Theme List of JAXA Aerospace Project Research Association Recruitment 2018

No.	Department	Location	Research Theme	Details	Required Abilities	Working Environment	Supervisor (Post, Name)	Contacts (Post, Name, Email, Phone+81-)			Ratios (Own Research: Project Contribution)
18	Aeronautical Technology Directorate, Numerical Simulation Research Unit	Chofu、TOKYO	Research on Aircraft Multi-Physics Integrated Simulation	It is important to predict aircraft performance beforehand with simulation in order to lower development costs and shorten development time. However, the simulation for the full flight envelope is not possible currently, and it can not be an alternative to experiments (flight test, wind tunnel test). Predicting unsteady multi-physics phenomena (e.g. low-speed/high-speed buffet, flutter, and etc.) that occur near the envelope boundaries is still challenging. The aim of this research is to develop a simulation technology of multi-physics integrated simulation which involves aerodynamics, structural dynamics, flight dynamics, acoustics, and etc. A employed researcher will conduct a research on numerical methods, develop a numerical code, apply it for practical problems, and validate the methods.	Applicant must have an experience of research on simulation of aerodynamics, structural dynamics, flight dynamics, acoustics, and etc. An experience of multi-physics simulation is not necessarily required.	Researchers of aerodynamics, structural dynamics, flight dynamics, acoustics will support the research. You may collaborate with researchers of experiment such as wind tunnel test and flight test, and participate in joint researches with universities and industries.	Associate Senior Researcher, Atsushi Hashimoto	Associate Senior Researcher, Atsushi Hashimoto	hashimoto.atsushi@jaxa.jp	50-3362-6557	7 : 3
21	Aeronautical Technology Directorate, Flight Research Unit	Chofu、TOKYO	Fault Detection and Isolation (FDI) Algorithm for Flight Control and its Evaluation Through Flight Tests with Research Airplane	The task of this research is to propose new "practical" algorithm to detect and isolate faults which are estimated from aircraft motion data in real flights. The algorithm must not only be supported by control theories, but also be confirmed to achieve sufficient performance in real use, because the algorithm is intended to be certified by civil aviation authorities in the future. The developed algorithm will be tested and evaluated in numerical simulations, in Hardware-In-the-Loop Simulations (HILS), and in real flight with MuPAL-alpha which is JAXA's fixed-wing research aircraft equipped with research fly-by-wire system. This research will be progressed with VISION project in Horizon2020 program which is a Japan and EU collaboration research program.	(1) Strong background of aircraft flight dynamics and control theories including identification theory. (2) Experience to study in the fields of fault detection and isolation. (3) Programming skills for Matlab and language-C. (4) Skills to conduct flight tests smoothly, such as communication with not only researcher but also pilots. (5) English skill if Japanese skill is not enough for daily conversations.	We provide the following: - Personal PC - Hardware-in-the-loop simulation with research airplane (MuPAL-alpha) - Research airplane (MuPAL-alpha) to evaluate FDI performance in real condition	Associate Senior Researcher, Masayuki Sato	Associate Senior Researcher, Masayuki Sato	sato.masayuki@jaxa.jp	50-3362-6597	2 : 8
26	Institute of Space and Astronautical Science (ISAS), Department of Space Astronomy and Astrophysics	Sagamihara, KANAGAWA	Research in Space Astronomy and Astrophysics for the Foreign-led Missions under the International Collaborations	【Own Research】 To conduct the research that benefits the future program of JAXA with the participation to the foreign-led international space missions. Observational and theoretical research in astrophysics with X-ray, optical, infrared, and radio wavelength as well as experimental or conceptual study for key technologies of the instruments are considered. 【Project Contribution】 To conduct experimental, or observational research for on-going or potential future collaboration of the foreign-led space science projects such as NASA-led WFIRST, ESA-led Athena, etc. Development of key technology which is common for future missions such as the development of low-noise detectors or the study of cryogenic systems are being promoted. Study for the international flagship missions in astrophysics in 2030's such as Lynx, LUVOIR, OST, HabEx is also in the scope of the task.	It is preferable to have knowledge and experience in one of the following research: (1) observational research using satellites, sounding rockets, balloons, or ISS; (2) development of instrument either for the space missions or ground observatories; (3) experimental research in the field of physics or astronomy.	You will conduct research under the supervision of professors in this department, who have a lot of experience in the development of instrument and/or promotion of space missions. The department has basic facilities necessary to conduct experiments in the field of X-ray/gamma-ray, infrared and radio astronomy.	Professors, K. Mitsuda, T. Takahashi, T. Dotani, M. Ishida, T. Nakagawa, H. Matsuhara, T. Yamada, M. Tsuboi	Professor, Toru Yamada	yamada.toru@jaxa.jp	50-3362-2463	5 : 5
27	Institute of Space and Astronautical Science (ISAS), Department of Space Astronomy and Astrophysics	Sagamihara, KANAGAWA	Creation of Future Astronomy/Astrophysics Missions	【Own Research】 To conduct research that leads to the creation of new mission concept, development of innovative detectors, or other research that stimulates the future space astronomy and astrophysics. Current research activities of the Space Astronomy and Astrophysics Department include observational studies in multi wavelength such as X-ray and Infrared as well as studies of fundamental physics in space using satellites, sounding rockets, balloons, and ISS. We also promote development of low-temperature detectors useful for various wave-length from radio through X-rays. 【Project Contribution】 To conduct research that are expected to be the science or technical core of future JAXA Strategic Large missions or Competitive Middle missions based on the unique idea.	It is preferable to have knowledge and experience in one of the following research: (1) observational research using satellites, sounding rockets, balloons, or ISS; (2) development of instrument either for the space missions or ground observatories; (3) experimental research in the field of physics or astronomy.	You will conduct research under the supervision of professors in this department, who have a lot of experience in the development of instrument and/or promotion of space missions. The department has basic facilities necessary to conduct experiments in the field of X-ray/gamma-ray, infrared and radio astronomy.	Professors, K. Mitsuda, T. Takahashi, T. Dotani, M. Ishida, T. Nakagawa, H. Matsuhara, T. Yamada, M. Tsuboi	Professor, Toru Yamada	yamada.toru@jaxa.jp	50-3362-2463	5 : 5
28	Institute of Space and Astronautical Science (ISAS), Department of Space Astronomy and Astrophysics (SPICA)	Sagamihara, KANAGAWA	Research and development work for the astronomical instrumentation for the next-generation infrared astronomy mission SPICA	【Own Research】 Instrumentation for space infrared missions and infrared astrophysics research using space missions. 【Project Contribution】 SPICA (Space Infrared Telescope for Cosmology and Astrophysics) is the next-generation infrared astronomical mission proposed to reveal the processes of birth and evolution of galaxies and planetary systems. SPICA, with a 2.5m, cold telescope, is expected to achieve excellent sensitivity. SPICA is proposed to be launched in the late 2020's under the extensive international collaboration. The successful applicants will work on development of the astronomical instrumentation including highly-sensitive infrared detectors, focal plane instruments, optics, and cryogenics, and/or system design of the instrumentation for SPICA.	One of the following experiences are required (1) Instrumentation for space and/or ground-based telescopes (2) Experimental physics related to this research area (3) Development experience of data analysis pipeline for or operation experience of space missions	You will be involved in the international research group that drives the SPICA project under the supervision of faculty of the infrared astronomy group in the department of space astronomy and astrophysics. The group at ISAS is one of the largest research groups in infrared astronomy in Japan, and the group operates basic test facilities for the experimental research.	Professor, Takao Nakagawa	Professor, Takao Nakagawa	nakagawa.takao@jaxa.jp	50-3362-5920	6 : 4
30	Institute of Space and Astronautical Science (ISAS), Department of Space Astronomy and Astrophysics (LiteBIRD)	Sagamihara, KANAGAWA	Research and Development for the polarization measurements of the cosmic microwave background with LiteBIRD	【Own Research】 Research in the field of space astronomy and astrophysics based on the observations of electromagnetic radiation, or development of instruments for such observations from space. 【Project Contribution】 LiteBIRD is the international mission to measure the all-sky polarization in the cosmic microwave background to reveal the presence of the primordial gravitational wave predicted by the inflation theory. LiteBIRD is equipped with two sets of telescopes to cover 34-448 GHz with the 0.1K TES bolometers at the focal planes, which are combined with the polarization modulators to largely reduce the systematic errors. The successful candidates will conduct research and development related to the mission instrument on board LiteBIRD, which includes optics, half-wave plates, detectors, cooling systems, on-board data processing, ground tests of the instruments, and ground data reduction. We will foster researchers who understand the practical side of the development of mission instrument and can lead the future missions in the field of space astronomy and astrophysics.	It is preferable to have knowledge and experience in one of the following experiments: (1) development of telescopes and/or detectors for space observations; (2) development of low-temperature detectors; (3) experimental studies in the field of fundamental physics.	You will conduct research under supervision of the professors in the department of space astronomy and astrophysics, ISAS, who are members of the LiteBIRD team and have a lot of experience in the development of instruments and promotion of space missions. If necessary, the candidates can receive supervision of other professors in the department. The department has basic facilities necessary t o conduct the research.	Professor, T. Dotani	Professor, T. Dotani	dotani.tadayasu@jaxa.jp	50-3362-5544	5 : 5

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35	Institute of Space and Astronautical Science (ISAS), Department of Solar System Sciences	Sagamihara, KANAGAWA	Learn from existing data to propose a compelling new mission	【Own Research】 We welcome an applicant who will have a fresh look at the existing data from solar system missions (including those for solar physics) and shed a new light on planning of future missions at ISAS. The new perspective includes development and application of new data analysis tools and ideas. The dataset to be inspected can be those from ISAS missions or others. 【Project Contribution】 Successful applicants are expected to make their research outputs as inputs to future mission designing activities at ISAS.	Experience in analysis of data from missions exploring the solar system including the sun.	The Department is composed by researchers studying solar physics, space plasma physics, planetary atmospheres including ionospheres and planetology including asteroids as one of the research targets. You will work with these members. Since many members are oriented towards hardware development for solar system missions, it is natural for you to be exposed to the opportunities to learn how space instruments work to produce the data that he/she works hard to decipher.	Department Director, Masaki Fujimoto	Department Director, Masaki Fujimoto	fujimoto.masaki@jaxa.jp	50-3362-5063	7 : 3
36	Institute of Space and Astronautical Science (ISAS), Department of Solar System Sciences	Sagamihara, KANAGAWA	Research on Solar System Sciences (International Collaboration with Foreign Institutes)	【Own Research】 ISAS has been collaborating with many foreign institutions. In order to expand the horizon of the collaboration, ISAS runs an early career exchange program in the solar system sciences. Here the focus is on enhancing the science output from ISAS lunar and asteorid exploration missions. The example opportunities are, data analysis of Kaguya, analysis of Hayabusa samples, creating new perspectives for Hayabusa2. 【Project Contribution】 Applicants who are interested in gaining boosts in their early career that are available only if they work at ISAS are most welcome. Fruitful outputs from this frame work would lead to future collaboration between ISAS and the foreign institute involved.	(1) Research record in solar system sciences. (2) Joint-study record with a foreign institutes	Mentors, one from ISAS and the other from the foreign institute, will be assigned to guarantee fruitful activity via this frame work.	Department Director, Masaki Fujimoto	Department Director, Masaki Fujimoto	fujimoto.masaki@jaxa.jp	50-3362-5063	8 : 2
38	Institute of Space and Astronautical Science (ISAS), SOLAR-B Project	Sagamihara, KANAGAWA	Solar physics researches based on Hinode observations	【Own Research】 With Hinode observations and other data from spacecrafts, applicants are expected to perform data analysis for leading researches on solar physics and its related field. Depending on the applicants' interests, the research topics can be selected from various kinds of topics, including the heating of the corona and chromosphere, coronal dynamics, solar flares, generation, development, and dissipation of solar magnetic fields, Sun-heliosphere connection, and Sun-laboratory plasma comparisons. In addition to science researches with Hinode, applicants are highly encouraged to participate in new research projects (including international balloon project SUNRISE-3) conceptual studies and research developments for the future solar physics missions, such as Solar-C. 【Project Contribution】 Applicants are expected to make major contributions to Hinode's scientific operations, by working as Chief Observers for onboard telescope. Applicants may also contribute to the verification and calibration of acquired data.	Research experiences on solar physics or its relevant research field are required. Applicants are expected to promote his/her researches (either observationally or theoretically) based on observations including Hinode. Applicant should make contributions to further improvements on our knowledge on the Sun. Research experiences with other spacecrafts and ground-based observations are welcome to expand his/her researches to more widely by newly coordinating with Hinode researches.	Researches can be promoted in deep collaboration with researchers in ISAS and NAOJ. Also, applicants can promote research works with foreign residents at ISAS. The computers at ISAS allow researchers to access all the Hinode data on line. Applicants are highly encouraged to participant in scientific operations of Hinode. With such opportunities, he/she can realize new observations with Hinode.	Associate Professor, Taro Sakao, Associate Professor, Toshifumi Shimizu	Associate Professor, Toshifumi Shimizu	shimizu.toshifumi@jaxa.jp	50-3362-4663	7 : 3
39	Institute of Space and Astronautical Science (ISAS), SOLAR-B Project	Sagamihara, KANAGAWA	Research and Development on Scientific Payloads for Future Solar Missions	【Own Research】 Applicants shall participate in future Japanese space solar programs such as SOLAR-C, and contribute to the relevant program through R&D studies of on-board scientific instruments. Towards future solar missions, ISAS solar physics group are now studying/developing X-ray mirrors and focal-plane detectors for photon-counting soft X-ray telescope(s), high-reliability moving components for observing continuously magnetic activities in the solar atmosphere, and also high-precision solar aspect sensors for precise observations of the Sun. In addition to such R&D studies, applicants can also be engaged in the study of on-board science data acquisition/processing, and/or performance evaluation on scientific instruments followed by assessment on their scientific capabilities. 【Project Contribution】 Participate in science operation of Hinode observatory as well as in system-related operation of the spacecraft (whenever necessary), which will help the applicants acquire skills for designing operation scheme for future satellite missions.	Applicants are requested to have good knowledge of physics or astrophysics. For applicants who aim to carry out engineering study, basic knowledge and research capability for the relevant area are required. It is desired that the applicants have experience in hardware R&D studies on physics and/or astrophysics. It is requested that the applicants can promote collaborative research activities with other groups inside or outside JAXA whenever needed. Those who have strong will to push next generation space solar physics forward through hardware development are highly welcomed.	ISAS solar physics group (SOLAR-B project) will supervise the research and it is possible to use various test facilities in ISAS. Meanwhile, collaborative research activities with solar physics group at NAOJ (with which ISAS solar group have years-long working relationship) as well as use of test facilities at NAOJ are also available and encouraged.	Associate Professor, Taro Sakao Associate Professor, Toshifumi Shimizu	Associate Professor, Taro Sakao	sakao.taro@jaxa.jp	50-3362-3718	8 : 2
40	Institute of Space and Astronautical Science (ISAS), PLANET-C "AKATSUKI" Project	Sagamihara, KANAGAWA	Observation of Venus atmosphere with "Akatsuki" and data analysis	"Akatsuki", which was inserted to Venus orbit in December 2015, started acquiring Venus data. The data, from the ultraviolet to the mid-infrared, with temporal coverage are to be used to study how the atmospheric circulation and structure of the clouds develop. Acquired data are archived and provided to the world in a common format in the meteorology community. 【Own Research】 A successful candidate can use "internal release" version of Akatsuki data for his/her researches. It is especially expected that the candidate, together with the adviser and other researchers, to produce 4-dimensional data (3 dimensions in spatial and 1 in temporal) by utilizing the data assimilation technique. Such data are expected to be useful to solve the problems of the super-rotating atmosphere and enormous cloud system in Venus. Data assimilation has greatly been advanced for meteorology of the earth but is still in preliminary stage for other planets. Therefore, significant gain from this research field is anticipated. 【Project Contribution】 A successful candidate is expected to work in the core of the project, in planning of the observation, operation of the spacecraft, organizing the science working team meetings, and communicating with NASA Participating Scientists. By experiencing all aspects of Akatsuki operations and project management with other project members, the candidate will have a good chance to obtain skills which make him/her a core member of future planetary exploration projects.	We welcome candidates with interests in observations and researches in planetary science. Expertise in analysis of large-volume data is advantageous. Experiences in observational data analysis, instrument development, numerical modeling, etc. are all considered. Knowledges in planetary science and/or atmospheric science are favored.	You will be trained through collaborative works with researchers in the planetary atmospheric studies from ISAS or other research institutes. He/she is expected to participate the seminars and workshops in the research group. Common computing environment and other required equipment will be provided by the group. A personal computer will also be provided. Skills in the instrument development/operation will be obtained by using a simulator based on the ground back-up of Akatsuki instruments (mostly, proto models). It is strongly encouraged to present scientific results at meetings of professional societies, for which travel expenses will be covered by the project.	Professor, Takehiko Satoh	Professor, Takehiko Satoh	satoh.takehiko@jaxa.jp	50-3362-3838	5 : 5

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43	Institute of Space and Astronautical Science (ISAS), ERG (Exploration of energization and Radiation in Geospace) Project	Sagamihara, KANAGAWA	ERG Data Analysis for Inner Magnetospheric Sciences, and Observation Planning, Data Calibration	【Own Research】 Project researchers are expected to lead international scientific research and satellite operation planning of the ERG satellite. 【Project Contribution】 The following list suggests possible examples of research & development topics. 1) Building system for observation planning and data acquisition planning considering scientific requirements from science community. 2) Participate in calibration and data processing of the instrument teams, and contribute to improve quality of science data. 3) Plan and promote the international cooperative observations.	Applicant is required to contribute scientific data evaluation processes and are also expected to promote data analysis studies using ERG data in the international multi-point observations. It is desirable to have English ability required for the abovementioned international research promotion.	The staff scientists of ERG projects will collaborate with project researchers. The project researchers can use scientific datasets of Geotail, THEMIS, MMS as well as the data analysis computer facility.	Project Manager, Iku Shinohara	Project Manager, Iku Shinohara	shinohara.iku@jaxa.jp	50-3362-3279	7 : 3
47	Institute of Space and Astronautical Science (ISAS), Astromaterials Science Research Group	Sagamihara, KANAGAWA	Research for Hayabusa 2 Return Sample Receiving	【Own Research】 The theme of this study is the research for the necessary development toward the Hayabusa 2 return sample receiving, but is not limited to technology development for the receiving facility instoration, the development of the improvement of sample handling techniques and analysis technology will be included. 【Project Contribution】 Curatorial work and research for Hayabusa and Hayabusa2 returned sample. Research for future sample return mission.	Applicant must have an experience of experimental research in the astromaterials or terrestrial materials.	Engage in research at the curation facility (Extraterrestrial Sample Curation Center). Atmospheric pressure plasma equipment (for cleaning), FTIR, FE-SEM/EDS, XRD and API-MS (for sample description), ultra-microtome, and FIB (for sample preparation), and micro-sample handling manipulator are provided. And sample analysis team that has been selected from all over the country through the practice of the united of curation work, can receive the expertise and technical support for chemical analysis. In particular, analysis and evaluation is carried out in collaboration with national laboratories. Collaboration with the super technician of curation facility in my advance the research.	Associate Professor, Masanao Abe	Professor, Hisayoshi Yurimoto	yurimoto.hisayoshi@jaxa.jp	50-3362-7788	7 : 3
49	Institute of Space and Astronautical Science (ISAS), Martian Moons Exploration (MMX) ISAS Pre-Project Team	Sagamihara, KANAGAWA	Research and development for the scientific instruments on-board the Martian Moons Exploration (MMX)	【Own Research】 Scientific studies for Mars and its moons, terrestrial planets, and our solar system. Research and development for the scientific instruments on-board the spacecrafts and the fundamental study for their sciences and elemental technologies. 【Project Contribution】 The successful candidates will conduct research and development related to the MMX scientific instruments, which includes VIS and NIR spectrometer, telescopic camera, Neutron and Gamma-ray spectrometer and so on.	It is preferable to have experience in research and development of instruments on-board the spacecrafts and knowledge and study ability in planetary science.	You will conduct research and development under supervision of the MMX team members and the professors in the department of solar system science. He/she can use ISAS facilities and access to information of the project if the technology export control of Japanese government permits.	Associate Professor, Takahiro Iwata	Manager, Hisashi Ootake	ootake.hisashi@jaxa.jp	50-3362-5568	5 : 5
52	Institute of Space and Astronautical Science (ISAS), GAPS Project	Sagamihara, KANAGAWA	GAPS: ultrasensitive observation of cosmic-ray anti-particles using long-duration balloon flights over Antarctica	【Own Research】 As a member of the GAPS collaboration, carry out science investigations in astroparticle physics, e.g. dark matter, cosmic-ray propagation, and solar modulation, but also consider future directions beyond the current GAPS program. 【Project Contribution】 In cooperation with GAPS members in Japan, the US and Italy, carry out hardware development, e.g. on the detector system, electronics, and thermal system, directed towards the Antarctic flight planned for 2020.	(1) Ph.D. or equivalent degree, in physics or a related discipline, is required. (2) Experience in hardware development, for cosmic-ray (3) physics or elementary particle physics is desired. (4) Ability to work cooperatively in a team is required. (5) Basic proficiency in English is desired.	GAPS members both in JAXA and elsewhere will mentor you. Basic needs for your research, such as desk space and a PC, will be supplied. Presentations at academic meetings and participation in internal workshops will be encouraged. If approved by GAPS, you can participate in the payload integration in the US and flight operations in Antarctica.	Assistant Professor, Hideyuki Fuke	Assistant Professor, Hideyuki Fuke	fuke.hideyuki@jaxa.jp	50-3362-3676	5 : 5
53	Institute of Space and Astronautical Science (ISAS), Department of Interdisciplinary Space Science	Sagamihara, KANAGAWA	Scientific Research and Instrumental Development for Astrobiology-Driven Space Experiments and Explorations	【Own Research】 We expect enthusiastic and open-minded applicants to propose research plans focused on scientific analysis of returned samples and acquired data from existing astrobiology-driven space experiments and explorations or/and engineering development of key scientific instruments for future astrobiology-driven experiments and explorations. In particular, the following disciplines are the most welcome: (1) scientific analysis of Earth-returned samples of the Tanpopo astrobiology experiments currently in operation at the International Space Station Exposed Facility until 2019; (2) instrumental development for new astrobiology space experiments in the post-Tanpopo era; and (3) basic research for the proof-of-concept of critical path instruments needed for future astrobiology explorations, including rendezvous and sample return techniques, to the Ocean World and the Icy World of the Solar System (e.g., cometary nuclei, Jupiter Trojans, Jovian satellites, Saturnian satellites, etc.) by taking into accounts of respective planetary protection challenges. 【Project Contribution】 In the Tanpopo Project, the successful applicant is expected to actively contribute to both initial and detailed sample analyses of the Earth-returned samples from the International Space Station, which include exposure panels of artificial organic and terrestrial microbial samples and capture panels of micrometeoroids and Earth-bound microparticles impacted to aerogels in the low earth orbit in 2015-2019. He or she is also highly recommended to promote international collaboration of astrobiology research through outcomes of the Tanpopo project.	Applicant is expected to demonstrate the following: (1) professional knowledge and proven skills of more than one discipline amongst astronomy, Solar System science, oceanography, microbiology, geo/cosmo-chemistry, and astronautical engineering, all of which are necessary elements for interdisciplinary nature of astrobiology; (2) communication capability to smoothly promote collaborative research with Japanese and international scientists and engineers; and (3) tangible experiences of any of development, evaluation, operation, analysis or other works related to observational, measuring, or analytical scientific instruments, regardless academic disciplines (astronomical, meteoritical, physical, chemical, biological, etc.)	You will join the Laboratory for Astrobiology and Astromaterial (LABAM) and receive supports from the laboratory as well as the NINS Astrobiology Center-Satellite Research Consortium for the Tanpopo initial and detailed sample analyses. As for the post-Tanpopo space experiments and the Ocean and Icy World explorations, the research activities will become interactive with respective research teams and working groups defined within ISAS or domestic and international collaborators working with the LABAM. You can use unique experimental, analytical and manufacturing facilities available to the LABAM researchers, including vacuum chamber, clean room for microparticle analysis and flight hardware development, Captured particle Locating, Observation and eXtraction System (CLOXS), microgravity drop tower, and low-velocity to hypervelocity impact experiment facilities.	Assistant Professor, Hajime YANO	Assistant Professor, Hajime YANO	yano.hajime@jaxa.jp	50-3362-5415	5 : 5
55	Institute of Space and Astronautical Science (ISAS), Central-unit of Science-satellite Operation and Data Archive (C-SODA)	Sagamihara, KANAGAWA	Creation of science data products and development of advanced information system to promote interdisciplinary space science and the original research utilizing these products and system	【Own Research】 The applicant is expected to achieve innovative scientific results using DARTS(space science data archive system). He/she is also expected to study on information technology to develop our data archive system, data analysis and data visualization. 【Project Contribution】 The applicant will collect and/or create various space science data, archive them in DARTS, and release them to public. He/she will also develop an advanced information system to utilize these data and to promote interdisciplinary space sciences, in cooperation with C-SODA staff members. Furthermore, he/she is expected to achieve innovative scientific results using these data and system, which would be difficult otherwise. (No need to cover all)	(1) Sufficient research experiences of space science (any science fields) or information science are required. (2) Ability to develop data analysis system/web system by software technology is desired. (3) Scientific knowledge contributed to make open science data is desired.	In our group, there are experts on astronomy, solar physics, solar-terrestrial-physics, database, and informatics, etc. You will have access to various archival data in these fields, and can use high performance computers to develop a new products and system.	Assistant Professor, Yukio Yamamoto	Assistant Professor, Yukio Yamamoto	yamamoto.yukio@jaxa.jp	50-3362-2612	7 : 3

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56	Institute of Space and Astronautical Science (ISAS), Department of Space Flight System	Sagamihara, KANAGAWA	Study on Space Flight System	【Own Research】 Multi-discipline space flight engineering including space flight systems as well as ground support systems and their basic disciplines such as system engineering, space transportation engineering, structure and materials engineering. 【Project Contribution】 The candidates are required to contribute space science programs and ISAS projects of space transportation (sounding rocket, reusable sounding rocket), scientific satellite/spacecraft (SLIM, MMX, DESTINY+) etc., and future space mission through their study on the space flight systems.	Applicant must possess wide knowledge and ability in space engineering and should have studied in one of the space engineering fields.	Research will be supervised by the academic staffs in Department of Space Flight Systems as well as the collaboration with other research staffs in JAXA including ISAS. You will have access to various facilities in ISAS and can receive various supports by the technicians in charge of them.	Prof., Eiichi Sato and other members in Department of Space Flight System	Prof. and Director of Department, Eiichi Sato	sato@isas.jaxa.jp	50-3362-2469	7 : 3
57	Institute of Space and Astronautical Science (ISAS), Department of Space Flight System	Sagamihara, KANAGAWA	Deep Space Mission Design	【Own Research】 Trajectory design is the first step of deep space mission planning. It is not a simple energy optimization process, but a high level synthesis process of spacecraft design, operation plan, and program management. For this reason, it is also frequently called “mission design.” A researcher is expected to study on the mission and trajectory design method specific to deep space missions. 【Project Contribution】 Department of space flight systems is in charge of mission design of deep space missions such as DESTINY+, EQUULEUS, and MMX. The researcher is expected to join the teams of those missions and to cope with the highly complicated and difficult problems on mission and trajectory design in these missions.	(1) A wide range of knowledge and capability in space technology is required. (2) Research experience in the field of astrodynamics (mainly of trajectory design), or research/development experience of spacecraft system is preferable.	The research is done under the lead of research staffs in ISAS Department of Space Systems and Astronautics, as well as the collaboration with other research staffs in JAXA. A PC for design and analysis use will be provided to the researcher, and the JAXA super computer is also available on research necessity.	Associate Professor, Yasuhiro Kawakatsu	Associate Professor, Yasuhiro Kawakatsu	Kawakatsu.Yasuhiro@jaxa.jp	50-3362-7836	5 : 5
58	Institute of Space and Astronautical Science (ISAS), Department of Space Flight System	Sagamihara, KANAGAWA	Modeling of Small Body Dynamical Environment and Surface-Proximity Rover Dynamics Study	【Own Research】 This research is to explore the dynamical aspect of small body exploration probes (for on-surface, sub-surface, and small body-proximity scientific investigations). There are more and more demands on new and highly specific surface exploration methods for near future small-body missions, which requires advanced small-body modeling and dynamical analysis tequnique. Realistic and accurate rover orbital motion/surface interaction dynamics is pursued in conjunction with precise gravity, geological and surface mechanical property modeling in this research. The analysis theme is to be selected from the ISAS's near future operation and mission planning (i.e. Solar Sail, Hayabusa2, etc.) 【Project Contribution】 Participation to one of the active projects in ISAS as well as co-working with international academia in the astrodynamics field are strongly encouraged in this research.	Following abilities are required: (1)Broad knowledge on dynamical analysis and interplanetary mission analysis. (2)Good skill on numerical simulation of dynamical problems. (3)High motivation to create new academic values by coworking with international researchers.	Research will be supervised mainly by Dr.Tsuda. The research environment including desk, computer and collaboration opportunities with technical staffs in JAXA will be provided. You will have access to various facilities in ISAS and can receive various supports by the technicians in charge of them.	Associate professor, Yuichi Tusda	Associate professor, Yuichi Tusda	tsuda.yuichi@jaxa.jp	50-3362-4411	7 : 3
62	Institute of Space and Astronautical Science (ISAS), MMX ISAS Pre-Project Team	Sagamihara, KANAGAWA	Astrodynamics in the Proximity of Martian Moons	【Own Research】 To research and study the descent operation to the small body surface, and total design of the guidance, navigation and control system for this descent operation. 【Project Contribution】 Martian Moons eXplorer (MMX) mission is a rendezvous and sample return mission from the Martian moons. The objective of this research is to design the descent operation strategies from the view point of astrodynamics in the proximity of the Martian moons.	(1) A wide range of knowledge and capability in space technology and exploration is required. (2) Research experience in the field of astrodynamics (especially trajectory design around small bodies), or research/development/operation experience of spacecraft system is preferable.	The research will be performed under the lead of research staffs in ISAS Department of Space Systems and Astronautics, as well as under the collaboration with other research staffs in JAXA (ISAS, Research & Development Directorate, etc.). A PC for computation and analysis use will be provided, and a JAXA super computer will also be available if necessary.	Associate Professor, Yasuhiro Kawakatsu	Engineer, Yuya Mimasu	Mimasu.Yuya@jaxa.jp	50-3362-4647	5 : 5
65	Institute of Space and Astronautical Science (ISAS), Department of Spacecraft Engineering	Sagamihara, KANAGAWA	Research and development of tiny Lunar rover with sophisticated mobile system	【Own Research】 We seek for a motivated postdoctoral researcher to develop a tiny Lunar rover with a sophisticated mobile system. Many of high-gravity extraterrestrial bodies in the Solar System having a solid surface are covered with soft soils scattered with small rocks. Past rovers exported to such surfaces by foreign space agencies were typically equipped with many wheels that made the mass of the rover more than ten kilograms. We are thinking of much smaller rovers for future Lunar missions. But the travers ability over the above-mentioned natural terrain by small wheels is drastically degraded because the size of the wheels is compatible with the rocks. Thus sophisticated new mobile systems applicable to tiny rovers are expected based on the different ideas. 【Project Contribution】 New mobile concepts are applied to the rover which is under development for future Lunar mission.	The applicants must have a knowledge and experiences on the robotics research with one of the following capabilities. (1)embedded system (2)FPGA (3)3D CAD (4)terramechanics (5)multibody dynamics Terramechanics covers all the interaction problems between soil and vehicles which work over the soil. Thus it includes mobile systems, landing, drilling, and so on.	Two professors from the Department of Spacecraft Engineering in the Institute of Space and Astronautical Science (ISAS) supervise your research. They developed tiny rovers for actual asteroid missions in the past. You also work for the development and evaluation processes in Lunar missions if rovers are officially admitted as a payload. Multibody dynamics simulator, 3D printer and several analytical tools needed for developing a rover are available.	Associate Professor, Tetsuo Yoshimitsu	Associate Professor, Tetsuo Yoshimitsu	kikko@nnl.isas.jaxa.jp	42-759-8304	5 : 5
67	Institute of Space and Astronautical Science (ISAS), Department of Spacecraft Engineering (Small SAR Project)	Sagamihara, KANAGAWA	Research on Synthetic Aperture Radar for Small Satellite	【Own Research】 Based on the below-mentioned, on-going small SAR project, an applicant can perform a further revolutionary research such as polarimetric/ interferometric SAR observation with a small satellite. 【Project Contribution】 Our institute can provide research guidance on microwave antenna, microwave measurement, SAR sensor and communication engineering. RF measurement systems and space environment test equipment are available at our institute. Above all, we can provide you with a flight chance of your idea.	Knowledge and experiences that are required for this research are either of microwave theory, microwave measurement, thermal engineering and communication engineering.	Research guidance on microwave antenna, microwave measurement and SAR sensor can be provided. RF measurement systems and space environment test equipment are available at our institute. Above all, we can provide you with a flight chance of your idea.	Professor, Hirobumi Saito	Professor, Hirobumi Saito	saito.hirobumi@jaxa.jp	50-3362-2657	5 : 5