Theme List of JAXA Aerospace Project Research Association Recruitment 2017

Attached Sheet

No.	Department	Location	Research Theme	Details	Required Abilities	Working Environment	Supervisor (Post, Name)	Contacts (Post, Name, Email, Phone)	Ratios (Own Research: Project Contribution)
1	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 aviatioin 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.	Person who engages oneself in this research must have strong background of aircraft flight dynamics and control theories including identification theory. It is strongly recommended to have experience to study in the fields of fault detection and isolation. Programming skills for Matlab and language-C are also required. Moreover, skills to conduct flight tests smoothly, such as communication with not only researcher but also pilots, are recommended. English skill is strongly required if Japanese skill is not enought for daily conversations.	The following will be provided: - Personal PC - Hardware-in-the-loop simulation with research airplane (MuPAL-alpha) - Research airplane (MuPAL-alpha) to evaluate FDI performance in real condition	Associate Principal Reasearcher, Masayuki Sato	Associate Principal Reasearcher, Masayuki Sato sato.masayuki@jaxa.jp 050-3362-6597	2:8
2	Institute of Space and Astronautical Science (ISAS), Department of Space Astronomy and Astrophysics	Sagamihara, KANAGAWA	Research in Space Astronomy and Astrophysics for the Oversea Missions under the International Collaborations	The successful candidates will conduct research in the field of space astronomy and astrophysics with the space flight systems joining the oversea missions advanced under the international collaborations including this department. Examples are sounding rocket experiments including FOXSI3 (observations of hard X-rays from the Sun), X-ray polarimetry missions including PRAXyS, NASA-led large international mission WFIRST (wide-field, near IR survey telescope), the Fermi gamma-ray space telescope based on large international collaboration, ESA-led large X-ray observatory Athena, and so on. The successful candidates will develop instrument or analyze data joining one of the various types of international missions involving this department not restricted to the above examples. The successful canditaes can gain experience in the instrument development and in advancing the international missions, through which we will foster the researchers who can lead the international missions in the future. The research theme includes ground-based observations coordinated with the space observations.	It is preferable to have experience and knowledge in one of the following research fields: (1) observational research using the space flight systems such as satellites and sounding rockets (2) instrument development for the satellites or ground observatories (3) experimental research in the field of physics or astronomy.	Successful candidates will conduct research under the supervision of professors (associate professors) in this department, who have a lot of experience of the international missions. The department has basic facilities necessary to conduct experiments in the field of space astronomy and astrophysics.	Professors, K. Mitsuda, T. Takahashi, T. Dotani, M. Ishida, T. Nakagawa, H. Matsuhara, T. Yamada, M. Tsuboi Associate professor, N. Yamasaki	Professor, Tadayasu Dotani dotani.tadayasu@jaxa.jp 050-3362-5544	5:5
3	Institute of Space and Astronautical Science (ISAS), Department of Space Astronomy and Astrophysics	Sagamihara, KANAGAWA	Creation of Future Astronomy/Astrophysics Missions	The successful candidates will conduct research on the creation of new mission concept, development of innovative detectors, or related research with the aim of creating future missions in the field of space astronomy and astrophysics. Through such research, we foster researchers who can lead the detector development or mission promotion in the future. Current research activities include those using satellites, sunding rockets, baloons, and ISS in the fields of X-ray and Gamma-ray astronomy, infrared astronomy and radio astronomy. Furthermore, we promote development of low-temperature detectors useful for various wave-length from radio through X-rays. Although it is expected to contribute future missions in the field of X-ray/gamma-ray, infrared, and radio astronomy, research on completely new mission concept based on innovative idea or related instrument development is also welcome.	It is preferable to have knoweldge and experience in one of the following research: (1) observational research using satellites, sounding rockets, baloons, or ISS (2) development of instrument either for the space missions or ground observatories (3) experimental research in the field of physics or astronomy.	Successful candidates 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, Tadayasu Dotani dotani.tadayasu@jaxa.jp 050-3362-5544	5:5
4	Institute of Space and Astronautical Science (ISAS), Department of Solar System Sciences	Sagamihara, KANAGAWA	Learn from Existing Data to Propose a Compelling New Mission	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 ligh 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. Some understanding on where ISAS stands in the world-wide landscape of the solar system exploration may help putting an application form in a better shape.	Experience in analysis of data from missons exploring the solar system including the sun.	The Department is composed by reseachers studying solar physics, space plasma physics, planetary atmospheres including ionospheres and planetology including asteroids as one of the research targets. A sucessful applicant will work with these members. Since many members are oriented towards hardware development for solar system missions, it is natural for a successful applicant to be exposed to the opportunities to learn how space instrments work to produce the data that he/she works hard to decypher.	Department Director, Masaki Fujimoto	Department Director, Masaki Fujimoto fujimoto.masaki@jaxa.jp 050-3362-5063	7:3
5	Institute of Space and Astronautical Science (ISAS), Department of Interdisciplinary Space Science	Sagamihara, KANAGAWA	Research of Nucleation and Crystal Growth in Space Environment	This research aims to investigate nucleation and crystal growth phenomena by utilizing the space environment. The researcher is expected to be a team member of space experiment mission through development of flight models, preparation of the experiments, data analysis, and modeling of the phenomena. Specifically, the present research consists of the following subject: 1) material analysis of microgravity samples and its application to infrared elements, 2) preparation for a new sounding rocket experiment concerning to astrochemistry based on an international collaboration.	Applicant must have a Ph.D. (or equivalent doctoral level degree) concerning to materials science. Abilities in image processing, material preparation and sample evaluation are preferred.	Researchers and engineers working on the Department of Interdisciplinary Space Science of ISAS can often give you some advices during your work and study. You will work in JAXA Sagamihara Campus. You can utilize setups for materials processing and evaluation, a short-duration microgravity facility, microgravity environment simulators, the JAXA supercomputer system, and a machine shop for development of prototypes.	Professor, Yuko Inatomi	Professor, Yuko Inatomi inatomi.yuko@jaxa.jp 050-3362-5180	7:3
6	ISAS Department of Interdisciplinary Space Science	Tsukuba, IBARAKI	Research on Physical Properties and Structure of High Temperature Melts using Containerless Techniques	Due to the chemical reaction between crucibles, high temperature melts are hard to be handled with conventional method using container. This research projects utilizes container-less techniques (electrostatic and aerodynamic levitation) and study on structure and thermophysical properties of high temperature melt. This research project includes; 1) Thermophysical property measurements of high temperature melts and synthesis of metastable phases from deeply undercooled melts by ground facilities, 2) structural analysis of high temperature melts using synchrotron facilities 3) Preparations, operations and analysis of experiments using the Electrostatic Levitation Furnace on the International Space Spation (ISS-ELF) .	1) Experience and knowledge on material processing 2) Experience and knowledge on measurement and control 3) Experience on X-ray structural analysis or levitation experiments (preferable)	Ground falicilities (electrostatic levitators and aerodynamic levitators) are available in Tsukuba Space Center. Fundamental equipements and analyzers necessary for sample preparations and analysis are also available. Synchrotron experiments will be conducted under the collaboration with reseachers from other organizations (Tohoku University , NIMS, and etc.)	Professor, Takehiko Ishikawa	Professor, Takehiko Ishikawa ishikawa.takehiko@jaxa.jp 050-3362-6087	6:4
7	ISAS Department of Space Flight System	Sagamihara, KANAGAWA	Study on Space Flight System	Multi-dicipline space flight engineering including space flight systems as well as ground support systems and their basic diciplines such as system engineering, space transportation engineering, structure and materials engineering. The candidates are required to contribute space science programs and projects in ISAS through their stuidy on the space flight systems.	The candidates should possess wide knowledge and ability in soace 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. The applicants can accesse various facilities in ISAS and can receive various supports by the technicians in charge of them.	Professor, Eiichi Sato	Professor, Eiichi Sato sato@isas.jaxa.jp 050-3362-2469	7:3

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8	ISAS Department of Space Flight System	Sagamihara, KANAGAWA	Deep Space Mission Desgin	Unlike earth-orbiting satellites, deep space explorers must reach their target objects by themselves. Trajectory desgin is the first step of deep space mission planning, which strongly constrains schedule and scale of the mission and provides critical conditions for the spacecraft design. Accordingly, trajectory design of deep space mission 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."Therefore, a researcher is expected to join the study team on future deep space missions and to cope with the problems on mission analysis and spacecraft design. The researcher is also expected to study on the design process specific to deep space missions.	What is required to perform this research is a wide range of knowledge and capability in space technology. In particular, to have 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 colaboration with other research staffs in JAXA (ISAS, JSPEC, etc.). 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 050-3362-7836	5:5
9	Institute of Space and Astronautical Science (ISAS), Spacecraft Engineering Devision、Small SAR project	Sagamihara, KANAGAWA	Research on Synthetic Aperture Radar for Small Satellite	ImPACT Program of Cabinet Office, Government of Japan support us to develop a compact satellite-borne synthetic aperture radar for on-demand, all weather earth observation. Real-time earth observations at any time at any weather become possible with satellite constellation if a synthetic aperture radar (SAR) can be compatible with a 100kg small satellite. In order to realize SAR observation with a small satellite, a compact SAR antenna and a RF amplifier with high-efficiency and high- duty cycle, an efficient power/thermal system that can manage its high peak-power requirement will be developed in this research. Also a large-mass memory that stores huge amount of observation data is necessary. 2-3Gbps X band downlink communications are being developped. The main focus is to develop hardware system based on a nobel insight. A researcher can select one of these subject and enjoy a complete process of the research, development and demonstration in space.	Knowleges and experimences that are required for this research are either of microwace theory, micorwave measurement, thermal engineering and communication engineering.	Our institute can provide research guidance on microwave antenna, micrawave measurement, SAR sensor and commminication engineering. RF measurement systems and space environment test equipments 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 050-3362-2657	5:5
10	Institute of Space and Astronautical Science (ISAS), Department of Spacecraft Engineering	Sagamihara, KANAGAWA	Research and development of a tiny Lunar rover with a sophisticated mobile system	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. The 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 less than three kilograms for future Lunar missions. But the traversability over the above-mentioned natural terrain by small wheels of the rover 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.	(1) The applicants must have a knowledge and experiences on the robotics research based on terramechanics. Terramechanics covers all the interaction problems between the soil and the vehicles which work over the soil. Thus it includes mobile systems, landing, drilling, and so on. (2) The applicants must have an ability to use 3D CAD for developing a robot in-house.	Two professors from the Department of Spacecraft Engineering in the Institute of Space and Astronautical Science (ISAS) supervise your research. You can also work for the development and evaluation processes in Lunar missions if the rover is officially admitted as a payload. 3D printers and several analytical tools are available.	Associate professor, Tetsuo Yoshimitsu	Associate professor, Tetsuo Yoshimitsu kikko@nnl.isas.jaxa.jp 042-759-8304	5:5
11	Institute of Space and Astronautical Science (ISAS), Department of Spacecraft Engineering	Sagamihara, KANAGAWA	Research for Near Earth Asteroids	Near Earth Asteroids (NEA) are important for the planetary science to study the origin and evolution of the solar system. They are also important for the human future because they may have natural resources, they can be the targets of manned missions, and they may collide to the Earth. In this study, we try to create new possibilities of researches or explorations for NEAs. For example, following issues can be the subjects of our studies : mission plans to NEAs that are different from previous ones (both robotic and manned missions), planetary defense, utilization of NEAs. In order to study these issues, we will do following things for NEAs : ground-based observations to reveal the physical natures, analysis of data taken by ground-based telescopes or spacecraft, orbital analysis, mission planning, and etc.	Basic knowledge of planetary science or space engineering is necessary. The ability of computer programming is required. In addition to these, it is desirable to have one or more experiences from the followings : 1) observations of solar system bodies 2) data analysis for solar system bodies 3) orbital calculation of solar system bodies 4) space missions to solar system bodies 5) orbit planning or orbit determination of spacecraft of satellites	Working space and PC will be provided. As for the observations of asteroids, we will get the telescope time of other observatories by proposal or collaboration. Date taken by JAXA's spacecraft and satellites can be taken from the data archives of JAXA. Large computer of JAXA can be used if necessary. Discussions with JAXA researchers of various fields are possible.	Associate Professor, Makoto Yoshikawa	Associate Professor, Makoto Yoshikawa yoshikawa.makoto@jaxa.jp 050-3362-3983	7:3
12	Institute of Space and Astronautical Science (ISAS), SOLAR-B Project	Sagamihara, KANAGAWA	Solar physics researches based on Hinode observations	ISAS/JAXA is leading solar physics researches with the Hinode satellite. Hinode was developed and launched on September 2006 by ISAS, with NAOJ as domestic partner and with international partners. Applicants are expected to make major contributions to Hinode's scientific operations and to perform data analysis for leading researches on solar physics and its related field. Hinode has three advanced telescopes, providing high spatial resolution data of magnetic and velocity field at the photosphere and diagnostics of the hot plasma in the corona. Depending on the applicants' interests, the research topics can be selected from various kinds of topics, including the heating of the corona and	Research experiences on solar physics or its relevant research field are required for applicants. Applicants are expected to promote his/her researches (either observationally or theoretically) based on observations including Hinode. Researches 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, Toshifumi Shimizu	Associate Professor, Toshifumi Shimizu shimizu.toshifumi@jaxa.jp 050-3362-4663	7:3
13	Institute of Space and Astronautical Science (ISAS), SOLAR-B Project	Sagamihara, KANAGAWA	Research and Development on Scientific Payloads for Future Solar Missions	Applicants for this position 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 instrument(s). Towards future solar missions, ISAS solar physics group are now engaged in studying photon-counting soft X-ray telescope and its focal-plane detector, and are also developing high-reliability mechanisms allowing >10 million movements in space which are indispensable for observing continuously magnetic activities in the solar atmosphere. Applicants are requested to be engaged in either such R&D studies on scientific instruments that can bring break-through in space solar physics, or in the development of on-board acquisition/processing systems for science data, performance evaluation on scientific instruments followed by detailed assessment on their science performance, or in the study on engineering aspects of the spacecraft system.	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, Toshifumi Shimizu	Associate Professor, Taro Sakao sakao.taro@jaxa.jp 050-3362-3718	5:5

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14	Institute of Space and Astronautical Science (ISAS), ERG (Exploration of energization and Radiation in Geospace) project	Sagamihara, KANAGAWA	Observation Planning, Data Processing, Data Analysis for Inner Magnetospheric Sciences	Project researchers of this research topic will participate in the ERG project. The major mission is to elucidate how high energy electrons in the Earth's radiation belts are generated. The ERG satellite will be launched in FY2016. Project researchers is required to contribute to the data calibration processes and sciences. The following list shows examples of research & development themes. Project researchers are also expected to lead scientific research of the ERG project. 1) Building system for daily observation planning and data acquisition planning considering scientific requirements from the science community. 2) Participate in calibration and data processing tasks of the onboard instrument teams, and contribute to improve quality of science data. 3) Plan the international cooperative observations of the inner magnetosphere, and promote data exchange and scientific research.	Project researchers are 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.	Associate Professor, Iku Shinohara	Associate Professor, Iku Shinohara shinohara.iku@jaxa.jp 050-3362-3279	5:5
15	Institute of Space and Astronautical Science (ISAS), Hayabusa2 Project Team	Sagamihara, KANAGAWA	Astrodynamics analysis and Operation Planning for Asteroid Proximity Phase of Hayabusa2	This research is a part of Hayabusa2 project with the following two objectives. 1) Operation preparations: Dynamics analyses of the forthcoming events in the asteroid proximity phase to contribute to the proxmity operations plannning, 2) Post-operation evaluatoins: Evaluations of guidance/navigation operation results in the proxmity phase based on received inflight data. Hayabusa2 is an asteroid sample-return mission, which is currently in its interplanetary cruise phase, and is scheduled to reach asteroid Ryugu in 2018. For 18 months around the asteroid, Hayabusa2 will execute various operations, including touchdowns, creating a crater on the surface of Ryugu, and deploying rovers for asteroid landing. These operations will be conducted through a means of asteroid-relative guidance and navigation under a microgravity environment. To achieve accurate and precise operation, high fidelity analyses of the attitude-orbit coupled dynamics are esseintial under given specific consraints of each operation. The applicant is expected to contribute to this area to support a part of the project-oriented tasks. Additinally, the applicant is encouraged to undertake a research-based activity in the field of astrodynamics to take full advantage of this practical-mission opportunity.	・Sufficient knowledge and experience with dynamical analysis and spacecraft's orbit/attitude dynamics. ・Sufficient knowledge and experience with numerical data analysis or simulation.	・Research/Study will be conducted chiefly under the supervision of Dr. Takano Saiki, the project engineer of Hayabusa2 Project Team, as well as the supervision of other project staff members. ・Office equipment and computers will be provided ・Attendance at project meetings of related field will be permitted	Assistant Professor, Takanao Saiki	Associate Senior Researcher, Satoru Nakazawa nakazawa.satoru@jaxa.jp 050-3362-7292	5:5
16	Institute of Space and Astronautical Science (ISAS), Unit for Science-satellite Operation and Data Archive AKARI Data Processing and Analysis Team	Sagamihara, KANAGAWA	Construction of AKARI data archive and astronomical researches using the AKARI data	The infrared astronomical satellite AKARI had carried out an all-sky survey in the mid- and far-IR wavelengths as well as almost 20,000 pointed observations in various wavelengths from near- to far-IR. The AKARI data processing and analysis team is in charge of data processing and archiving of this huge amount of data to provide "Science Ready" data products to world-wide astronomical community. The successful candidates will participate in the construction of AKARI data archive via data evaluation and archiving, and improvement of data analysis techniques toward the future space infrared missions. In addition, the persons are expected to carry out (1) astronomical researches based on the AKARI data, and/or (2) researches in the data processing / archiving technology. Contribution to the data promotion activity is also encouraged.	The candidates must be self-standing researchers in astronomy or software science. The candidates must have skills in astronomical data analysis and software development.	The successive candidates will work together with AKARI data processing and analysis team (1 research staff, 4 post-docs) and members in the infrared astronomy group of the Department of Space Astronomy and Astrophysics (8 research staffs, 4 post-docs, 12 graduate students). Office space and computer facilities are provided.	Team leader/ Associate Professor, Issei Yamamura	Team leader/ Associate Professor, Issei Yamamura yamamura@ir.isas.jaxa.jp 050-3362-7398	5:5
17	Institute of Space and Astronautical Science (ISAS), Central-unit of Science-satellite Operation and Data Archive (C-SODA)	Sagamihara, KANAGAWA	Development of Advanced Information System to Promote Interdisciplinary Space Science Research and Original Research using that System	In C-SODA, we carry out research on informatics and information technologies in order to promote interdisciplinary space sciences, as well as individual researches in various domains of space sciences. We collect various space science data, archive them and release them from DARTS (http://darts.isas.jaxa.jp). We develop web-applications to facilitate using those data archived at DARTS. The applicant will develop an advanced information system to utilize these data and to promote interdisciplinary space sciences, in cooperation with staff members in the department. Also, he/she is expected to achieve innovative scientific results using that system, which would have been difficult otherwise.	Doctoral degree in space science, informatics, or information technologies. He/she is expected to have sufficient experiences of analyzing space science data, and development of data analysis system/web system.	In our group, there are experts on astronomy, solar physics, solar-terrestrial-physics, database, and informatics, etc. The applicants can access various archival data in these fields, and can use high performace computers to develop a new system.	Professor, Ken Ebisawa	Professor, Ken Ebisawa ebisawa.ken@jaxa.jp 050-3362-2823	7:3
18	Institute of Space and Astronautical Science (ISAS), Astromaterials Science Research Group	Sagamihara, KANAGAWA	Research for Hayabusa 2 return sample receiving	Hayabusa 2 project is expected to bring back samples from C-type asteroid in 2020 to the Earth. It is planned that the acceptance and initial description will be operated in JAXA Sagamihara campus. Some samples will be also planned to used for detailed analysis by our group. Our group, while based on the experience of Hayabusa sample acceptance, taking into account the characteristics of the Hayabusa 2 return sample, will be developing research of new sample handling techniques and describing technology. The samples are distributed to a detailed analysis after the initial description. In the initial description of the particle, to maximize the scientific gain, we need to execute appropriate description for optimal distribution but minimize the sample damage for following detailed analysis. 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.	Must have an experience of experimental research in the astromaterials or terestrial materials.	Engage in research at the curation facility (Extraterestrial Smple 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 050-3362-7788	7:3
19	Institute of Space and Astronautical Science (ISAS), Department of Space Flight Systems	Sagamihara, KANAGAWA	Astrodynamics in the Proximity of Martian Moons	Martian Moons eXplorer (MMX) mission is the rendevous and sample return mission from the Martian moons, and has been under study in ISAS/JAXA. In this mission, several observation requirements from scientific instrunments and requirements for landing and collecting samples from from the surface of moon. In the proximity of Martian moon, because of the gravity field generated by Mars and moon, the spcaecraft behaves under the very special dynamics. The objective of this research is to elucidate multi-body astrodynamics of the spacecraft in proximity to Martian moons, and apply the results to design of the spacecraft operation. Its achievemnet reflects to the design of the spacecraft and ground systems.	Wide range of knowledge and capability in space technology is required. In particular, to have research experience in the field of astrodynamics (mainly of trajectory design), or research/development/operation 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 colaboration with other research staffs in JAXA (ISAS, Research & Development Directorate, etc.). 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	Researcher, Yuya Mimasu mimasu.yuya@jaxa.jp 050-3362-4647	5:5

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20	Institute of Space and Astronautical Science (ISAS), LiteBIRD ISAS preproject	Sagamihara, KANAGAWA	Research and Development for the Mission Instruments on board LiteBIRD	LiteBIRD is the international mission based on the Japan-US collaboration 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 the 40cm and 20cm telescopes to cover 34-448 GHz with the focal plane detectors of 0.1K TES bolometers. The telescopes utilize the half-wave plates to largely reduce the systematic errors. Outputs from the TES bolometers are read with SQUID, and are transmitted to the ground after compression. 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	The successful candidates 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. The department has basic facilities necessary t o conduct the research.	Professors, K. Mitsuda, T. Dotani	Professor, Tadayasu Dotani dotani.tadayasu@jaxa.jp 050-3362-5544	5:5
21	Institute of Space and Astronautical Science (ISAS), SLS(Department of Spacecraft Engineering)	Sagamihara, KANAGAWA	Combined Study of Orbit Determination and Orbit Design in Cis-Lunar Region	A moon exploration or a planetary mission whose orbit maneuver utilizes moon gravity requires combined study of orbit determination and orbit design. Traditionally, minimization of velocity increment (namely fuel consumption), shorter cruising time, or robustness against engine failure are studied in the research area of orbit design. On the other hand, estimation accuracy with limited observation date have been studied in the area of orbit determination. In real project, however, average accuracy of the orbit determination is not a problem. Required accuracy and timing of orbit determination depend on orbit design. And also orbit design considering robustness against orbit determination error is essential. Therefore, the goal of this research is the combined study of orbit determination and orbit design. The researcher should work for orbit design and determination of real projects such as OMOTENASHI and EQUULEUS which will be launched by SLS rocket in 2018.	The applicant should have research experience in orbit determination or orbit design area. He or she is required to have fundamental knowledge on astrodynamics and should be able to study soon after the apointment both orbit design and determination. To communicate with Japanese engineer, foreign researcher, and NASA personnel, ability of English communication is essential. Also basic Japanese skill especially reading of Japanese technical documents is needed.	The researcher can discuss with specialists of orbit design, orbit determination, and spacecraft system in JAXA. He or she can use some software of which license JAXA has and can access spacecraft information of the project, if the technology export control of Japanese government permits.	Professor, Tatsuaki Hashimoto	Professor, Tatsuaki Hashimoto hashimoto.tatsuaki@jaxa.jp 050-3362-2773	5:5
22	Institute of Space and Astronautical Science (ISAS), SPICA Preproject	Sagamihara, KANAGAWA	Research and Development Work for the Astronomical Instrumentation for the Next-Generation Infrared Astronomy Mission SPICA	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 is a satellite with a 2.5m, cold telescope, which has outstanding sensitivity and angular resolution. SPICA is proposed to be launched in the 2020's under the extensive international collaboration. We offer opportunities for postdoctoral researchers, who will work in basic research and 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.	Either experience is prefeered: - experience in instrumentation for space and/or ground-based telescopes - experimental physics related to this research area	Successful applicant(s) 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. With three professors, four associate professors, and one assistant professors, the infrared astronomy group at ISAS is one of the largest research groups in infrared astronomy in Japan. The group has test facilities for the experimental research.	Professor, Takao Nakagawa	Professor, Takao Nakagawa nakagawa@ir.isas.jaxa.jp 050-3362-5920	6:4
23	Institute of Space and Astronautical Science (ISAS), Department of Solar System Sciences	Sagamihara, KANAGAWA	Research Program on ISAS Lunar and Planetary Missions (International Collaboration with Foreign Institutes)	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. Applicants who are interested in gaining boost in their early career that is available only if they stay at ISAS are most welcome.	(1) Research record in planetary science. (2) Record of being a coinvestigator to a foreign institute. (3) A research plan that matches with one of the themes given by the foreign institute and that benefits from staying at ISAS.	In additon to keeping mentorship from the foreign insitute, a host researcher will be assigned from ISAS. For example, With the University of Arizona, asteroid sample retrun mision themes, either obtaining new insights from remote sensing observations data, or development of a new technique for analysing samples to be returned from primordial asteroids, are conceivable.	Department Director, Masaki Fujimoto	Department Director, Masaki Fujimoto fujimoto.masaki@jaxa.jp 050-3362-5063	10:0
24	Aeronautical Technology Directorate, Aerodynamics Research Unit	Chofu, TOKYO	Development of Advanced Diagnostics in Hypersonic Facilities for Atmospheric Entry Flight Environments	In order to support a variety of future atmospheric entry missions, the applicant will be engaged in improvement of atmospheric entry flight environments simulator facilities such as shock tubes, expansion tubes, and light gas guns, to extend their operational envelope and to achieve data productivity gain. The applicant will be also engaged in development of advanced diagnostic systems for these facilities, such as flow visualization, emission spectroscopy, laser-induced fluorescence spectroscopy, and probe measurement, which have not been accomplished so far in the world.	The applicant is requested to have considerable experience in experiments using hypersonic flow facilities such as hypersonic wind tunnels, shock tubes, expansion tubes, and light gas guns, and to have adequate skills in flow diagnostics. The applicant are also requested to have expert knowledge in hypersonic flows with thermochemical reactions involved.	The hypersonic test facilities such as a shock tube, an expansion tube, a light gas gun, a hypersonic rarefied wind tunnel, and a hypersonic wind tunnel, a variety of spectrometers equipped with CCD cameras for wavelengths from vacuum-ultra-violet to infrared, flow visualization system, and lasers for diagnostics are available. The experimental research will be supported by collaborative experts in the field of hypersonic test facilities and flow diagnostics, as well as supported by comparative numerical simulations conducted by collaborative experts in the field of hypersonic flow analysis.	Senior Researcher, Kazuhisa Fujita	Senior Researcher, Kazuhisa Fujita fujita.kazuhisa@jaxa.jp 050-3362-4378	8:2