

List of supporting materials

The supporting materials are classified to seven categories and named as follows,

1. Relevant to system design, tracking and operation (Name : Reference T_xx)
2. Relevant to applications to Engineering Science (Name : Reference E_xx)
3. Relevant to applications to space-VLBI (Name : Reference S_xx)
4. 4. Relevant to applications to Planetary Science (Name : Reference P_xx)
5. Relevant to applications to radio astronomy (Name : Reference R_xx)
6. Materials for publicity and explanation (Name : Reference M_xx)
7. Foreign Country publications (Name : Reference F_xx)

1. Relevant to system design, tracking and operation

Name : Reference T_xx

Reference T_1

R.Akiba, T.Hayashi, H.Matsuo, K.Uesugi, M.Ichikawa, "Status Report on PLANET-A, Japanese First Interplanetary Flight", IAF (32th Congress of the International Astronautical Federation), 1980.

Reference T_2

T.Nomura, T.Hayashi, H.Hirosawa, K.Ninomiya, M.Ichikawa, "Deep Space Projects in Japan", AIAA/NASA Symposium on Space Tracking and Data Systems, pp.1-3, 1981.

Reference T_3

M.Kawaguchi, Y.Masumoto, H.Yamamoto, H.Hara, T.Hayashi, "Despin Antenna Control System for PLANET-A", Proceedings of the 13th International Symposium on Space Technology and Science (ISTS), Chapter 9. Guidance and Control, pp.975-980),1982.

Reference T_4

T.Hayashi,K.Inoue,K.Shutoh,S.Yokoyama,Y.Minami,K.Ochi,K.Takahashi,H.Yamada,"Bubble Date Recorder for Deep Space Mission", Proceedings of the 13th International Symposium on Space Technology and Science (ISTS), Chapter 7. Electronic Components and Devices, pp.687-692), 1982, Tokyo.

Reference T_5

K.Hirao,T.Hayashi,K.Uesugi,H.Hara,H.Yamamoto,Y.Masumoto,T.Orii,M.Kamimura, "System Design of Japan's First Interplanetary Flight Project", IAF(36th Congress of the International Astronautical Federation), IAF-85-66, Session.19, pp.1-7, 1985.

Reference T_6

T.Nomura, T.Hayashi, T.Nishimura, H.Hirosawa, M.Ichikawa, "USUDA Deep Space Station with 64-meter-Diameter Antenna", Acta Astronautica, Vol.14, pp.97-103, 1986, (Paper based on the 36th IAF Congress).

Reference T_7

T.Nomura, T.Hayashi, H.Hirosawa, M.Ichikawa, K.Inoue, S.Otani, M.Kamimura, T.Yamagishi, "Communications System for the Japanese Interplanetary Spacecraft MS-T5/PLANET-A", IAF (36th Congress of the International Astronautical Federation), IAF-85-388, Session.11, 1985.

ReferenceT_8

T.Hayashi, T.Nishimura, H.Hirosawa, T.Takano, M.Yamada and H.Saito, "Operation Results of Communications Facilities at the Usuda Deep Space Center", Proceedings of the 15th International Symposium on Space Technology and Science (ISTS), Chapter 9. Space Communications, Vol.1, pp.1093-1098, 1986.

ReferenceT_9

T.Hayashi, T.Takano and H.Saitoh, "Shielding Effects of a Gigantic Antenna by Terrain", MONTECH '86 IEEE, Proc. of Conf. on Antennas and Communications, PP.205-208, September, 1986.

ReferenceT_10

T.Nomura, H.Hayashi, H.Hirosawa, T.Takano, M.Ichikawa, N.Katayama, S.Koshizaka, M.Fujioka, T.Inada, T.Haruno and H.Tomita, "Design Principles of Deep Space Communications", Proc. 15th ISTS, pp.1115-1122, 1986.

ReferenceT_11

N.A.Fanelli, J.P.Goodwin, S.M.Petty, T.Hayashi, T.Nishimura, T.Takano, "Utilization of the Usuda Deep Space Center for the United States International Cometary Explorer (ICE)", Proceedings of the 15th International Symposium on Space Technology and Science (ISTS), Chapter 9. Space Communications, Vol.1, pp.1107-1114,1986.

ReferenceT_12

T. Nomura, T. Hayashi, H. Hirosawa, T. Takano, "Telecommunications System for Halley's Comet Exploration" (originally in Japanese, translated to English), Transaction of IECE, vol.J69-B, no.11, pp.1267-1275, November, 1986.

ReferenceT_13

T.Hayashi, T.Nishimura and T.Takano, " Communications, Tracking and Orbit Determination of SAKIGAKE and SUISEI Encountering Halley's Comet Using USUDA Station", Journal of Space Technology and Science, (Paper of a Publication of Japanese Rocket Society), Vol.2, No.2, pp.11-24, 1987.

ReferenceT_14

T.Hayashi, et al., "Up-to-date Communications System for Japanese Scientific Spacecraft", Proc. of 16th Int'nl Symposium on Space Tech. and Science, PP.2077-2083, Sapporo, 1988.

ReferenceT_15

T.Hayashi, T.Nishimura, T.Takano, S.Betsudan and S.Koshizaka, "Japanese Deep-Space Station with 64-m-Diameter Antenna Fed through Beam Waveguides and its Mission Applications", Proceedings of the IEEE, Vol.82, No.5, pp.646-657, 1994.

2. Relevant to applications to Engineering Science

Name : Reference E_xx

Reference E_1

W. A. Imbriale, T. Takano, M. Ichikawa and M. Tsuchiya, "A Comparison of Analytical Methods Used for Beam Waveguide Systems", IEICE National Convention-Fall, B-22, 1991.

Reference E_2

T.Takano, T.Yamada, K.Shuto, T.Tanaka, "The Experiment of CCSDS Packet Telemetry Using A Highly Elliptical Orbit Satellite "HITEN" ", Proc. of 18th International Symposium on Space Technology and Science, pp.1679-1686, 1992.

Reference E_3

A. Fujiwara, J. Kawaguchi, D. K. Yeomans, M. Abe, T. Mukai, T. Okada, J. Saito, H. Yano, M. Yoshikawa, D. J. Scheeres, O. Barnouin-Jha, A. F. Cheng, H. Demura, R. W. Gaskell, N. Hirata, H. Ikeda, T. Kominato, H. Miyamoto, A. M. Nakamura, R. Nakamura, S. Sasaki, K. Uesugi, "The Rubble-Pile Asteroid Itokawa as Observed by Hayabusa", Science, the 2 June 2006 issue, (2006).

Reference E_4

Yoshikawa M., Kawaguchi J., Fujiwara A., and Tsuchiyama A., (2015) "Hayabusa sample return mission", In Asteroids IV (P. Michel et al., eds.), pp. 397–418. Univ. of Arizona, Tucson, DOI: 10.2458/azu_uapress_9780816532131-ch021.

Reference E_5

M. Yajima, K. Tsuchikawa, T. Murakami, K. Katsumoto, T. Takano, "Study of Bistatic Radar System Using VLBI Technologies for Detecting Space Debris and the Experimental Verification of its Validity", Earth, Moon, and Planets, vol.100, pp.57-76, 2007.

Reference E_6

Tsuda, Y., Saiki, T., Terui, F., Nakazawa, S., Yoshikawa, M., Watanabe, S., Hayabusa2 Mission Status: Landing, Roving and Cratering on Asteroid Ryugu, Acta Astronautica, Vol.171, pp.42-54, 2020, doi:10.1016/j.actaastro.2020.02.035.

3 . Relevant to applications to space-VLBI

Name : Reference S_xx

Reference S_1

G.S.Levy et al., " Very Long Baseline interferometric Observations Made with an Orbiting Radio Telescope", Science, vol.234, pp.187-189, October, 1986.

Reference S_2

G. S. Levy, C. S. Christensen, J. F. Jordan, R. A. Presaton, C. D. Edwards, R. P. Linfield, S. J. Di Nardo, L. Skjeve, J. S. Ulvestad, T. Hayashi, T. Nishimura, T. Takano, T. Yamada, T. Shiomi, H. Kunimori, N. Kawaguchi, M. Inoue, M. Morimoto, H. Hirabayashi, B. F. Burke, A. Whitmey, D. L. Jauncey, C. H. Ottenhoff, K. Blaney and W. Peter, "Results and Communications Considerations of the Very Long Baseline Interferometry Demonstration Using the Tracking and Data Relay Satellite System", Acta Astronautica Vol. 15, No. 6/7, pp. 481-487, 1987.

Reference S_3

H. Hirose et al., "Space VLBI satellite Halca and its engineering accomplishments", Acta Astronautica, vol.50, NO.5, pp.301-309, 2002.

4 . Relevant to applications to Planetary Science

Name : Reference P_xx

Reference P_1

T.Takano, Z.Yamamoto, H.Hirosawa, T.Hayashi, M.Yamada,N.Kawashima, S.Oh-hashii and M.Tsuchiya, "Receiving System for the Voyager-2 Neptune Occultation Experiment", IEICE Trans. B- II , Vol.J75-B- II , No.1, pp.47-55, 1992 (in Japanese). Electronics and Communications in Japan, vol.75, no.11, pp.59-71, 1992 (translated to English).

Reference P_2

E.Mizuno, N.Kawashima, T.Takano and P.A.Rosen, "Voyager Radio Science: Observations and Analysis of Neptune's Atmosphere", IEICE Trans. Communications, vol.E75, no.7, pp.665-672, July, 1992.

Reference P_3

Noriyuki Namiki, Takahiro Iwata, Koji Matsumoto, Hideo Hanada, Hiroto Noda, Sander Goossens, Mina Ogawa, Nobuyuki Kawano, Kazuyoshi Asari, Sei-itsu Tsuruta, Yoshiaki Ishihara, Qinghui Liu, Fuyuhiko Kikuchi, Toshiaki Ishikawa, Sho Sasaki, Chiaki Aoshima, Kosuke Kurosawa, Seiji Sugita and Tadashi Takano, "Far-side Gravity Field of the Moon from Four-way Doppler Measurements of SELENE (Kaguya)", SCIENCE VOL 323, no. 5916, pp.900-905, Feb. 2009.

Reference P_4

Junichi Haruyama, Kazuyuki Hioki, Motomaro Shirao, Tomokatsu Morota, Harald Hiesinger, Carolyn H. van der Bogert, Hideaki Miyamoto, Akira Iwasaki, Yasuhiro Yokota, Makiko Ohtake, Tsuneo Matsunaga, Seiichi Hara, Shunsuke Nakanotani, and Carle M. Pieters, "Possible lunar lava tube skylight observed by SELENE cameras", GEOPHYSICAL RESEARCH LETTERS, VOL. 36, L21206, 2009.

Reference P_5

Imamura, T., Miyamoto, M., Ando, H., Hausler, B., Patzold, M., Tellmann, S., Tsuda, T., Aoyama, Y., Murata, Y., Takeuchi, H., Yamazaki, A., Toda, T., & Tomiki, A. (2018), Journal of Geophysical Research (Planets), 123, 2151, Fine Vertical Structures at the Cloud Heights of Venus Revealed by Radio Holographic Analysis of Venus Express and Akatsuki Radio Occultation Data.

Reference P_6

Chiba, S., Imamura, T., Tokumaru, M., Shiota, D., Matsumoto, T., Ando, H., Takeuchi, H., Murata, Y., Yamazaki, A., Hausler, B., & Patzold, M. (2022), *Solar Physics*, 297, 34, Observation of the Solar Corona Using Radio Scintillation with the Akatsuki Spacecraft: Difference Between Fast and Slow Wind.

5 . Relevant to applications to radio astronomy

Name : Reference R_xx

Reference R_1

Hirabayashi, H., Hirosawa, H., Kobayashi, H., Murata, Y., Edwards, P. G., Fomalont, E. B., Fujisawa, K., Ichikawa, T., Kii, T., Lovell, J. E. J., Moellenbrock, G. A., Okayasu, R., Inoue, M., Kawaguchi, N., Kamenno, S., Shibata, K. M., Asaki, Y., Bushimata, T., Enome, S., Horiuchi, S., Miyaji, T., Umemoto, T., Migenes, V., Wajima, K., Nakajima, J., Morimoto, M., Ellis, J., Meier, D. L., Murphy, D. W., Preston, R. A., Smith, J. G., Tingay, S. J., Traub, D. L., Wietfeldt, R. D., Benson, J. M., Claussen, M. J., Flatters, C., Romney, J. D., Ulvestad, J. S., D'Addario, L. R., Langston, G. I., Minter, A. H., Carlson, B. R., Dewdney, P. E., Jauncey, D. L., Reynolds, J. E., Taylor, A. R., McCulloch, P. M., Cannon, W. H., Gurvits, L. I., Mioduszewski, A. J., Schilizzi, R. T., and Booth, R. S., 1998, *Science*, 281, 1825, Overview and Initial Results of the Very Long Baseline Interferometry Space Observatory Programme.

Reference R_2

Horiuchi, S., Fomalont, E. B., Taylor, W. K., Scott, A. R., Lovell, J. E. J., Moellenbrock, G. A., Dodson, R., Murata, Y., Hirabayashi, H., Edwards, P. G., Gurvits, L. I., and Shen, Z.-Q., 2004, *The Astrophysical Journal*, 616, 110, The VSOP 5 GHz Active Galactic Nucleus Survey. IV. The Angular Size/Brightness Temperature Distribution.

Reference R_3

“Very Long Baseline Interferometry Experiment on Giant Radio Pulses of Crab Pulsar toward Fast Radio Burst Detection”, Takefuji, K., et al., *Publications of the Astronomical Society of the Pacific*, Volume 128, Issue 966, pp. 084502 (2016).

Reference R_3

“Very Long Baseline Interferometry Experiment on Giant Radio Pulses of Crab Pulsar toward Fast Radio Burst Detection”, Takefuji, K., et al., *Publications of the Astronomical Society of the Pacific*, Volume 128, Issue 966, pp. 084502 (2016).

Reference R_4

Enoto, T., Terasawa, T., Kisaka, S., Hu, C.-P., Guillot, S., Lewandowska, N., Malacaria, C., Ray, P. S., Ho, W. C. G., Harding, A. K., Okajima, T., Arzoumanian, Z., Gendreau, K. C., Wadiasingh, Z., Markwardt, C. B., Soong, Y., Kenyon, S., Bogdanov, S., Majid, W. A., Guver, T., Jaisawal, G. K., Foster, R., Murata, Y., Takeuchi, H., Takefuji, K., Sekido, M., Yonekura, Y., Misawa, H., Tsuchiya, F., Aoki, T., Tokumaru, M.,

Honma, M., Kameya, O., Oyama, T., Asano, K., Shibata, S., & Tanaka, S. J. (2021), *Science*, 372, 187, Enhanced x-ray emission coinciding with giant radio pulses from the Crab Pulsar.

6. Materials for publicity and explanation

Name : Reference M_xx

Reference M_1

Design and Operation

Reference M_2

Application Achievements

Reference M_3

Halley's comet DenshiTokyo 1985

Appendices: 「Relevant publications in foreign countries」 :

7. Foreign Country publications

Name : Reference F_xx

Reference F_1

W. A. Imbriale, "Solutions to Low-Frequency Problems with Geometrically Designed BWG Systems," National Radio Science Meeting, Boulder, Colorado, p. 60, January 7–10, 1992.

Reference F_2

W. A. Imbriale, M. S. Esquivel, and F. Manshadi, "Novel Solutions to Low-Frequency Problems with Geometrically Designed Beam-Waveguide Systems," IEEE Transactions on Antennas and Propagation, vol. 46, no. 12, pp. 1790–1796, December 1998.

Reference F_3

William A. Imbriale, Large Antennas of the Deep Space Network, MONOGRAPH 4, DEEP-SPACE COMMUNICATIONS AND NAVIGATION SERIES, JPL, published by DESCANSO, 2002.