# Itai Sfaradi, Ph.D.

## Physicist

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## 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** - *Scientific researcher (Postdoctoral)*
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)**

**Science news article featuring my work on radio bursts from TDEs.**

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

**Night with the Stars - a public (ticketed) event at the Lick Observatory in which I was the main speaker.**

## PUBLICATIONS

**Papers:** 6 / 26 (as a first author / total; one first-author paper under review)

**Citations:** 147 / 1417 (as a first author / total)

**h-index:** 17; **i10-index:** 24

**First author journal publications (leading; order of number of citations):**

1. 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, 59 citations.**
2. 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, 51 citations.**
3. 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, 12 citations.**
4. 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.**
5. 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.**

6. A 14-year-old Mystery: The Peculiar Case of the Engine-driven SN 2012ap. **Sfaradi** et al. arXiv:2605.16495, **Submitted** to The Astrophysical Journal Letters (2026) - **11.8 Impact factor, recently submitted.**

**Other journal publications (major contribution and co-authorship):**

1. 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)
2. 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)
3. Type IIP supernova SN2016X in radio frequencies. Ruiz-Carmona, **Sfaradi**, and Horesh. Astronomy & Astrophysics, Volume 666, id.A82, 9 pp. (2022).
4. 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)
5. 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)
6. 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.)** The Astrophysical Journal Letters, Volume 993, Issue 1, id.L6, 25 pp. (2025)
7. 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)
8. 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)
9. 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)
10. 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)
11. The complex circumstellar environment of supernova 2023ixf. Zimmerman et al. **(including Sfaradi I.)** Nature, Volume 627, Issue 8005, p.759-762 (2024)
12. 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)
13. 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)

14. 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)
15. 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)
16. 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)
17. 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)
18. A tidal disruption event coincident with a high-energy neutrino. Stein et al. **(including Sfaradi I.)** Nature Astronomy, Volume 5, p. 510-518. (2021)
19. 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)
20. 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.

## ACADEMIC SERVICE

- **Member of the Scientific organizing committee (SOC)**, at the “Dynamic Radio Skies” conference in Toronto, Canada (2026)
- **Refereed** for the American Astronomical Society’s The Astrophysical Journal four times.
- **Scientific Panelist** for the Time Allocating Committee of NASA’s Hubble Space Telescope (2026).
- **Scientific Panelist**, at NASA’s “The 4th TDAMM Workshop” in Huntsville, Alabama (2025)
- **Contributor** for the Time-Domain Astronomy Benchmark (2026).
- **Refereed** for NASA’s Chandra - X-ray Telescope (2026).
- **Refereed** two times for Atacama Large Millimeter/submillimeter Array - Radio Telescope (2025, 2026).
- **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 (LOC) - “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 (LOC) - “The radio transient sky” workshop at the Hebrew University of Jerusalem (2019).

## SEMINARS AND PRESENTATIONS

- **Seminar speaker**, “Astronomy lunch talks” at the University of California, Berkeley (2026).
- **Poster**, “The 4th TDAMM Workshop” in Huntsville, Alabama (2025).
- **A talk** at the Center for Astrophysics Harvard (2025).
- **Contributed seminar talk**, “QPEs and nuclear transients” conference in Madrid, Spain (2025).
- **Seminar speaker**, “Astronomy lunch talks” at the University of California, Berkeley (2025).
- **Contributed seminar talk**, “The transient radio skies” conference in Sydney, Australia (2025; had to decline).
- **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).
- **Seminar speaker**, “Astrophysics lunch talk” at Hebrew University of Jerusalem, Israel (2024).
- **A talk** 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 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 10 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 3 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.

## MENTORING AND TEACHING

- **Mentoring** UC Berkeley undergraduate and 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 the Hebrew University of Jerusalem 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).