References

Ackeret, Jacob. 1946. Zur Theorie der Raketen. *Helvetica Physica Acta*, **19**, 103–112.

Akeson, Rachel, Beichman, Charles, Kervella, Pierre, et al. 2021. Precision millimeter astrometry of the α Centauri AB system. *Astronomical Journal*, **162**(1), 14. https://ui.adsabs.harvard.edu/abs/2021AJ....162...14A.

Alcubierre, Miguel. 1994. The warp drive: Hyper-fast travel within general relativity. *Classical and Quantum Gravity*, **11**(5), L73–L77. https://ui.adsabs.harvard.edu/abs/1994CQGra..11L..73A.

Alder, Ken. 2014. *The measure of all things: The seven-year odyssey and hidden error that transformed the world*. New York: Free Press.

Ancona, Elena, and Kezerashvili, Roman Ya. 2024. Recent advances in space sailing missions and technology: Review of the 6th International Symposium on Space Sailing (ISSS 2023). *arXiv e-prints*, Nov., arXiv:2411.12492. https://ui.adsabs.harvard.edu/abs/2024arXiv241112492A.

Anderson, John D. 2016. *Fundamentals of aerodynamics*. 6th ed. New York: McGraw-Hill.

Anderson, John D., Laing, Philip A., Lau, Eunice L., et al. 1998. Indication, from Pioneer 10/11, Galileo, and Ulysses data, of an apparent anomalous, weak, long-range acceleration. *Physical Review Letters*, **81**(14), 2858–2861. https://ui.adsabs.harvard.edu/abs/1998PhRvL..81.2858A.

Andrews, Dana G., and Zubrin, Robert M. 1990. Magnetic sails and interstellar travel. *Journal of the British Interplanetary Society*, **43**, 265–272. https://api.semanticscholar.org/CorpusID:55324095.

Anglada-Escudé, Guillem, Amado, Pedro J., Barnes, John, et al. 2016. A terrestrial planet candidate in a temperate orbit around Proxima Centauri. *Nature*, **536**(7617), 437–440. https://ui.adsabs.harvard.edu/abs/2016Natur.536..437A.

Ashby, Neil. 2002. Relativity and the Global Positioning System. *Physics Today*, **55**(5), 41–47. https://doi.org/10.1063/1.1485583.

Aston, G. 1986. Electric propulsion: A far reaching technology. *Journal of the British Interplanetary Society*, **39**(Nov.), 503. https://ui.adsabs.harvard.edu/abs/1986JBIS...39..503A.

Atwater, Harry A., Davoyan, Artur R., Ilic, Ognjen, et al. 2018. Materials challenges for the Starshot lightsail. *Nature Materials*, **17**(Oct.), 861. https://doi.org/10.1038/s41563-018-0075-8.

Bacon, Ralph Hoyt. 1959. Logarithmic spiral: An ideal trajectory for the interplanetary vehicle with engines of low sustained thrust. *American Journal of Physics*, **27**(3), 164–165. https://doi.org/10.1119/1.1934788.

Bailer-Jones, Coryn A. L. 2021a. Lost in space? Relativistic interstellar navigation using an astrometric star catalog. *Publications of the Astronomical Society of the Pacific*, **133**(1025), 074502. https://ui.adsabs.harvard.edu/abs/2021PASP..133g4502B.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 11 Nov 2026 at 18:26:26, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009700429

Bailer-Jones, Coryn A. L. 2021b. The sundiver: Combining solar sails with the Oberth effect. *American Journal of Physics*, **89**(3), 235–243. https://ui.adsabs.harvard.edu/abs/2021AmJPh..89..235B.

Bailer-Jones, Coryn A. L., and Farnocchia, Davide. 2019. Future stellar flybys of the Voyager and Pioneer spacecraft. *Research Notes of the American Astronomical Society*, **3**(4), 59. https://ui.adsabs.harvard.edu/abs/2019RNAAS...3...59B.

Ball, Justin. 2019. Maximizing specific energy by breeding deuterium. *Nuclear Fusion*, **59**(10), 106043. https://ui.adsabs.harvard.edu/abs/2019NucFu..59j6043B.

Bassetto, Marco, Niccolai, Lorenzo, Quarta, Alessandro A., and Mengali, Giovanni. 2018. Logarithmic spiral trajectories generated by solar sails. *Celestial Mechanics and Dynamical Astronomy*, **130**(2), 18. https://ui.adsabs.harvard.edu/abs/2018CeMDA.130...18B.

Bazzani, Elisa, Guglielmi, Anna Valeria, Corvaja, Roberto, et al. 2023. The tree of light as interstellar optical transmitter system. *arXiv e-prints*, Aug., arXiv:2308.01900. https://ui.adsabs.harvard.edu/abs/2023arXiv230801900B.

Becker, Werner. 2009. X-Ray emission from pulsars and neutron stars. Page 91 of: Becker, Werner (ed.), *Astrophysics and Space Science Library*. Astrophysics and Space Science Library, vol. 357. https://ui.adsabs.harvard.edu/abs/2009ASSL..357...91B.

Becker, Werner, Bernhardt, Mike G., and Jessner, Axel. 2013. Autonomous spacecraft navigation with pulsars. *Acta Futura*, **7**(Nov.), 11–28. https://ui.adsabs.harvard.edu/abs/2013AcFut...7...11B.

Beig, Robert, and Heinzle, J. Mark. 2008. Relativistic aberration for accelerating observers. *American Journal of Physics*, **76**(7), 663–670. https://ui.adsabs.harvard.edu/abs/2008AmJPh..76..663B.

Bethe, H. 1930. Zur Theorie des Durchgangs schneller Korpuskularstrahlen durch Materie. *Annalen der Physik*, **397**(3), 325–400. https://onlinelibrary.wiley.com/doi/abs/10.1002/andp.19303970303.

Biswas, Abhijit, Srinivasan, Meera, Wollman, Emma, et al. 2024. Photon-counting for deep space optical communications. Page 1302508 of: Itzler, Mark A., Bienfang, Joshua C., and McIntosh, K. Alex (eds.), *Advanced Photon Counting Techniques XVIII*, vol. 13025SPIE, for International Society for Optics and Photonics, https://doi.org/10.1117/12.3013703.

Blanco, Philip R. 2019. A discrete, energetic approach to rocket propulsion. *Physics Education*, **54**(6), 065001. https://ui.adsabs.harvard.edu/abs/2019PhyEd..54f5001B.

Blanco, Philip R., and Mungan, Carl E. 2021. High-speed escape from a circular orbit. *American Journal of Physics*, **89**(1), 72–79. https://ui.adsabs.harvard.edu/abs/2021AmJPh..89...72B.

Blatter, Heinz, and Greber, Thomas. 2017. Tau Zero: In the cockpit of a Bussard ramjet. *American Journal of Physics*, **85**(12), 915–920. https://ui.adsabs.harvard.edu/abs/2017AmJPh..85..915B.

Bobrick, Alexey, and Martire, Gianni. 2021. Introducing physical warp drives. *Classical and Quantum Gravity*, **38**(10), 105009. https://ui.adsabs.harvard.edu/abs/2021CQGra..38j5009B.

Bond, A., and Martin, A. R. 1978. Project Daedalus: The mission profile. *Journal of the British Interplanetary Society*, **31**(Jan.), S37–S42. https://ui.adsabs.harvard.edu/abs/1978JBIS...31S..37B.

Brandt, P. C., Provornikova, E., Bale, S. D., et al. 2023. Future exploration of the outer heliosphere and very local interstellar medium by Interstellar Probe. *Space Science Review*, **219**(2), 18. https://ui.adsabs.harvard.edu/abs/2023SSRv..219...18B.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 11 Nov 2026 at 18:26:26, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009700429

Brandt, Pontus C., Provornikova, E. A., Cocoros, A., et al. 2022. Interstellar Probe: Humanity's exploration of the Galaxy begins. *Acta Astronautica*, **199**(Oct.), 364–373. https://ui.adsabs.harvard.edu/abs/2022AcAau.199..364B.

Brewer, John, Campbell, Matthew F., Kumar, Pawan, et al. 2022. Multiscale photonic emissivity engineering for relativistic lightsail thermal regulation. *Nano Letters*, **22**(2), 594–601. https://doi.org/10.1021/acs.nanolett.1c03273, PMID: 35014534.

Brophy, John. 2011. The Dawn ion propulsion system. *Space Science Review*, **163**(1-4), 251–261. https://ui.adsabs.harvard.edu/abs/2011SSRv..163..251B.

Bussard, Robert W. 1960. Galactic matter and interstellar flight. *Astronautica Acta*, **6**(4), 179–194.

Calabro', E. 2011. Relativistic aberrational interstellar navigation. *Acta Astronautica*, **69**(7), 360–364. https://ui.adsabs.harvard.edu/abs/2011AcAau..69..360C.

Campbell, Matthew F., Brewer, John, Jariwala, Deep, et al. 2022. Relativistic light sails need to billow. *Nano Letters*, **22**(1), 90–96. https://doi.org/10.1021/acs.nanolett.1c03272, PMID: 34939817.

Cardesin-Moinelo, A., Godfrey, J., Grotheer, E., et al. 2024. Mars Express: 20 years of mission, science operations and data archiving. *Space Science Review*, **220**(2), 25. https://ui.adsabs.harvard.edu/abs/2024SSRv..220...25C.

Cassenti, Brice N. 1982. Design considerations for relativistic antimatter rockets. *Journal of the British Interplanetary Society*, **35**(Sept.), 396. https://ui.adsabs.harvard.edu/abs/1982JBIS...35..396C.

Cesarone, R. J. 1989. A gravity assist primer. *AIAA Student Journal*, **27**(Jan.), 16–22. https://ui.adsabs.harvard.edu/abs/1989AIASJ..27...16C.

Chapline, George F., Dickson, Paul W., and Schnitzler, Bruce G. 1988. Fission fragment rockets – a potential breakthrough. In: *Proceedings of the 1988 International reactor physics conference*, vol. 4. USA: American Nuclear Society, https://inis.iaea.org/search/search.aspx?orig_q=RN:22026614.

Christian, John. 2019. StarNAV: Autonomous optical navigation of a spacecraft by the relativistic perturbation of starlight. *Sensors*, **19**(19), 4064. https://ui.adsabs.harvard.edu/abs/2019Senso..19.4064C.

Christodoulides, Costas. 2016. *The special theory of relativity*. Cham: Springer, https://doi.org/10.1007/978-3-319-25274-2.

Clark, Rodney, and Sheldon, Robert. 2005. Dusty Plasma Based Fission Fragment Nuclear Reactor. Pages 1–7 of: *41st AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit*. American Institute of Aeronautics and Astronautics, https://arc.aiaa.org/doi/abs/10.2514/6.2005-4460.

Cohen, Samuel A., Swanson, C. P. S., McGreivy, Nick, et al. 2019. Direct fusion drive for interstellar exploration. *Journal of the British Interplanetary Society*, **72**, 37–50. https://api.semanticscholar.org/CorpusID:229289135.

Crawford, Ian A. 2009. The astronomical, strobiological and planetary science case for interstellar spaceflight. *Journal of the British Interplanetary Society*, **62**(Jan.), 415–421. https://ui.adsabs.harvard.edu/abs/2009JBIS...62..415C.

Crawford, Ian A. 2011. Project Icarus: A review of local interstellar medium properties of relevance for space missions to the nearest stars. *Acta Astronautica*, **68**(Apr.), 691–699. https://ui.adsabs.harvard.edu/abs/2011AcAau..68..691C.

Curkendall, David W., and Border, James S. 2013. Delta-DOR: The one-nanoradian navigation measurement system of the deep space network – History, architecture, and

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 11 Nov 2026 at 18:26:26, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009700429

componentry. *Interplanetary Network Progress Report*, **42-193**(May), 1–46. https://ui.adsabs.harvard.edu/abs/2013IPNPR.193D...1C.

Curtis, Howard D. 2014. *Orbital Mechanics for Engineering Students*. 3rd ed. Boston: Butterworth–Heinemann.

Damasso, Mario, Del Sordo, Fabio, Anglada-Escudé, Guillem, et al. 2020. A low-mass planet candidate orbiting Proxima Centauri at a distance of 1.5 AU. *Science Advances*, **6**(3), eaax7467. https://ui.adsabs.harvard.edu/abs/2020SciA....6.7467D.

Davies, Richard, and Kasper, Markus. 2012. Adaptive optics for astronomy. *Annual Review of Astronomy and Astrophysics*, **50**(Sept.), 305–351. https://ui.adsabs.harvard.edu/abs/2012ARA&A..50..305D.

De Sanctis, Enzo, Monti, Stefano, and Ripani, Marco. 2016. *Energy from nuclear fission*. Cham: Springer, https://doi.org/10.1007/978-3-319-30651-3.

Djojodihardjo, Harijono. 2018. Review of solar magnetic sailing configurations for space travel. *Advances in Astronautics Science and Technology*, **1**(11), 207–219. https://doi.org/10.1007/s42423-018-0022-4

Do, Aaron, Tucker, Michael A., and Tonry, John. 2018. Interstellar interlopers: Number density and origin of 'Oumuamua-like objects. *Astrophysical Journal*, **855**(1), L10. https://ui.adsabs.harvard.edu/abs/2018ApJ...855L..10D.

Dumusque, Xavier, Pepe, Francesco, Lovis, Christophe, et al. 2012. An Earth-mass planet orbiting α Centauri B. *Nature*, **491**(7423), 207–211. https://ui.adsabs.harvard.edu/abs/2012Natur.491..207D.

Early, James T., and London, Richard A. 2000. Dust grain damage to interstellar laser-pushed lightsail. *Journal of Spacecraft and Rockets*, **37**(4), 526–531. https://ui.adsabs.harvard.edu/abs/2000JSpRo..37..526E.

Eisenhauer, Frank, Monnier, John D., and Pfuhl, Oliver. 2023. Advances in optical/infrared interferometry. *Annual Review of Astronomy and Astrophysics*, **61**(Aug.), 237–285. https://ui.adsabs.harvard.edu/abs/2023ARA&A..61..237E.

Eubanks, T. Marshall, Blase, W. Paul, Hein, Andreas, et al. 2023. Swarming Proxima Centauri: Optical communication over interstellar distances. *arXiv e-prints*, Sept., arXiv:2309.07061. https://ui.adsabs.harvard.edu/abs/2023arXiv230907061E.

Evans, B. 2022. *NASA's Voyager missions*. 2 ed. Cham: Springer Praxis, https://doi.org/10.1007/978-3-031-07923-8.

Faria, J. P., Suárez Mascareño, A., Figueira, P., et al. 2022. A candidate short-period sub-Earth orbiting Proxima Centauri. *Astronomy & Astrophysics*, **658**(Feb.), A115. https://ui.adsabs.harvard.edu/abs/2022A&A...658A.115F.

Farr, William H., Choi, John M., and Moision, Bruce. 2013. 13 bits per incident photon optical communications demonstration. Page 861006 of: Hemmati, Hamid, and Boroson, Don M. (eds), *Free-Space Laser Communication and Atmospheric Propagation XXV*, vol. 8610SPIE, for International Society for Optics and Photonics, https://doi.org/10.1117/12.2007000.

Finseth, J. L. 1991 (February). *Rover nuclear rocket engine program: Overview of rover engine tests*. Tech. rept. 19920005899. NASA. https://ntrs.nasa.gov/citations/19920005899

Forgan, Duncan H., Heller, René, and Hippke, Michael. 2018. Photogravimagnetic assists of light sails: A mixed blessing for Breakthrough Starshot? *Monthly Notices of the Royal Astronomical Society*, **474**(3), 3212–3220. https://ui.adsabs.harvard.edu/abs/2018MNRAS.474.3212F.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 11 Nov 2026 at 18:26:26, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009700429

Forward, R. L. 1982. Antimatter propulsion. *Journal of the British Interplanetary Society*, **35**(Sept.), 391. https://ui.adsabs.harvard.edu/abs/1982JBIS...35..391F.

Forward, R. L. 1984. Roundtrip interstellar travel using laser-pushed lightsails. *Journal of Spacecraft and Rockets*, **21**(2), 187–195. https://ui.adsabs.harvard.edu/abs/1984JSpRo..21..187F.

Forward, R. L. 1990. Grey solar sails. *The Journal of the Astronautical Sciences*, **38**(2), 161–185.

Forward, R. L. 1995. A transparent derivation of the relativisitic rocket equation. In: *31st Joint Propulsion Conference and Exhibit*. https://arc.aiaa.org/doi/abs/10.2514/6.1995-3060.

Fountain, Glen H., Kusnierkiewicz, David Y., Hersman, Christopher B., et al. 2008. The New Horizons spacecraft. *Space Science Review*, **140**(1-4), 23–47. https://ui.adsabs.harvard.edu/abs/2008SSRv..140...23F.

Freedland, Robert M., and Lamontagne, Michel. 2015. Firefly Icarus: An unmanned interstellar probe using z-pinch fusion propulsion. *Journal of the British Interplanetary Society*, **68**(Jan.), 68–80. https://ui.adsabs.harvard.edu/abs/2015JBIS...68...68F.

Freeland, Robert M. 2015. Mathematics of magsails. *Journal of the British Interplanetary Society*, **68**(Jan.), 306–323. https://ui.adsabs.harvard.edu/abs/2015JBIS...68..306F.

Fridman, P. A. 2011. SETI: The transmission rate of radio communication and the signal's detection. *Acta Astronautica*, **69**(9-10), 777–787. https://ui.adsabs.harvard.edu/abs/2011AcAau..69..777F.

Frisbee, Robert. 2003a. *How to build an antimatter rocket for interstellar missions: Systems level considerations in designing advanced propulsion technology vehicles*. American Institute of Aeronautics and Astronautics, https://arc.aiaa.org/doi/10.2514/6.2003-4676. Pages 1–26.

Frisbee, Robert. 2004. *Beamed-momentum light sails for interstellar missions: Mission applications and technology requirements*. American Institute of Aeronautics and Astronautics, https://arc.aiaa.org/doi/abs/10.2514/6.2004-3567. Pages 1–24.

Frisbee, Robert H. 2003b. Advanced space propulsion for the 21st century. *Journal of Propulsion and Power*, **19**(6), 1129–1154. https://doi.org/10.2514/2.6948.

Frisch, Priscilla C., Redfield, Seth, and Slavin, Jonathan D. 2011. The interstellar medium surrounding the Sun. *Annual Review of Astronomy and Astrophysics*, **49**(1), 237–279. https://ui.adsabs.harvard.edu/abs/2011ARA&A..49..237F.

Funaki, Ikkoh, and Yamakawa, Hiroshi 2009. Research status of sail propulsion using the solar wind. *Journal of Plasma Fusion Research*, **8**, 1580–1584. www.jspf.or.jp/JPFRS/index_vol8-9.html.

Funaki, Ikkoh, and Yamakawa, Hiroshi. 2012. Solar wind sails. Chap. 19 of: Lazar, Marian (ed.), *Exploring the solar wind*. Rijeka: IntechOpen, https://doi.org/10.5772/35673.

Fuzfa, André, Dhelonga-Biarufu, Williams, and Welcomme, Olivier. 2020. Sailing towards the stars close to the speed of light. *Physical Review Research*, **2**(4), 043186. https://ui.adsabs.harvard.edu/abs/2020PhRvR...2d3186F.

Gaia Collaboration. 2023. Gaia Data Release 3. Summary of the content and survey properties. *Astronomy & Astrophysics*, **674**(June), A1. https://ui.adsabs.harvard.edu/abs/2023A&A...674A...1G.

Gao, Ramon, Kelzenberg, Michael D., and Atwater, Harry A. 2024. Dynamically stable radiation pressure propulsion of flexible lightsails for interstellar exploration. *Nature Communications*, **15**(May), 4203. https://ui.adsabs.harvard.edu/abs/2024NatCo..15.4203G.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 11 Nov 2026 at 18:26:26, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009700429

Gilster, Paul. 2004. *Centauri Dreams: Imagining and planning interstellar exploration*. New York: Springer Science & Business Media, https://doi.org/10.1007/978-1-4757-3894-0.

Giovannetti, Vittorio, Lloyd, Seth, Lorenzo, Maccone,, and Shapiro, Jeffrey H. 2013. Electromagnetic channel capacity for practical purposes. *Nature Photonics*, **7**(Oct.), 834–838. www.nature.com/articles/nphoton.2013.193.

Giovannetti, V., García-Patrón, R., Cerf, N. J., and Holevo, A. S. 2014. Ultimate classical communication rates of quantum optical channels. *Nature Photonics*, **7**(Sept.), 796–800. www.nature.com/doifinder/10.1038/nphoton.2014.216.

Golovin, Alex, Reffert, Sabine, Just, Andreas, et al. 2023. The fifth catalogue of nearby stars (CNS5). *Astronomy & Astrophysics*, **670**(Feb.), A19. https://ui.adsabs.harvard.edu/abs/2023A&A...670A..19G.

Gonzalez, Guillermo. 2020. The solar system: Favored for space travel. *BIO-Complexity*, **2020**(0). https://bio-complexity.org/ojs/index.php/main/article/view/117.

Gordon, James P. 1962. Quantum effects in communications systems. *Proceedings of the IRE*, **50**(9), 1898–1908. https://doi.org/10.1109/JRPROC.1962.288169

Gowdy, Robert H. 1995. The physics of perfect rockets. *American Journal of Physics*, **63**(3), 229–232. https://ui.adsabs.harvard.edu/abs/1995AmJPh..63..229G.

Grasset, O., Dougherty, M. K., Coustenis, A., et al. 2013. JUpiter ICy moons Explorer (JUICE): An ESA mission to orbit Ganymede and to characterise the Jupiter system. *Planetary Space Science*, **78**(Apr.), 1–21. https://ui.adsabs.harvard.edu/abs/2013P&SS...78....1G.

Gratton, R., Zurlo, A., Le Coroller, H., et al. 2020. Searching for the near-infrared counterpart of Proxima c using multi-epoch high-contrast SPHERE data at VLT. *Astronomy & Astrophysics*, **638**(June), A120. https://ui.adsabs.harvard.edu/abs/2020A&A...638A.120G.

Greber, T., and Blatter, H. 1990. Aberration and Doppler shift: The cosmic background radiation and its rest frame. *American Journal of Physics*, **58**(10), 942–945. https://ui.adsabs.harvard.edu/abs/1990AmJPh..58..942G.

Gros, Claudius. 2017. Universal scaling relation for magnetic sails: Momentum braking in the limit of dilute interstellar media. *Journal of Physics Communications*, **1**(4), 045007. https://ui.adsabs.harvard.edu/abs/2017JPhCo...1d5007G.

Gurnett, D. A., Kurth, W. S., Burlaga, L. F., and Ness, N. F. 2013. In situ observations of interstellar plasma with Voyager 1. *Science*, **341**(6153), 1489–1492. https://ui.adsabs.harvard.edu/abs/2013Sci...341.1489G.

Haas, Elisa. 2025. *Laser sail system optimization for in-situ exploration of exoplanets*. MSc thesis, Heidelberg University.

Häfner, Tobias, Kushwaha, Manisha, Celik, Onur, and Bellizzi, Filippo. 2019. Project Dragonfly: Sail to the stars. *Acta Astronautica*, **154**(Jan.), 311–319. https://ui.adsabs.harvard.edu/abs/2019AcAau.154..311H.

Hatzes, Artie P. 2013. The radial velocity detection of Earth-mass planets in the presence of activity noise: The case of α Centauri Bb. *Astrophysical Journal*, **770**(2), 133. https://ui.adsabs.harvard.edu/abs/2013ApJ...770..133H.

Hein, Andreas M., Long, Kelvin F., Fries, Dan, et al. 2017. The Andromeda study: A femtospacecraft mission to Alpha Centauri. *arXiv e-prints*, Aug., arXiv:1708.03556. https://ui.adsabs.harvard.edu/abs/2017arXiv170803556H.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 11 Nov 2026 at 18:26:26, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009700429

Heller, René, and Hippke, Michael. 2017. Deceleration of high-velocity interstellar photon sails into bound orbits at α Centauri. *Astrophysical Journal*, **835**(2), L32. https://ui.adsabs.harvard.edu/abs/2017ApJ...835L..32H.

Heller, René, Anglada-Escudé, Guillem, Hippke, Michael, and Kervella, Pierre. 2020. Low-cost precursor of an interstellar mission. *Astronomy & Astrophysics*, **641**(Sept.), A45. https://ui.adsabs.harvard.edu/abs/2020A&A...641A..45H.

Helvajian, Henry, Rosenthal, Alan, Poklemba, John, et al. 2023. Mission architecture to reach and operate at the focal region of the solar gravitational lens. *Journal of Spacecraft and Rockets*, **60**(3), 829–847. https://ui.adsabs.harvard.edu/abs/2023JSpRo..60..829H.

Hippke, Michael. 2019. Interstellar communication. I. Maximized data rate for lightweight space-probes. *International Journal of Astrobiology*, **18**(3), 267–279. https://ui.adsabs.harvard.edu/abs/2019IJAsB..18..267H.

Hoang, Thiem. 2017. Relativistic gas drag on dust grains and implications. *Astrophysical Journal*, **847**(1), 77. https://ui.adsabs.harvard.edu/abs/2017ApJ...847...77H.

Hoang, Thiem, Lazarian, A., Burkhart, Blakesley, and Loeb, Abraham. 2017. The interaction of relativistic spacecrafts with the interstellar medium. *Astrophysical Journal*, **837**(1), 5. https://ui.adsabs.harvard.edu/abs/2017ApJ...837....5H.

Hohmann, W. 1925. *Die Erreichbarkeit der Himmelskörper*. Berlin: Oldenbourg Wissenschaftsverlag, https://doi.org/10.1515/9783486751406.

Huang, Liangwei, Shuai, Ping, Zhang, Xinyuan, and Chen, Shaolong. 2019. Pulsar-based navigation results: Data processing of the x-ray pulsar navigation – I. Telescope. *Journal of Astronomical Telescopes, Instruments, and Systems*, **5**(Jan.), 018003. https://ui.adsabs.harvard.edu/abs/2019JATIS...5a8003H.

Iess, Luciano, Di Benedetto, Mauro, James, Nick, et al. 2014. Astra: Interdisciplinary study on enhancement of the end-to-end accuracy for spacecraft tracking techniques. *Acta Astronautica*, **94**(2), 699–707. https://ui.adsabs.harvard.edu/abs/2014AcAau..94..699I.

Jackson, Gerald P. 2022. Deceleration of exoplanet missions utilizing scarce anti-matter. *Acta Astronautica*, **197**, 380–386. www.sciencedirect.com/science/article/pii/S0094576522001163.

James, Nick, Abello, Ricard, Lanucara, Marco, et al. 2009. Implementation of an ESA delta-DOR capability. *Acta Astronautica*, **64**(11), 1041–1049. https://ui.adsabs.harvard.edu/abs/2009AcAau..64.1041J.

Janhunen, P. 2009. Increased electric sail thrust through removal of trapped shielding electrons by orbit chaotisation due to spacecraft body. *Annales Geophysicae*, **27**(8), 3089–3100. https://angeo.copernicus.org/articles/27/3089/2009/.

Janhunen, P., and Sandroos, A. 2007. Simulation study of solar wind push on a charged wire: basis of solar wind electric sail propulsion. *Annales Geophysicae*, **25**(3), 755–767. https://ui.adsabs.harvard.edu/abs/2007AnGeo..25..755J.

Janhunen, Pekka. 2004. Electric sail for spacecraft propulsion. *Journal of Propulsion and Power*, **20**, 763–764. https://api.semanticscholar.org/CorpusID:122272677.

Janhunen, Pekka, Toivanen, Petri, Envall, Jouni, et al. 2014. Overview of electric solar wind sail applications. *Proceedings of the Estonian Academy of Sciences*, **63**(3), 267–278. https://doi.org/10.3176/proc.2014.2S.08.

Johnson, Les. 2022. *A traveler's guide to the stars*. Princeton: Princeton University Press, https://press.princeton.edu/books/hardcover/9780691212371/.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 11 Nov 2026 at 18:26:26, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009700429

Johnson, Les, and Roy, Kenneth (editors). 2024. *Interstellar Travel. Propulsion, Life Support, Communications, and the Long Journey*. Amsterdam: Elsevier, https://doi.org/10.1016/C2021-0-01074-9.

Kallenrode, May-Britt. 2004. *Space physics: An introduction to plasmas and particles in the heliosphere and magnetospheres*. 3rd ed. Heidelberg: Springer, https://doi.org/10.1007/978-3-662-09959-9.

Kaltenegger, Lisa. 2017. How to characterize habitable worlds and signs of life. *Annual Review of Astronomy and Astrophysics*, **55**(1), 433–485. https://ui.adsabs.harvard.edu/abs/2017ARA&A..55..433K.

Kanth Dacha, Sai, Essiambre, Rene-Jean, Ashikhimin, Alexei, et al. 2025. Communicating at a record 14.5 bits per received photon through a photon-starved channel. *arXiv e-prints*, Jan., arXiv:2501.13356. https://ui.adsabs.harvard.edu/abs/2025arXiv250113356K.

Kasting, James F., Whitmire, Daniel P., and Reynolds, Ray T. 1993. Habitable zones around main sequence stars. *Icarus*, **101**(1), 108–128. https://ui.adsabs.harvard.edu/abs/1993Icar..101..108K.

Kennedy, A. 2006. Interstellar travel: The wait calculation and the incentive trap of progress. *Journal of the British Interplanetary Society*, **59**(Jan.), 239–246. https://ui.adsabs.harvard.edu/abs/2006JBIS...59..239K.

Kenworthy, Matthew A., and Haffert, Sebastiaan Y. 2025. High-contrast coronagraphy. *Annual Review of Astronomy and Astrophysics*. www.annualreviews.org/content/journals/10.1146/annurev-astro-021225-022840.

Kezerashvili, Roman Ya. 2008. Solar sail interstellar travel – 1. Thickness of solar sail films. *Journal of the British Interplanetary Society*, **61**(Jan.), 430–439. https://ui.adsabs.harvard.edu/abs/2008JBIS...61..430Y.

Khazanov, G., Delamere, P., Kabin, K., and Linde, T. J. 2005. Fundamentals of the plasma sail concept: magnetohydrodynamic and kinetic studies. *Journal of Propulsion and Power*, **21**(5), 853–861. https://doi.org/10.2514/1.3737.

Kiang, Nancy Y., Siefert, Janet, Govindjee, and Blankenship, Robert E. 2007. Spectral signatures of photosynthesis. I. Review of Earth organisms. *Astrobiology*, **7**(1), 222–251. https://ui.adsabs.harvard.edu/abs/2007AsBio...7..222K.

Kipping, David. 2017. Relativistic light sails. *Astronomical Journal*, **153**(6), 277. https://ui.adsabs.harvard.edu/abs/2017AJ....153..277K.

Kipping, David. 2018. Erratum: Relativistic light sails. *Astronomical Journal*, **155**(2), 103. https://ui.adsabs.harvard.edu/abs/2018AJ....155..103K.

Kopparapu, Ravi Kumar, Ramirez, Ramses, Kasting, James F., et al. 2013. Habitable zones around main-sequence stars: New estimates. *Astrophysical Journal*, **765**(2), 131. https://ui.adsabs.harvard.edu/abs/2013ApJ...765..131K.

Kraus, U. 2000. Brightness and color of rapidly moving objects: The visual appearance of a large sphere revisited. *American Journal of Physics*, **68**(1), 56–60. https://ui.adsabs.harvard.edu/abs/2000AmJPh..68...56K.

Kulkarni, Neeraj, Lubin, Philip M., and Zhang, Qicheng. 2016 (Sept.). Relativistic solutions to directed energy. Page 998106 of: Hughes, Gary B. (ed.), *Planetary defense and space environment applications*. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 9981. https://ui.adsabs.harvard.edu/abs/2016SPIE.9981E..06K.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 11 Nov 2026 at 18:26:26, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009700429

Kulkarni, Neeraj, Lubin, Philip, and Zhang, Qicheng. 2018. Relativistic spacecraft propelled by directed energy. *Astronomical Journal*, **155**(4), 155. https://ui.adsabs.harvard.edu/abs/2018AJ....155..155K.

Lagoute, C., and Davoust, E. 1995. The interstellar traveler. *American Journal of Physics*, **63**(3), 221–227. https://ui.adsabs.harvard.edu/abs/1995AmJPh..63..221L.

Lauer, Tod R., Munro, David H., Spencer, John R., et al. 2025. A demonstration of interstellar navigation using New Horizons. *Astronomical Journal*, **170**(1), 22. https://ui.adsabs.harvard.edu/abs/2025AJ....170...22L.

Leinert, Ch., Bowyer, S., Haikala, L. K., et al. 1998. The 1997 reference of diffuse night sky brightness. *Astronomy & Astrophysics Supplement*, **127**(Jan.), 1–99. https://ui.adsabs.harvard.edu/abs/1998A&AS..127....1L.

Lesh, J., Ruggier, C., and Cesarone, R. 1994 (August). *Space communications technologies for interstellar missions*. Tech. rept. 20060037973. NASA. https://ntrs.nasa.gov/citations/20060037973

Liewer, P. C., Mewaldt, R. A., Ayon, J. A., and Wallace, R. A. 2000. NASA's interstellar probe mission. *AIP Conference Proceedings*, **504**(1), 911–916. https://aip.scitation.org/doi/abs/10.1063/1.1302594.

Lingam, Manasvi, and Loeb, Abraham. 2020. Propulsion of spacecraft to relativistic speeds using natural astrophysical sources. *Astrophysical Journal*, **894**(1), 36. https://ui.adsabs.harvard.edu/abs/2020ApJ...894...36L.

Lingam, Manasvi, Hein, Andreas M., and Eubanks, T. Marshall. 2023. Chasing nomadic worlds: A new class of deep space missions. *Acta Astronautica*, **212**(Nov.), 517–533. https://ui.adsabs.harvard.edu/abs/2023AcAau.212..517L.

London, R. A., and Early, J. T. 2018. Evaluation of the hazard of dust impacts on interstellar spacecraft. *Journal of the British Interplanetary Society*, **71**(Jan.), 133–139. https://ui.adsabs.harvard.edu/abs/2018JBIS...71..133L.

Long, K. 2023. Calculations of particle bombardment due to dust and charged particles in the ISM on the project Starshot gram-scale interstellar probe. *Journal of the British Interplanetary Society*, **76**(Aug.), 262–272. https://ui.adsabs.harvard.edu/abs/2023JBIS...76..262L.

Long, K. F., Obousy, R. K., and Hein, A. 2011. Project Icarus: Optimisation of nuclear fusion propulsion for interstellar missions. *Acta Astronautica*, **68**(June), 1820–1829. https://ui.adsabs.harvard.edu/abs/2011AcAau..68.1820L.

Long, Kelvin F. 2022. Interstellar propulsion using laser-driven inertial confinement fusion physics. *Universe*, **8**(8), 421. https://ui.adsabs.harvard.edu/abs/2022Univ....8..421L.

Lubin, P. 2016. A roadmap to interstellar flight. *Journal of the British Interplanetary Society*, **69**(Jan.), 40–72. https://ui.adsabs.harvard.edu/abs/2016JBIS...69...40L.

Lubin, P., and Hettel, W. 2020. The path to interstellar flight. *Acta Futura*, **12**(Apr.). https://doi.org/10.5281/zenodo.3874099.

Lubin, Philip. 2022a. *The path to transformational space exploration. Volume 1: Fundamentals of Directed Energy*. World Scientific Publishing Company, https://ui.adsabs.harvard.edu/abs/2022pts1.book.....L.

Lubin, Philip. 2022b. *The path to transformational space exploration. Volume 2: Applications of directed energy*. World Scientific Publishing Company, https://ui.adsabs.harvard.edu/abs/2022pts2.book.....L.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 11 Nov 2026 at 18:26:26, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009700429

Lubin, Philip, Cohen, Alexander N., and Erlikhman, Jacob. 2022. Radiation effects from the interstellar medium and cosmic ray particle impacts on relativistic spacecraft. *Astrophysical Journal*, **932**(2), 134. https://ui.adsabs.harvard.edu/abs/2022ApJ...932..134L.

Lyngvi, A., Falkner, P., and Peacock, A. 2005. The interstellar heliopause probe technology reference study. *Advances in Space Research*, **35**(12), 2073–2077. https://ui.adsabs.harvard.edu/abs/2005AdSpR..35.2073L.

Macdonald, Malcolm (ed.). 2014. *Advances in solar sailing*. Cham: Springer Praxis, https://doi.org/10.1007/978-3-642-34907-2.

MacKay, David J. C. 2003. *Information theory, inference and learning algorithms*. Cambridge: Cambridge University Press, www.inference.org.uk/mackay/itila/book.html.

Mallove, Eugene, and Matloff, Gregory 1989. *The starflight handbook*. John Wiley & Sons, www.wiley.com/en-us/The+Starflight+Handbook3A+A+Pioneer's+Guide+to+%Interstellar+Travel-p-9780471619123.

Martin, A. R. 1972. The effects of drag on relativistic spaceflight. *Journal of the British Interplanetary Society*, **25**(Jan.), 643–653. https://ui.adsabs.harvard.edu/abs/1972JBIS...25..643M.

Martin, Anthony R., and Bond, Alan. 1979. Nuclear pulse propulsion: A historical review of an advanced propulsion concept. *Journal of the British Interplanetary Society*, **32**(Aug.), 283. https://ui.adsabs.harvard.edu/abs/1979JBIS...32..283M.

Marx, G. 1966. Interstellar vehicle propelled by terrestrial laser beam. *Nature*, **211**(5044), 22–23. https://ui.adsabs.harvard.edu/abs/1966Natur.211...22M.

Matloff, G. L. 2013. The speed limit for graphene interstellar photon sails. *Journal of the British Interplanetary Society*, **66**(Jan.), 377–380. https://ui.adsabs.harvard.edu/abs/2013JBIS...66..377M.

McInnes, Colin R. 1999. *Solar sailing*. Cham: Springer Praxis, https://doi.org/10.1007/978-1-4471-3992-8.

McInnes, Colin R., and Brown, John C. 1990. The dynamics of solar sails with a non-point source of radiation pressure. *Celestial Mechanics and Dynamical Astronomy*, **49**(3), 249–264. https://ui.adsabs.harvard.edu/abs/1990CeMDA..49..249M.

McNutt, Ralph L., Wimmer-Schweingruber, Robert F., Gruntman, Mike, et al. 2019. Near-term interstellar probe: First step. *Acta Astronautica*, **162**(Sept.), 284–299. https://ui.adsabs.harvard.edu/abs/2019AcAau.162..284M.

Meadows, Victoria S., Reinhard, Christopher T., Arney, Giada N., et al. 2018. Exoplanet biosignatures: Understanding oxygen as a biosignature in the context of its environment. *Astrobiology*, **18**(6), 630–662. https://ui.adsabs.harvard.edu/abs/2018AsBio..18..630M.

Mecklenburg, Matthias, Schuchardt, Arnim, Mishra, Yogendra Kumar, et al. 2012. Aerographite: Ultra lightweight, flexible nanowall, carbon microtube material with outstanding mechanical performance. *Advanced Materials*, **24**(26), 3486–3490. https://onlinelibrary.wiley.com/doi/abs/10.1002/adma.201200491.

Meschini, Samuele, Laviano, Francesco, Ledda, Federico, et al. 2023. Review of commercial nuclear fusion projects. *Frontiers in Energy Research*, **11**. www.frontiersin.org/journals/energy-research/articles/10.3389/fenrg.2023.1157394.

Messerschmitt, David, Lubin, Philip, and Morrison, Ian. 2020a. Relaying swarms of low-mass interstellar probes. *arXiv e-prints*, July, arXiv:2007.11554. https://ui.adsabs.harvard.edu/abs/2020arXiv200711554M.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 11 Nov 2026 at 18:26:26, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009700429

Messerschmitt, David, Lubin, Philip, and Morrison, Ian. 2023. Interstellar flyby scientific data downlink design. *arXiv e-prints*, June, arXiv:2306.13550. https://ui.adsabs.harvard.edu/abs/2023arXiv230613550M.

Messerschmitt, David G. 2015. Design for minimum energy in interstellar communication. *Acta Astronautica*, **107**, 20–39. www.sciencedirect.com/science/article/pii/S0094576514004391.

Messerschmitt, David G., Lubin, Philip, and Morrison, Ian. 2020b. Challenges in scientific data communication from low-mass interstellar probes. *Astrophysical Journal Supplement*, **249**(2), 36. https://ui.adsabs.harvard.edu/abs/2020ApJS..249...36M.

Miller, James, Stanbridge, Dale, and Williams, Bobby. 2005. New Horizons Pluto approach navigation. *Advances in the Astronautical Sciences*, **119**(01). https://www2.boulder.swri.edu/~tcase/nhnav-Miller-DaleAASpaper.pdf

Milne, P., Lamontage, M., and Freeland II, R.M. 2016. Project Icarus: Communications data link designs between Icarus and Earth and between Icarus spacecraft. *Journal of the British Interplanetary Society*, **69**(Jan.), 278–288. https://ui.adsabs.harvard.edu/abs/2016JBIS...69..278M.

Moision, Bruce, and Farr, William 2014. Range dependence of the optical communications channel. *Interplanetary Network Progress Report*, **42-199**(Nov.), 1–10. https://ui.adsabs.harvard.edu/abs/2014IPNPR.199B...1M.

Moore, W. 1810. Theory of the motion of rockets. *Journal of Natural Philosophy, Chemistry and the Arts*, **27**(Aug.), 276–285.

Morgan, David L. 1982. Concepts for the design of an antimatter annihilation rocket. *Journal of the British Interplanetary Society*, **35**(Sept.), 405. https://ui.adsabs.harvard.edu/abs/1982JBIS...35..405M.

Morris, Michael S., and Thorne, Kip S. 1988. Wormholes in spacetime and their use for interstellar travel: A tool for teaching general relativity. *American Journal of Physics*, **56**(5), 395–412. https://ui.adsabs.harvard.edu/abs/1988AmJPh..56..395M.

Müller, Thomas, King, Andreas, and Adis, Daria. 2008. A trip to the end of the universe and the twin "paradox". *American Journal of Physics*, **76**(4), 360–373. https://doi.org/10.1119/1.2830528.

Nesnas, Issa, Fesq, Lorraine, and Volpe, Richard. 2021. Autonomy for space robots: Past, present, and future. *Current Robotics Reports*, **2**(09). https://link.springer.com/article/10.1007/s43154-021-00057-2.

Niang, Samuel. 2020 (Dec.). *Optimisation of positron accumulation in the GBAR experiment and study of space propulsion based on antimatter*. Theses, Université Paris-Saclay, https://theses.hal.science/tel-03163848.

Oberth, Hermann. 1929. *Wege zur Raumschiffahrt*. Düsseldorf: VDI-Verlag, https://d-nb.info/860779556.

Owens, Mathew J. 2020. Solar-wind structure. In: *Oxford Research Encyclopedia of Physics*. Oxford University Press, https://doi.org/10.1093/acrefore/9780190871994.013.19.

Pappalardo, Robert T., Buratti, Bonnie J., Korth, Haje, et al. 2024. Science overview of the Europa Clipper mission. *Space Science Review*, **220**(4), 40. https://ui.adsabs.harvard.edu/abs/2024SSRv..220...40P.

Parkin, Kevin L. G. 2018. The Breakthrough Starshot system model. *Acta Astronautica*, **152**(Nov.), 370–384. https://ui.adsabs.harvard.edu/abs/2018AcAau.152..370P.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 11 Nov 2026 at 18:26:26, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009700429

Parkin, Kevin L. G. 2020. A Starshot communication downlink. *arXiv e-prints*, May, arXiv:2005.08940. https://ui.adsabs.harvard.edu/abs/2020arXiv200508940P.

Parkin, Kevin L. G. 2024. Cost-optimal laser-accelerated lightsails. *arXiv e-prints*, May, arXiv:2205.13138. https://arxiv.org/abs/2205.13138v6.

Penrose, R. 1959. The apparent shape of a relativistically moving sphere. *Proceedings of the Cambridge Philosophical Society*, **55**(1), 137. https://ui.adsabs.harvard.edu/abs/1959PCPS...55..137P.

Perakis, Nikolaos, and Hein, Andreas M. 2016. Combining magnetic and electric sails for interstellar deceleration. *Acta Astronautica*, **128**(July), 13–20. https://ui.adsabs.harvard.edu/abs/2016AcAau.128...13P.

Perakis, Nikolaos, Schrenk, Lukas E., Gutsmiedl, Johannes, et al. 2016. Project Dragonfly: A feasibility study of interstellar travel using laser-powered light sail propulsion. *Acta Astronautica*, **129**(Dec.), 316–324. https://ui.adsabs.harvard.edu/abs/2016AcAau.129..316P.

Peretz, Eliad, Mather, John C., Hamilton, Christine, et al. 2022. Orbiting laser configuration and sky coverage: Coherent reference for Breakthrough Starshot ground-based laser array. *Journal of Astronomical Telescopes, Instruments, and Systems*, **8**(Jan.), 017004. https://ui.adsabs.harvard.edu/abs/2022JATIS...8a7004P.

Perryman, Michael. 2018. *The exoplanet handbook*. 2nd ed. Cambridge: Cambridge University Press. https://doi.org/10.1017/9781108304160

Pinheiro, Mario J. 2004. Some remarks about variable mass systems. *European Journal of Physics*, **25**(1), L5–L7. https://ui.adsabs.harvard.edu/abs/2004EJPh...25L...5P.

Platt, E. A., and Hanner, D. W. 1965 (5). *Effective specific impulse of a pulsed rocket engine*. Tech. rept. Lawrence Radiation Laboratory Livermore. https://www.osti.gov/biblio/1068247

Popova, Elena, Efendiev, Messoud, and Gabitov, Ildar. 2017. On the stability of a space vehicle riding on an intense laser beam. *Mathematical Methods in the Applied Sciences*, **40**(4), 1346–1354. https://onlinelibrary.wiley.com/doi/abs/10.1002/mma.4282.

Quanz, Sascha P., Kammerer, Jens, Defrère, Denis, et al. 2018 (July). Exoplanet science with a space-based mid-infrared nulling interferometer. Page 107011I of: Creech-Eakman, Michelle J., Tuthill, Peter G., and Mérand, Antoine (eds.), *Optical and Infrared Interferometry and Imaging VI*. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 10701. https://ui.adsabs.harvard.edu/abs/2018SPIE10701E..1IQ.

Rajpaul, Vinesh, Aigrain, Suzanne, and Roberts, Stephen. 2016. Ghost in the time series: No planet for Alpha Cen B. *Monthly Notices of the Royal Astronomical Society*, **456**(1), L6–L10. https://ui.adsabs.harvard.edu/abs/2016MNRAS.456L...6R.

Razin, Yosef S., Pajer, Gary, Breton, Mary, et al. 2014. A direct fusion drive for rocket propulsion. *Acta Astronautica*, **105**(1), 145–155. https://ui.adsabs.harvard.edu/abs/2014AcAau.105..145R.

Redding, J. L. 1967. Interstellar vehicle propelled by terrestrial laser beam. *Nature*, **213**(5076), 588–589. https://ui.adsabs.harvard.edu/abs/1967Natur.213..588R.

Reylé, Céline, Jardine, Kevin, Fouqué, Pascale, et al. 2021. The 10 parsec sample in the Gaia era. *Astronomy & Astrophysics*, **650**(June), A201. https://ui.adsabs.harvard.edu/abs/2021A&A...650A.201R.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 11 Nov 2026 at 18:26:26, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009700429

Robins, W. H., and Finger, H. B. 1991 (July). *An historical perspective of the NERVA nuclear rocket engine technology program*. Tech. rept. 19910017902. NASA. https://ntrs.nasa.gov/citations/19910017902

Rouan, Daniel. 2011. *Coronagraphy*. Berlin: Springer, https://doi.org/10.1007/978-3-642-11274-4_356. Pages 363–372.

Saha, Swapan Kumar. 2011. *Aperture synthesis*. New York: Springer, https://doi.org/10.1007/978-1-4419-5710-8.

Schattschneider, Peter, and Jackson, Albert A. 2022. The Fishback ramjet revisited. *Acta Astronautica*, **191**(Feb.), 227–234. https://ui.adsabs.harvard.edu/abs/2022AcAau.191..227S.

Schmidt, G., Bonometti, J., and Morton, P. 2000. Nuclear pulse propulsion: Orion and beyond. In: *36th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit*. https://arc.aiaa.org/doi/abs/10.2514/6.2000-3856.

Schwieterman, Edward W., Kiang, Nancy Y., Parenteau, Mary N., et al. 2018. Exoplanet biosignatures: A review of remotely detectable signs of life. *Astrobiology*, **18**(6), 663–708. https://ui.adsabs.harvard.edu/abs/2018AsBio..18..663S.

Semay, Claude, and Silvestre-Brac, Bernard. 2004. The equation of motion of an interstellar Bussard ramjet. *European Journal of Physics*, **26**(1), 75. https://dx.doi.org/10.1088/0143-0807/26/1/009.

Semyonov, Oleg G. 2014. Relativistic rocket: Dream and reality. *Acta Astronautica*, **99**(June), 52–70. https://ui.adsabs.harvard.edu/abs/2014AcAau..99...52S.

Shannon, C. E. 1948. A mathematical theory of communication. *Bell System Technical Journal*, **27**(3), 379–423. https://onlinelibrary.wiley.com/doi/abs/10.1002/j.1538-7305.1948.tb01338.x.

Sheikh, Suneel I., Pines, Darryll J., Ray, Paul S., et al. 2006. Spacecraft navigation using X-ray pulsars. *Journal of Guidance Control Dynamics*, **29**(1), 49–63. https://ui.adsabs.harvard.edu/abs/2006JGCD...29...49S.

Shemar, Setnam, Fraser, George, Heil, Lucy, et al. 2016. Towards practical autonomous deep-space navigation using X-ray pulsar timing. *Experimental Astronomy*, **42**(2), 101–138. https://ui.adsabs.harvard.edu/abs/2016ExA....42..101S.

Shostak, Seth. 2011. Limits on interstellar messages. *Acta Astronautica*, **68**(3), 366–371. https://ui.adsabs.harvard.edu/abs/2011AcAau..68..366S.

Simmons, J. F. L., and McInnes, C. R. 1993. Was Marx right? or How efficient are laser driven interstellar spacecraft? *American Journal of Physics*, **61**(3), 205–207. https://ui.adsabs.harvard.edu/abs/1993AmJPh..61..205S.

Slough, John. 2024. The fusion driven rocket. Pages 1–20 of: *2024 IEEE Aerospace Conference*. https://doi.org/10.1109/AERO58975.2024.10521025

Spencer, David A., Betts, Bruce, Bellardo, John M., et al. 2021. The LightSail 2 solar sailing technology demonstration. *Advances in Space Research*, **67**(9), 2878–2889. https://ui.adsabs.harvard.edu/abs/2021AdSpR..67.2878S.

Spietz, Peter, Spröwitz, Tom, Seefeldt, Patric, et al. 2021. Paths not taken: The Gossamer roadmap's other options. *Advances in Space Research*, **67**(9), 2912–2956. www.sciencedirect.com/science/article/pii/S0273117721000995.

Tajmar, Martin. 2003. *Advanced space propulsion systems*. Vienna: Springer, https://doi.org/10.1007/978-3-7091-0547-4.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 11 Nov 2026 at 18:26:26, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009700429

Tajmar, Martin, Neunzig, Oliver, and Weikert, Marcel. 2022. High-accuracy thrust measurements of the EMDrive and elimination of false-positive effects. *CEAS Space Journal*, **14**(01), 31–44. https://doi.org/10.1007/s12567-021-00385-1.

Terrell, James. 1959. Invisibility of the Lorentz contraction. *Physical Review*, **116**(4), 1041–1045. https://ui.adsabs.harvard.edu/abs/1959PhRv..116.1041T.

Thomas, Dale, Houts, Michael, Walters, William, et al. 2021 (August). *Establishing the feasibility of the centrifugal nuclear thermal rocket*. Tech. rept. 20210019705. NASA.

Thomas, Valerie C., Makowski, Joseph M., Brown, G. Mark, et al. 2011. The Dawn spacecraft. *Space Science Review*, **163**(1-4), 175–249. https://ui.adsabs.harvard.edu/abs/2011SSRv..163..175T. https://ntrs.nasa.gov/citations/20210019705

Tsiolkovsky, Konstantin E. 2004. *K. E. Tsiolkovsky selected works*. 2nd ed. Moscow: Nauka, www.tsiolkovsky.org/.

Tsu, T. C. 1959. Interplanetary travel by solar sail. *ARS Journal*, **29**(6), 422–427. https://doi.org/10.2514/8.4791.

Tsuda, Yuichi, Mori, Osamu, Funase, Ryu, et al. 2013. Achievement of IKAROS Japanese deep space solar sail demonstration mission. *Acta Astronautica*, **82**(2), 183–188. https://ui.adsabs.harvard.edu/abs/2013AcAau..82..183T.

Turner, Martin J. L. 2009. *Rocket and spacecraft propulsion*. 3rd ed. Cham: Springer Praxis, https://doi.org/10.1007/978-3-540-69203-4.

Turyshev, Slava G., and Toth, Viktor T. 2020. Image formation for extended sources with the solar gravitational lens. *Physical Review D*, **102**(2), 024038. https://ui.adsabs.harvard.edu/abs/2020PhRvD.102b4038T.

Turyshev, Slava G., Toth, Viktor T., Kinsella, Gary, et al. 2012. Support for the thermal origin of the Pioneer anomaly. *Physical Review Letters*, **108**(24), 241101. https://ui.adsabs.harvard.edu/abs/2012PhRvL.108x1101T.

Turyshev, Slava G., Garber, Darren, Friedman, Louis D., et al. 2023. Science opportunities with solar sailing smallsats. *Planetary Space Science*, **235**(Oct.), 105744. https://ui.adsabs.harvard.edu/abs/2023P&SS..23505744T.

Villoresi, P., Jennewein, T., Tamburini, F., et al. 2008. Experimental verification of the feasibility of a quantum channel between space and Earth. *New Journal of Physics*, **10**(3), 033038. https://ui.adsabs.harvard.edu/abs/2008NJPh...10c3038V.

von Savigny, C. 2017. Airglow in the Earth atmosphere: Basic characteristics and excitation mechanisms. *ChemTexts*, **3**(Oct.), 14. https://ui.adsabs.harvard.edu/abs/2017ChTxt...3...14V.

Vulpetti, Giovanni. 1985. Maximum terminal velocity of relativistic rocket. *Acta Astronautica*, **12**(2), 81–90. www.sciencedirect.com/science/article/pii/0094576585900761.

Walter, Ulrich. 2018. *Astronautics*. 3rd ed. Cham: Springer, https://doi.org/10.1007/978-3-319-74373-8.

Walter, Ulrich. 2006. Relativistic rocket and space flight. *Acta Astronautica*, **59**(6), 453–461. https://ui.adsabs.harvard.edu/abs/2006AcAau..59..453W.

Weaver, H. A., Gibson, W. C., Tapley, M. B., et al. 2008. Overview of the New Horizons science payload. *Space Science Review*, **140**(1-4), 75–91. https://ui.adsabs.harvard.edu/abs/2008SSRv..140...75W.

Werka, Robert, Clark, Rod, Sheldon, Rob, and Percy, Tom. 2012 (January). *Concept assessment of a fission fragment rocket engine (FFRE) propelled spacecraft*. Tech. rept. 20160010095. NASA. https://ntrs.nasa.gov/citations/20160010095

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 11 Nov 2026 at 18:26:26, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009700429

Westmoreland, Shawn. 2010. A note on relativistic rocketry. *Acta Astronautica*, **67**(9), 1248–1251. https://ui.adsabs.harvard.edu/abs/2010AcAau..67.1248W.

Whitmire, Daniel P. 1975. Relativistic spaceflight and the catalytic nuclear ramjet. *Acta Astronautica*, **2**(5), 497–509. www.sciencedirect.com/science/article/pii/0094576575900636.

Wiegmann, Bruce M. 2017 (February). *The conceptual design of an electric sail technology demonstration mission spacecraft*. Tech. rept. 20170001821. NASA. https://ntrs.nasa.gov/citations/20170001821

Winglee, R. M., Slough, J., Ziemba, T., and Goodson, A. 2000. Mini-magnetospheric plasma propulsion: Tapping the energy of the solar wind for spacecraft propulsion. *Journal of Geophysics Research*, **105**(A9), 21067–21078. https://ui.adsabs.harvard.edu/abs/2000JGR...10521067W.

Wittenberg, L. J., Cameron, E. N., Kulcinski, G. L., et al. 1992. A review of ^{3}He resources and acquisition for use as fusion fuel. *Fusion Technology*, **21**(4), 2230–2253. https://doi.org/10.13182/FST92-A29718.

You, Setthivoine. 2020. Helicity drive: A novel scalable fusion concept for deep space propulsion. In: *AIAA Propulsion and Energy 2020 Forum*. https://arc.aiaa.org/doi/abs/10.2514/6.2020-3835.

Yu, Wayne H., Semper, Sean R., Mitchell, Jason W., et al. 2020. NASA SEXTANT mission operations architecture. *Acta Astronautica*, **176**, 531–541. www.sciencedirect.com/science/article/pii/S0094576520304070.

Yucalan, Doga, and Peck, Mason. 2021. Autonomous navigation of relativistic spacecraft in interstellar space. *Journal of Guidance Control Dynamics*, **44**(6), 1106–1115. https://ui.adsabs.harvard.edu/abs/2021JGCD...44.1106Y.

Yurtsever, Ulvi, and Wilkinson, Steven. 2018. Limits and signatures of relativistic spaceflight. *Acta Astronautica*, **142**, 37–44. www.sciencedirect.com/science/article/pii/S0094576517305143.

Zank, G. P. 2015. Faltering steps into the Galaxy: The boundary regions of the heliosphere. *Annual Review of Astronomy and Astrophysics*, **53**(Aug.), 449–500. https://ui.adsabs.harvard.edu/abs/2015ARA&A..53..449Z.

Zhao, Lily, Fischer, Debra A., Brewer, John, et al. 2018. Planet detectability in the Alpha Centauri system. *Astronomical Journal*, **155**(1), 24. https://ui.adsabs.harvard.edu/abs/2018AJ....155...24Z.

Zhu, Wei, and Dong, Subo. 2021. Exoplanet statistics and theoretical implications. *Annual Review of Astronomy and Astrophysics*, **59**(Sept.), 291–336. https://ui.adsabs.harvard.edu/abs/2021ARA&A..59..291Z.

Zubrin, Robert M., and Andrews, Dana G. 1991. Magnetic sails and interplanetary travel. *Journal of Spacecraft and Rockets*, **28**(2), 197–203. https://ui.adsabs.harvard.edu/abs/1991JSpRo..28..197Z.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 11 Nov 2026 at 18:26:26, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009700429