomy.*

APPOINTMENTS

University of California, Berkeley - *Postdoctoral researcher*

September 2024 - Present

Hebrew University of Jerusalem- *Graduate student at Prof. Assaf Horesh research group*

Hebrew University of Jerusalem- *Teacher Assistant*

October 2017 - August 2024

Hebrew University of Jerusalem- *Research assistant at Prof. Michael Paul nuclear physics lab*

October 2015 - October 2016

EDUCATION

Hebrew University of Jerusalem- *Ph.D. in Physics*

January 2020 - August 2024

Thesis title: “Diagnostics of cosmic explosion using radio observations”

Hebrew University of Jerusalem- *M.Sc. in Physics*

October 2017 - December 2019

Thesis title: “A study of the circumstellar material around core-collapse supernovae”

Hebrew University of Jerusalem- *B.Sc. in Physics*

October 2014 - September 2017

AWARDS & HONORS

The Arnold Rosenblum Prize - for excellent achievements as a graduate student in gravitation, astrophysics and cosmology (accompanied by a 2500$ award).

Awarded with the Racah Students’ colloquium.

IN PRESS

Multiple articles covering my discovery of the first radio event of its kind:

- **Investigation of the First Radio-Bright Off-Nuclear Tidal Disruption Event (by The American Astronomical Society - Nova journal)**
- **Black hole caught snacking on star far from host galaxy's center (by Astronomy journal)**
- **Astronomers Discover Fastest-Evolving Radio Signals Ever Observed from Black Hole Tearing Apart Star (by the National Radio Astronomy Observatory)**
- **Allen Telescope Array Helps Uncover Hidden Black Hole Tearing Apart a Star (by The Search for Extraterrestrial Intelligence Institute)**
- **Black holes can move and 'reawaken,' scientists say (by The Jerusalem Post)**
- **Astronomers detect radio signals from a black hole tearing apart a star—outside a galactic center (by Phys.org)**
- **Ynet magazine coverage (in Hebrew)**

Ynet magazine coverage featuring my contribution to the discovery of a puzzling TDE (in Hebrew).

PUBLICATIONS

Published papers: 5 / 25 (as a first author / total)

Citations: 145 / 1188 (as a first author / total)

h-index: 16

First author journal publications (leading):

1. The First Radio-Bright Off-Nuclear TDE 2024tvd Reveals the Fastest-Evolving Double-Peaked Radio Emission. **Sfaradi** et al. The Astrophysical Journal Letters, Volume 992, Issue 2, id.L18, 23 pp. (2025) – **11.8 Impact factor, 11 citations.**
2. The Observed Phase Space of Mass-loss History from Massive Stars Based on Radio Observations of a Large Supernova Sample. **Sfaradi** et al. The Astrophysical Journal, Volume 979, Issue 2, id.189, 15 pp. (2025) – **5.4 Impact factor, 8 citations.**
3. The dense and non-homogeneous circumstellar medium revealed in radio wavelengths around the Type Ib SN 2019oys. **Sfaradi** et al. Astronomy & Astrophysics, Volume 686, id.A129, 14 pp. (2024) – **6.1 Impact factor, 8 citations.**
4. An off-axis relativistic jet seen in the long lasting delayed radio flare of the TDE AT 2018hyz. **Sfaradi** et al. Monthly Notices of the Royal Astronomical Society, Volume 527, Issue 3, pp.7672-7680 (2023) – **4.7 Impact factor, 41 citations.**
5. A Late-time Radio Flare Following a Possible Transition in Accretion State in the Tidal Disruption Event AT 2019azh. **Sfaradi** et al. The Astrophysical Journal, Volume 933, Issue 2, id.176, 8 pp. (2022) – **5.4 Impact factor, 51 citations.**

Second author journal publications (major contribution and co-leading):

1. Type IIP supernova SN2016X in radio frequencies. Ruiz-Carmona, **Sfaradi**, and Horesh. Astronomy & Astrophysics, Volume 666, id.A82, 9 pp. (2022).

2. PGIR 20eid (SN 2020qmp): A Type IIP Supernova at 15.6 Mpc discovered by the Palomar Gattini-IR survey. Srinivasaragavan, **Sfaradi**, et al. Astronomy & Astrophysics, Volume 660, id.A138, 14 pp. (2022)
3. Are Delayed Radio Flares Common in Tidal Disruption Events? The Case of the TDE iPTF 16fnl. Horesh, **Sfaradi**, et al. The Astrophysical Journal Letters, Volume 920, Issue 1, id.L5, 5 pp. (2021)
4. A Non-equipartition Shock Wave Traveling in a Dense Circumstellar Environment around SN 2020oi. Horesh, **Sfaradi** et al. The Astrophysical Journal, Volume 903, Issue 2, id.132, 15 pp. (2021)

Other journal publications (co-authorship):

1. Thermal Electrons in the Radio Afterglow of Relativistic Tidal Disruption Event ZTF22aaajecp/AT 2022cmc. Rhodes et al. **(including Sfaradi I.)** The Astrophysical Journal, Volume 992, Issue 1, id.146, 13 pp. (2025)
2. The Most Luminous Known Fast Blue Optical Transient AT 2024wpp: Unprecedented Evolution and Properties in the X-rays and Radio. Nayana et al. **(including Sfaradi I.)** eprint arXiv:2509.00952 (2025)
3. The Double Tidal Disruption Event AT 2022dbl Implies that at Least Some "Standard" Optical Tidal Disruption Events Are Partial Disruptions. Makrygianni et al. **(including Sfaradi I.)** The Astrophysical Journal Letters, Volume 987, Issue 1, id.L20, 22 pp. (2025)
4. A Massive Black Hole 0.8 kpc from the Host Nucleus Revealed by the Offset Tidal Disruption Event AT2024tvd. Yao et al. **(including Sfaradi I.)** The Astrophysical Journal Letters, Volume 985, Issue 2, id.L48, 20 pp. (2025)
5. Late-time supernovae radio re-brightening in the VAST pilot survey. Rose et al. **(including Sfaradi I.)** Monthly Notices of the Royal Astronomical Society, Volume 534, Issue 4, pp.3853-3868 (2024)
6. A case for a binary black hole system revealed via quasi-periodic outflows. Pasham et al. **(including Sfaradi I.)** Science Advances, vol. 10, issue 13, id. Eadj8898 (2024)
7. The complex circumstellar environment of supernova 2023ixf. Zimmerman et al. **(including Sfaradi I.)** Nature, Volume 627, Issue 8005, p.759-762 (2024)
8. AT 2021loi: A Bowen Fluorescence Flare with a Rebrightening Episode Occurring in a Previously Known AGN. Makrygianni et al. **(including Sfaradi I.)** The Astrophysical Journal, Volume 953, Issue 1, id.32, 18 pp. (2023)
9. Supernova 2020wnt: An Atypical Superluminous Supernova with a Hidden Central Engine. Tinyanont et al. **(including Sfaradi I.)** The Astrophysical Journal, Volume 951, Issue 1, id.34, 26 pp. (2023)
10. Day-time-scale variability in the radio light curve of the Tidal Disruption Event AT2022cmc: confirmation of a highly relativistic outflow. Rhodes et al. **(including Sfaradi I.)** Monthly Notices of the Royal Astronomical Society, Volume 521, Issue 1, pp.389-395 (2023)

11. The Birth of a Relativistic Jet Following the Disruption of a Star by a Cosmological Black Hole. Pasham et al. **(including Sfaradi I.)** Nature Astronomy, Volume 7, p. 88-104 (2023)
12. Radio and X-Ray Observations of the Luminous Fast Blue Optical Transient AT 2020xnd. Bright et al. **(including Sfaradi I.)** The Astrophysical Journal, Volume 926, Issue 2, id.112, 15 pp. (2022)
13. SN 2020bqj: A Type Ibn supernova with a long-lasting peak plateau. Kool et al. **(including Sfaradi I.)** Astronomy & Astrophysics, Volume 652, id.A136, 21 pp. (2021)
14. A tidal disruption event coincident with a high-energy neutrino. Stein et al. **(including Sfaradi I.)** Nature Astronomy, Volume 5, p. 510-518. (2021)
15. Two stripped envelope supernovae with circumstellar interaction. But only one really shows it. Sollerman et al. **(including Sfaradi I.)** Astronomy & Astrophysics, Volume 643, id.A79, 13 pp. (2020)
16. Evidence for Late-stage Eruptive Mass Loss in the Progenitor to SN2018gep, a Broad-lined Ic Supernova: Pre-explosion Emission and a Rapidly Rising Luminous Transient. Ho et al. **(including Sfaradi I.)** The Astrophysical Journal, Volume 887, Issue 2, article id. 169, 24 pp. (2019).

First author astronomical reports (leading):

- 11 TNS Astronotes, 9 ATels, and 4 GCN Circulars.

SEMINARS AND PRESENTATIONS

- **Serving in the Scientific organizing committee**, at the “Dynamic Radio Skies” conference in Toronto, Canada (upcoming 2026)
- **Scientific Panelist**, at NASA’s “The 4th TDAMM Workshop” in Huntsville, Alabama (2025)
- **Seminar speaker**, “Astronomy lunch talks” at the University of California, Berkeley (2025)
- **Poster**, “The 4th TDAMM Workshop” in Huntsville, Alabama (2025)
- A talk at Edo Berger’s group meeting in the CfA Harvard (2025)
- A talk at Ashley Villar’s group meeting in the CfA Harvard (2025)
- **Contributed seminar talk**, “QPEs and nuclear transients” conference in Madrid, Spain (2025)
- **Contributed seminar talk**, “The transient radio skies” conference in Sydney, Australia (2025; had to declined)
- **Invited talk**, “ALMA proposal preparation” workshop at the University of California, Berkeley (2024)
- **Invited seminar talk**, “Racah’s students colloquium” at Hebrew University of Jerusalem, Israel (2024; had to declined)

- **Seminar speaker**, “Astrophysics lunch talk” at Hebrew University of Jerusalem, Israel (2024)
- A talk at Tony Piro’s group meeting at Carnegie Institute (2023)
- **Seminar speaker**, “Astronomy tea talks” at Caltech (2023)
- **Seminar speaker**, Time domain astronomy seminar at the University of California, Berkeley (2023)
- **Seminar speaker**, Astronomy department of Colombia University (2023)
- A talk at Eliot Quataert’s group meeting at Princeton University (2023)
- **Seminar speaker**, at the Israel Physics Society annual meeting (2023)
- **Invited seminar talk**, “Student’s seminar” at Tel-Aviv University, Israel (2022)
- **Poster**, “The VLA all sky survey” conference at the National Radio Astronomy observatory (NRAO) in New Mexico University (2022)
- **Seminar speaker**, “Astrophysics lunch talk” at Hebrew University of Jerusalem, Israel (2021)

APPROVED OBSERVING TIME

Radio and mm:

- **Leading the campaign** for >5000 hours with AMI-LA in a span of 5 years to observe all high-energy transients (TDEs, CCSNe, FBOTs, GRBs, and AGN flares).
- **Principal Investigator** of more than 12 approved VLA programs in a span of 5 years with a total of >200 hours.
- **Principal Investigator** of 2 approved ATCA programs in a span of 1 year with a total of 144 hours.
- **Principal Investigator** of 2 approved ALMA programs in a span of 2 years with a total of 12 hours.
- **Principal Investigator** of 4 approved ATA programs in a span of 2 years with a total of >100 hours.
- **Principal Investigator** of 1 approved uGMRT program with a total of 6 hours.

X-ray - 5 approved DDT proposals with Swift XRT as a Principal Investigator.

Co-Investigator and Co-Principal Investigator of numerous optical/UV (HST, Keck, Lick, Gemini), IR (JWST), X-ray (Chandra, XMM-Newton, Swift XRT), and radio (VLA, ALMA, ATA, ATCA, NOEMA) successful programs.

ACADEMIC SERVICE

- **Refereed** for the Astrophysical Journal three times (2025-2026).
- **Panelist** for the Time Allocating Committee of NASA’s Hubble Space Telescope (upcoming 2026).
- **Contributor** for the Time-Domain Astronomy Benchmark (2026).

- **Refereed** for Atacama Large Millimeter/submillimeter Array - Radio Telescope (2025).
- **Member**, Rubin LSST Transients and Variable Stars (TVS) Science Collaboration (2024-present).
- **Member**, Zwicky Transient Facility (ZTF) massive black hole working group (2024-present).
- **Member**, Colloquium committee at the University of California, Berkeley (2025).
- **Member**, local organizing committee - "ALMA proposal preparation" workshop at the University of California, Berkeley (2025).
- **Co-leading** the Hebrew University of Jerusalem Astronomy Outreach group (2019-2024).
- **Member**, local organizing committee - "The radio transient sky" workshop at the Hebrew University of Jerusalem (2019).

MENTORING AND TEACHING

- **Mentoring** UC Berkeley graduate students in time domain astronomy (2025-2026).
- **Teaching** more than 150 students over 7 years in Physics lab A at the Hebrew University of Jerusalem (2017-2024).
- **Training** three graduate students at Assaf Horesh's research group in radio data reduction and time-domain astronomy physics (2023-2024).

PUBLIC OUTREACH

- **Speaker**, "Night with the Stars" at the Lick Observatory (2025).
- **Speaker**, "UC Berkeley astronomy night" at the University of California, Berkeley (2025).
- **Co-leading** the Hebrew University of Jerusalem Astronomy Outreach group (2019-2024).
- **Leading and organizing** multiple public stargazing sessions and astronomy talks (2019-2024).
- **Volunteer**, "Neta" organization - mentoring a group of 10 teenagers from under-privileged communities (2015-2018).
- **Volunteer**, "Yedidim" organization - mentoring a teenager from an under-privileged community (2014).