

CURRICULUM VITAE

Abraham Loeb

Field of Research: Theoretical Astrophysics and Cosmology

Family: Married to Dr. Ofrit Liviatan and father to daughters Klil and Lotem

Work Address:

Harvard University

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Academic Degrees

1986 Ph.D. in Physics

1985 M.Sc. in Physics

1983 B.Sc. in Physics and Mathematics

The Hebrew University of Jerusalem, Israel

Thesis Titles

Ph.D. “Particle Acceleration to High Energies and Amplification of Coherent Radiation by Electromagnetic Interactions in Plasmas”

M.Sc. “Analytical Models for the Evolution of Strong Shock Waves Generated by High Irradiance Lasers in Solids and Fast Spark Discharges”

Positions Held

2012– *Frank B. Baird Jr. Professor of Science*, Harvard University.

2007– Director, *Institute for Theory and Computation (ITC)*, Harvard University (<http://www.cfa.harvard.edu/itc/>).

2016 Founding Director of the *Black Hole Initiative*, Harvard University.

2011–2020 Longest-Serving Chair (three terms), Harvard Astronomy department (<http://astronomy.fas.harvard.edu/>).

2021– Member of the *Center for Astrophysics Executive Board*.

2018–2021 Chair of the *Board on Physics & Astronomy* of the National Academies, USA.

2016–2018 Vice chair of the *Board on Physics & Astronomy* of the National

Academies, USA.

2016– Chair of the Advisory Committee for *Breakthrough Starshot*, Breakthrough Prize Foundation.

2015– Affiliate of the Center of Mathematical Sciences and Applications, Harvard University.

2015– Science Theory Director for the *Breakthrough Initiatives Projects* of the *Breakthrough Prize Foundation*.

2012– *Frank B. Baird Jr. Professor of Science*, Harvard University.

2011–2020 Longest-Serving Chair (three terms), Harvard Astronomy department (<http://astronomy.fas.harvard.edu/>).

2011– Sackler Senior Visiting Professor, School of Physics and Astronomy, Tel Aviv University.

1997– Professor of Astronomy, Harvard University.

1995–1996 Associate Professor, Astronomy Dept., Harvard University.

1993–1995 Assistant Professor, Astronomy Dept., Harvard University.

1988–1993 Long-term member, The Institute for Advanced Study, Princeton.

1985–1988 Head of a theoretical group on electromagnetic propulsion, Israel.

1980–1988 Participant in “Talpiyot project,” Israel. This national project selects 25 high-school graduates every year from all around Israel; the participants attend an advanced program of academic study and research.

Honors & Awards

2023 Cosmos Award for “Extraterrestrial”, Reggio Calabria, Italy

2021 “Extraterrestrial” selected as Best Science Book of the Year and Best Nonfiction Book of the Year, Amazon

2021 Keynote Speaker in Peace BAR (spiritually Beautiful, materially Affluent and humanly Rewarding) Festival, on the topic: “The Arrival of Extraterrestrial Intelligence in the Solar System: Will the Identity and Destiny of Earth be Rewritten“, Kyung Hee University System, South Korea

2021 Ignatius Speaker, on “Our Future in Space”, Washington National Cathedral

2021 Keynote Speaker, National Book Festival, Library of Congress

2021 New York Times Bestseller on first week after publication date of the book *Extraterrestrial*.

2015-2020 Three of Loeb’s students selected for “*Forbes 30 Under 30*” in

five years: Amir Siraj, Henry Lin and Tony Pan; Forbes Magazine.

2020 *Dean's Competitive Funds for Promising Scholarship*, Faculty of Arts & Sciences, Harvard University.

2020 Loeb's PhD student, Nick Stone, awarded the *Bok Prize*, Astronomy Department, Harvard University.

2020 *Hoopes Prize in undergraduate education* for Senior Thesis of advisee, Amir Siraj, Harvard College.

2020 Member of the "President's Council of Advisors on Science and Technology (PCAST), White House, USA.

2020 Member of the Advisory Board of "Einstein: Visualize the Impossible", Hebrew University of Jerusalem, Israel.

2020 Selected to "The 14 Most Inspiring Israelis of the 2010-2020 Decade" by the organization "*From the Grapevine*".

2019 Svein Rosseland Lecturer at the University of Oslo, Norway.

2018 *Hoopes Prize in undergraduate education* for Senior Thesis of advisee, Eden Girma, Harvard College.

2018 Selected among "100 Hebrew University Alumni We Love", by the American Friends of the Hebrew University, Jerusalem.

2018 Distinguished Lecturer of the Center for Relativistic Astrophysics, School of Physics, Georgia Tech University, Atlanta.

2015 Elected Fellow of the International Academy of Astronautics (IAA) SETI Permanent Committee.

2015 Elected Member of the American Physical Society (APS).

2015 Member of the International Astronomical Union (IAU).

2014 Member of the Board on Physics & Astronomy (BPA) of the National Academies.

2013 Miegunyah Distinguished Visiting Fellowship, University of Melbourne, Australia.

2012 *Hoopes Prize in undergraduate education* for Senior Thesis of advisee, Marion Dierickx, Harvard College.

2012 Selected to "The 25 Most Influential People in Space" by TIME Magazine.

2012 Elected member of the American Academy of Arts & Sciences.

2012 Galileo Galilei Chair (Cattedra Galileiana) Award, Scuola Normale Superiore, Pisa, Italy.

2011 Sackler Lecturer in Astronomy, Leiden Observatory, Netherlands.

2011 Las Cumbres Observatory Prize Lecturer in Astrophysics, UC Santa Barbara.

2009/10 Director of the Jerusalem Winter School in Theoretical Physics.
2009 Distinguished Visiting Scientist at the Carnegie Observatories, Pasadena.
2008 Invited speaker at the annual symposium of the Miller Institute, UC Berkeley.
2007 Inaugural Australian Institute of Physics (AIP) End of Year Lecturer.
2007/8 Australia-Harvard Distinguished Fellow
2007 Merle Kingsley Distinguished Visitor at the California Institute of Technology (Caltech).
2006/7 John Bahcall Lecturer at Tel Aviv University University.
2006 Salpeter Lecturer at Cornell University.
2006 SAAS-Fee Lecturer on “The First Light”. Ten lectures summarized in a review of 158 pages, appeared in a book format (astro-ph/0603360).
2004- Distinguished Visiting Professorship at the Faculty of Physics and the Einstein Center for Theoretical Physics, Weizmann Institute of Science.
2003 Einstein Minerva fellow, Physics Faculty, Weizmann Institute.
2002 John Simon Guggenheim Memorial Foundation Fellow.
2001 Prof. Dror Sadeh Memorial Lecturer at Tel Aviv University.
1999 Bergmann Memorial Award of the US-Israel Binational Science Foundation.
1996 *Hoopes Prize in undergraduate education* for Senior Thesis of advisee P. Young, Harvard College.
1987 The Kennedy Prize, Hebrew University of Jerusalem.
1985 “Best M.Sc. Student” award of the Faculty of Science of the Hebrew University of Jerusalem (summa cum laude).
1980 Participant in the national elite project “Talpiyot”, Israel.

Mentoring Awards

2015 *Eric Keto Prize in Theoretical Astrophysics* for PhD thesis of advisee Gongjie Li. **2012** *Eric Keto Prize in Theoretical Astrophysics* for PhD thesis of advisee Laura Blecha.
2006 Robert J. Trumpler Award of the *Astronomical Society of the Pacific* for the PhD thesis to advisee Steven Furlanetto.

Honors in Public Outreach

2014 Profiled in the New York Times Science Section by Claudia Dreifus on December 1, 2014.
2014 Profiled in DISCOVER Magazine by Steve Nadis on April 2014.
2014 Research featured on NPR Radio and Fox News TV.

2013 Profiled in Science Magazine by Rob Irion on April 2013.
2013 Chambliss Astronomical Writing Award from the American Astronomical Society, for the book “How Did the First Stars and Galaxies Form?” (2010).
2011-2015 Ten articles featured in TIME Magazine by Mike Lemonick about personal research papers.
2008 Cover story of Smithsonian magazine about black holes, and cover story of ASTRONOMY magazine about the future collision between the Milky-Way and Andromeda.
2007 Paper on *Milkomeda* (arXiv:0705.1170) was selected as one of the top 10 space stories by ASTRONOMY magazine.

Professional Service

2018- Ex-officio Member, U.S. Liaison Committee for the International Union of Pure and Applied Physics, National Academies.
2018 Member of the Consultation Group of the 2020 Decadal Survey in Astronomy and Astrophysics, National Academies.
2017- Ex-officio Member, U.S. National Committee for the International Astronomical Union.
2016- Member, President’s Task Force on Diversity and Belonging, Harvard University.
2014- Member, Board on Physics and Astronomy of the National Academies.
2014-2017 Member, Dean’s Faculty Resources Committee, Faculty of Arts & Sciences, Harvard University.
2014 Guest member, Editorial board, Annual Reviews of Astronomy & Astrophysics.
2013–2014 Physical Sciences Chair, Review Committee of Science Graduate Programs, Harvard University.
2013– Member, Allston Academic Planning Committee, Harvard University.
2013–2015 Member, Star Family Challenge Committee, Harvard University.
2011- Head of Astrophysics, Editorial Board, Scientific Reports, Nature Magazine.
2011-2014 Member, International Advisory Board, Publications of the Astronomical Society of Australia.

2009— Editor, *Journal of Cosmology and Astroparticle Physics (JCAP)*.
2008–2010 Executive board for the *Energetic X-ray Imaging Survey Telescope*
2008–2010 Science Working Group for the *JANUS GRB Mission*
2008— Science Working Group for the *Lunar Radio Observatory*.
2008/9 Chair, selection committee of the Dan David Prize in cosmology.
2005–2008 Science Working Group for the *Cosmic Inflation Probe*.
2005— Science Working Group for the *Murchison Wide-Field Array*.
2000— Chair of the biennial *Harvard-Smithsonian Conference Series in Theoretical Astrophysics*, sponsored by Raymond and Beverly Sackler. The first conference on “The First Generation of Cosmic Structures” was held in May 2000 (<http://cfa-www.harvard.edu/apconf/>). The second conference on “Gamma-Ray Bursts: The Brightest Explosions in the Universe” was held in May 2002 (<http://cfa-www.harvard.edu/grbconf/>). The third conference on “Astrophysics of Planetary Systems” was held in May 2004 (<http://cfa-www.harvard.edu/apsconf/>). The fourth conference on “Nuclear Black Holes in Galaxies” was held in May 2006 (<http://cfa-www.harvard.edu/bh2006/>). The fifth conference on “21cm Cosmology” was held in May 2008 (<http://www.cfa.harvard.edu/events/2008/cos2008/>). The sixth conference on “Dynamics from the Galactic Center to the Milky-Way Halo” was held in May 2010 (<http://www.cfa.harvard.edu/events/2010/dyn/>). The seventh conference on “Testing General Relativity with Astrophysical Systems” was held in May 2012 (<http://www.cfa.harvard.edu/events/2012/sackler>). The eighth conference on “Debates of the Nature of Dark Matter” was held in May 2014 (<http://www.cfa.harvard.edu/events/2014/sackler>). The ninth conference on “The Transient Sky” was held in May 2016 (<http://www.cfa.harvard.edu/events/2016/sackler>). The tenth conference on “Gravitational Wave Astrophysics” was held in May 2018 (<https://itc.cfa.harvard.edu/sackler-conference-2018>).
1999–2000 Panel on Ultraviolet, Optical, and Infrared Astronomy from Space of the Astronomy and Astrophysics Survey Committee.
1998–2000 Science Working Group for the *Generation-X Space Telescope*.
1997–2000 Science Working Group for the *Next Generation Space Telescope*.

Undergraduate Students at Harvard College

Peter Young, Genevieve Shattow, Marion Dierickx, Ana-Maria Constantin,

Henry Lin, Eden Girma, Amir Siraj, Mahlet Shiferaw, Carson Ezell, Kaylie hausknecht.

Graduate Students (in chronological order)

Daniel Eisenstein (Hubble fellow, Professor at Univ. of Arizona, now tenured Professor at Harvard Univ.), Zoltán Haiman (Hubble fellow, tenured Professor at Columbia Univ.), Rosalba Perna (Harvard Junior fellow, Princeton Spitzer fellow, tenured Professor at SUNY Stony Brook), Eric Woods (teaching), Ravi Pilla (graduated), Alexandre Refregier (Professor, ETH Zurich, Switzerland), David Heyrovsky (graduated), Xiaohu Wang (graduated), Pinaki Chatterjee (graduated), Steven Furlanetto (prize postdoctoral fellowship at Caltech, tenured Professor at UCLA), Loren Hoffman (Lindheimer postdoctoral fellow, Northwestern, postdoc at Hebrew University), Daniel Babich (prize postdoctoral fellowship, Caltech), Ryan O’Leary (Einstein fellow, UC Berkeley), Genevieve Shattow (Swinburne), Joseph Munoz (researcher, Lincoln Labs), Bence Kocsis (Einstein fellow, ITC, postdoc IAS, Professor in Hungary), Laura Blecha (Einstein fellow, Maryland; Assistant Professor, U. Florida), Idan Ginsburg (Dartmouth, research fellow at CfA), Eli Visbal (Prize postdoc at Columbia U., Research Fellow at Flatiron Institute, Professor at Univ. of Toledo), Nicholas Stone (Postdoc at Columbia U., Assistant Professor at Hebrew University), Douglas Rubin (graduated, finances), Tony Pan (graduated, CEO of “Modern Electron”), Jonathan Bitner (Physics, CEO of startup), Gongjie Li (Harvard Junior fellow, Assistant Professor at Georgia Tech), Natalie Mashian (Physics, research fellow in biophysics), Marion Dierickx (Astronomy, postdoc at Harvard), Pierre Christian (Astronomy, prize postdoc in Arizona), Anna Ijjas (Visiting PhD student), Anna Patej (Physics, Prize postdoc at U. Arizona), Xiawei Wang (Astronomy), Ben Margalit (Columbia U., postdoc at UC Berkeley), Aaron Smith (UT Austin), Delilah Gates (Physics), Sophia Sanchez-Maes (Astronomy), Betty Hu (Physics), Shelley Cheng (Astronomy), Karina Mathew (English).

Visiting Graduate Students (in chronological order)

Dr. Girish Kulkarni (India), Dr. Urbano Franca (Spain), Dr. Kimi Hayasaki (Japan), Dr. Francisco Villaescusa-Navarro (Spain), Dr. Giacomo Fragione (Italy), Dr. Shmuel Bialy (Israel), Dr. Akshaya Rane (WVU, US), Dr. Erez

Michaeli (Israel), Elisa Tabor (Stanford).

Postdoctoral fellows (in chronological order)

Anne Thoul (Prof. at Univ. of Liege, Belgium), Volker Bromm (Prof. at Univ. of Texas), Stuart Wyithe (Prof. at Univ. of Melbourne), Avery Broderick (Prof. at Univ. Waterloo, Canada), Misha Medvedev (Prof. at U. Kansas), Mark Dijkstra (MPA postdoc), Scott Gaudi (Prof. at Ohio-State U.), Jonathan Pritchard (Prof. at Imperial College, UK), Uri Keshet (Prof. at Ben Gurion Univ., Israel), Yuval Birnboim (Prof. at Hebrew Univ.), Bence Kocsis (Einstein fellow), Charlie Conroy (Prof. at Harvard), Yue Shen (Prof. at U. Illinois), Nico Yunes (Prof. at Univ. of Montana), Asaf Pe'er (Prof. at Cork Univ., Ireland), Smadar Naoz (Prof. at UCLA), Sayan Chakraborti (Harvard Society of Fellows), Konstantin Batygin (Prof. at Caltech), Yan-Fei Jiang (Einstein fellow), Lorenzo Sironi (Einstein fellow), James Guillochon (Einstein fellow), Cora Dvorkin (Hubble fellow), Igor Pikovski (Branco Weiss postdoctoral fellow), Blakesley Burkhart (Einstein fellow), Nia Imara (Future Faculty Leader fellow, Harvard), Zac Manchester (SEAS postdoctoral fellow, Harvard), Girish Kulkarni (Cambridge U.), Nicola Amorisco (ITC fellow), Anastasia Fialkov (ITC fellow), John Forbes (ITC fellow), Ana Bonaca (ITC fellow), Laura Kreiberg (Harvard Junior Fellow), Nia Imara (John Harvard fellow), Dan D'Orazio (ITC fellow), Sownak Bose (ITC fellow), Manasvi Lingam (ITC fellow), Razi Emami (ITC fellow), Paul Chesler (BHI fellow), Hsin-Yu Chen (BHI fellow), Feraz Azhar (BHI fellow), Vokram Ravi (CfA fellow), Julian Munoz (CfA fellow), Mohammad Safarzadeh (ITC fellow), Karan Jani (Vanderbilt), Richard Annantua (ITC fellow), Morgan MacLeod (ITC fellow), Richard Cloete (Galileo-Luakien fellow), Laura Domine (Galileo-Keto fellow), Juliana Cherston (Brinson Fellow).

Abraham Loeb - LIST OF PUBLICATIONS

Books

9. Loeb, A. *“Interstellar”*, HarperCollins (August 2023).
8. Lingam, M., & Loeb, A. *“Life In The Cosmos: From Biosignatures to Technosignatures”*, Harvard University Press (June 2021).
7. Loeb, A. *“Extraterrestrial”*, Houghton Mifflin Harcourt (January 2021).
6. Loeb, A. (Eds. D. Sloan, R.A. Batista, M. T. Hicks & R. Davies), *“Fine-Tuning in the Physical Universe”*, Cambridge University Press (2020)
5. Loeb, A. *“From the First Star to Milkmeda”*, Kindle, Amazon (2015).
4. Loeb, A. *“From the First Star to the End of Time”* (in hebrew), Carmel Publishing House, Israel (2015).
3. Loeb, A., & Furlanetto, S., *“The First Galaxies in the Universe”*, Princeton Series in Astrophysics, Princeton University Press (2013).
2. Loeb, A. *“How Did the First Stars and Galaxies Form?”*, Frontiers in Physics Series, Princeton University Press (2010).
1. Loeb, A., Ferrara, A., & Ellis, R. S. *“First Light in the Universe”*, SAAS-Fee winter school, Springer, New York (2008).

Latest Papers and Essays

1282. Loeb, A. “Touching a Piece of Sky”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/Bennu.pdf>]
1281. Loeb, A. “Engaging the Public in the Practice of Science”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/KC.pdf>]

1280. Loeb, A. “A Tale of Two Nobels”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/Nobel.pdf>]
1279. Loeb, A. “Loneliness is Pointless”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/Uni5.pdf>]
1278. Loeb, A. “Some of Us Are Looking at the Stars”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/Thank6.pdf>]
1277. Loeb, A. “A Piece of Sky”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/Thank5.pdf>]
1276. Pacucci, F., Ni, Y. & Loeb, A. “Extreme Tidal Stripping May Explain the Overmassive Black Hole in Leo I: a Proof of Concept”, ApJL (2023).
[arXiv:2309.02487]
1275. Loeb, A. “Escaping Earth as a Sign of Intelligence”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/Thank4.pdf>]
1274. Loeb, A. “Reconstructing the First Interstellar Meteor, IM1”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/Recon.pdf>]
1273. Loeb, A. “Discovery of Spherules of Likely Extrasolar Composition in the Pacific Ocean Site of the CNEOS 2014-01-08 (IM1) Bolide”, (2023).
[<https://arxiv.org/abs/2308.15623>]
1272. Loeb, A. “The IM1 Spherules from the Pacific Ocean Have Extrasolar Composition”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE45.pdf>]
1271. Loeb, A. “Sporting Science”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/Sport.pdf>]
1270. Loeb, A. “A Salute to Nature”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/Nature1.pdf>]

1269. Loeb, A. “Letters from Earthlings and Beyond”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/Let3.pdf>]
1268. Loeb, A. “Opening Interstellar Packages in Our Mailbox”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/Dent.pdf>]
1267. Loeb, A. “Seeking a Higeehr Intelligence”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/Think.pdf>]
1266. Loeb, A. “Recruiting Panelists from the Bar at Harvard Square”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE44.pdf>]
1265. Loeb, A. “An Extraterrestrial Messiah?”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/Mess.pdf>]
1264. Loeb, A. “An Unprecedented Hearing About Extraterrestrials in the US House of Representatives” (43th diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE43.pdf>]
1263. Loeb, A. “Celebration of Life-As-We-Know-It!” (42th diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE42.pdf>]
1262. Loeb, A. “The Count is Up to 360 Spherules” (41th diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE41.pdf>]
1261. Loeb, A. “The One Thing That Senators, Scientists and Artists Agree On!” (40th diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE40.pdf>]
1260. Loeb, A. “We Are All in the Same Boat” (39th diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE39.pdf>]

1259. Loeb, A. “A Harvest of 92 New Spherules in One Day” (38th diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE38.pdf>]
1258. Hertzberg, M. P., & Loeb, A. “Inconsistency with de Sitter Spacetime of “Gravitational Pair Production and Black Hole Evaporation”, PRL (2023). [<https://arxiv.org/abs/2307.05243>]
1257. Loeb, A. “A Billion Year Delivery by FedEx” (37th diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE37.pdf>]
1256. Loeb, A. “Starting the Analysis of Spherules from the Interstellar Expedition” (36th diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE36.pdf>]
1255. Loeb, A. “Summary of a Successful Interstellar Expedition” (35th diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE35.docx>]
1254. Loeb, A. “On the Way Back from IM1’s Site” (34th diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE34.docx>]
1253. Loeb, A. “A Toast of Champagne to Fifty IM1 Spherules” (33th diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE33.docx>]
1252. Loeb, A. “From Ocean to Table” (32nd diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE32.docx>]
1251. Loeb, A. “Is an Iron Peanut or Bean Worth Ten Thousand Spherules?” (31th diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE31.docx>]
1250. Loeb, A. “Running Along IM1’s Likely Path” (30th diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE30.docx>]

1249. Loeb, A. “The Spatial and Size Distributions of Spherules Are Correlated with the Likely IM1’s Path” (29th diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE29.docx>]
1248. Loeb, A. “The Flowers Above the Grass Level” (28th diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE28.docx>]
1247. Loeb, A. “We Have 25 Spherules from IM1’s Site” (27th diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE27.docx>]
1246. Loeb, A. “Two Are Better Than One” (26th diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE26.docx>]
1245. Loeb, A. “Somewhere Over the Rainbow” (25th diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE25.docx>]
1244. Loeb, A. “Our Largest Spherule Looks Like an Alien Emoji” (24th diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE24.docx>]
1243. Loeb, A. “What a Wonderful World” (23th diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE23.docx>]
1242. Loeb, A. “Finding a Needle in an Ocean” (22nd diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE22.docx>]
1241. Loeb, A. “Hunting for More IM1 Spherules” (21th diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE21.docx>]

1240. Loeb, A. “We Have Discovered Spherules from the Path of the First Recognized Interstellar Meteor, IM1” (20th diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE20.docx>]
1239. Loeb, A. “Inspiration from a Visit to a Terrestrial Marketplace” (nineteenth diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE19.docx>]
1238. Loeb, A. “Background Wires at the DoD Coordinates of IM1” (eighteenth diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE18.docx>]
1237. Loeb, A. “Where Are the Spherules of IM1?” (seventeenth diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE17.docx>]
1236. Loeb, A. “Black Powder in the Debris Field of the First Interstellar Meteor” (sixteenth diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE16.docx>]
1235. Loeb, A. “We Recovered Shock-Resisting Steel in the Debris Field of the First Interstellar Meteor” (fifteenth diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE15.docx>]
1234. Loeb, A. “Corroded Iron and Volcanic Debris in IM1’s Path” (fourteenth diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE14.docx>]
1233. Loeb, A. “Analysis of the Materials Retrieved from Runs 4 and 5 in IM1’s Path” (thirteenth diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE13.docx>]
1232. Loeb, A. “A Rich Harvest of Wires and Fragments from IM1’s Path” (twelve diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE12.docx>]

1231. Loeb, A. “Ashes to Ashes, Dust to Dust” (tenth diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE10.docx>]
1230. Loeb, A. “You Cannot Make a Lemonade Without Lemons” (ninth diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE9.docx>]
1229. Loeb, A. “An Anomalous Wire Made of Manganese and Platinum in the Pacific Ocean Site of the First Interstellar Meteor” (eighth diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE8.docx>]
1228. Loeb, A. “Strange Wires and Diverse Fragments in the Pacific Ocean Site of the First Interstellar Meteor” (seventh diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE7.docx>]
1227. Loeb, A. “Do Aliens Have Hair? (sixth diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE6.docx>]
1226. Loeb, A. “First Sample of Fragments from the Pacific Ocean Floor (fifth diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE5.docx>]
1225. Loeb, A. “Scooping the Ocean Floor (fourth diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE4.pdf>]
1224. Loeb, A. “Arriving At Silver Star (third diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE3.pdf>]
1223. Loeb, A. “Seeking Extraterrestrial Artifacts in the Pacific Ocean (second diary report)”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE2.pdf>]

1222. Loeb, A. “It’s Easier to Seek Extraterrestrial Facts from the Ocean Floor Than Get it From Government”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/IE1.pdf>]
1221. Padmanabhan, H. & Loeb, A. “Alleviating the Need for Exponential Evolution of JWST galaxies in $10^{10}M_{\odot}$ Halos at $z > 10$ by a Modified Λ CDM Power Spectrum” (2023).[arXiv:2306.04684]
1220. Loeb, A. “The Multiple Groups of UAP Studies Within Government”, Medium (2023).
[<https://www.cfa.harvard.edu/~loeb/Fab1.pdf>]
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