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2020 年 4 月入学　April 2020 Admission

広島大学大学院先進理工系科学研究科（博士課程前期）
学生募集要項

Graduate School of Advanced Science and Engineering (Master s Course)
Application Guidebook

量子物質科学プログラム
Quantum Matter Program

◆一般選抜（第二次募集）
General Admission (2nd Selection)

2019 年 9 月　September 2019

広島大学
Hiroshima University(

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先進理工系科学研究科アドミッション・ポリシー

【博士課程前期】

先進理工系科学研究科先進理工系科学専攻では，以下のような志や意欲をもち，それに必要な基礎学力を持つ学生の入学を求める。

① 先進的で高度な学術研究や学際的研究を推進する意欲を有する人
② 理学，工学，情報科学に関連する分野の研究者や技術者など，専門性を有する職業に従事することを目指す人
③ 幅広い教養と共に，理学，工学，情報科学に関連する学問領域における知識と研究能力を身に付け，多角的視点から「持続可能な発展を導く科学」の構築や地域及び国際社会の課題解決への熱意を有する人
④ 社会人としての良識や倫理観を身に付けた人

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2018 年 7 月豪雨及び 2016 年熊本地震で被災された広島大学志願者への入学検定料免除の特例措置について

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入学検定料の免除を希望される方は，出願前に必ず「6　問合せ先」までご連絡ください。

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1　特例措置の対象となる入学者選抜

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2　措置内容

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3　免除の対象者

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4　申請方法

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◯2018 年 7 月豪雨及び 2016

Programs and Number of Students to be admitted

The Division of Advanced Science and Engineering of Graduate School of Advanced Science and Engineering (Master's Course) in Hiroshima University consists of 14 programs that are listed in the table below with the numbers to .

The capacity of Division of Advanced Science and Engineering is defined in the table below and the number enclosed in the square brackets represents the standard capacity for each program.

This student application guidebook describes the schedule of the entrance examination and the method for selecting students for Quantum Matter Program and the number of students to be admitted by this student application guidebook are listed below. You can obtain the application guidebooks for the other programs in the location that is listed in the "contact / place of submission" section in the table.

April 2020 Admission

Advanced Science and Engineering					Preparatory Office for the Establishment of Graduate School of Advanced Science and Engineering, Hiroshima University (Graduate Student Section, Student Support Office of Graduate School of Science) 1-3-1 Kagamiyama, Higashi-Hiroshima 739-8526, Japan Tel: +81-(0)82-424-7309, 4468
					Preparatory Office for the Establishment of Graduate School of Advanced Science and Engineering, Hiroshima University (Graduate Student Section, Student Support Office of Graduate School of Engineering) 1-4-1 Kagamiyama, Higashi-Hiroshima 739-8527, Japan Tel: +81-(0)82-424-7518
					Preparatory Office for the Establishment of Graduate School of Advanced Science and Engineering, Hiroshima University (Graduate Student Section, Student Support Office of Graduate School of Advanced Sciences of Matter) 1-3-1 Kagamiyama, Higashi-Hiroshima 739-8530, Japan Tel: +81-(0)82-424-7008,7009
					Preparatory Office for the Establishment of Graduate School of Advanced Science and Engineering, Hiroshima University (Graduate Student Section, Student Support Office of Graduate School of Integrated Arts and Sciences) 1-7-1 Kagamiyama, Higashi-Hiroshima 739-8521, Japan Tel: +81-(0)82-424-6318
					Preparatory Office for the Establishment of Graduate School of Advanced Science and Engineering, Hiroshima University (Graduate Student Section, Student Support Office of Graduate School of International Development and Cooperation) 1-5-1 Kagamiyama, Higashi-Hiroshima 739-8529, Japan Tel: +81-(0)82-424-4680

Admission Policy of Quantum Matter Program and Admission Schedule

Admission Schedule

Entrance Examination Classification	Item	Date

(Note)

【Note】

About supervisors who will accept students in this entrance examination, please refer to the attached paper.

All applicants are required to be given guidance by his or her preferred supervisor prior to application.

1. Application Qualifications

Applicants must meet one of the following qualifications:

(1) Those who have graduated from a Japanese university or college, or are expected to graduate on or before March 31, 2020

(2) Those who have been awarded a bachelor's degree by National Institution for Academic Degrees and Quality Enhancement of Higher Education according to Article 104, Section 7 of the School Education Law (Law No.26 of 1947) or who are expected to be awarded on or before March 31, 2020 <Note 1>

(3) Those who have successfully completed 16 years of formal education abroad or are expected to complete on or before March 31, 2020

(4) Those who have taken a correspondence course from an overseas educational institution in Japan and completed 16 years of formal education or are expected to complete on or before March 31, 2020

(5) Those who have completed an undergraduate program of an overseas-based educational institute located in Japan that has been approved by the Minister of Education, Culture, Sports, Science and Technology (MEXT), whose graduates are regarded as having completed 16 years of formal education, or are expected to complete on or before March 31, 2020

(6) Persons who have been conferred, or expect to be conferred by March 31, 2020, a degree equivalent to a bachelor's degree through attending an overseas university or other overseas school (limited to those whose education and research activities have been evaluated by persons who have been certified by the relevant country's government or a related institution, or have been separately designated by the Ministry of Education, Culture, Sports, Science and Technology as being equivalent to such) and graduated from a program that requires 3 or more years to complete (Includes graduating from a program implemented by the relevant overseas school while living in Japan through distance learning, as well as graduating from a program implemented by an educational facility established with the relevant overseas country's school education system and has received the designation mentioned above).

(7) Those who have completed a four-year or longer professional program approved by MEXT, conducted by a vocational school, after the date set by MEXT, or are expected to complete on or before March 31, 2020

(8) Those who are deemed eligible by MEXT

(9) Those who have been enrolled in a graduate school according to Article 102, Section 2 of the School Education Law and have been recognized by Hiroshima University Graduate School as having appropriate academic ability to receive graduate education <Note 2> <Note 3>

(10) Those who are 22 years old or older at the time of March 31, 2020, and recognized in the preliminary selection by Hiroshima University Graduate School as having equal to or higher academic ability than persons who are graduates of a university or college <Note 3>

<Note 1> Those who are enrolled in an advanced course in junior college or a specialized vocational high school which has been approved as satisfying the requirements designated by National Institution for

Academic Degrees and Quality Enhancement of Higher Education according to Clause No. 1, Article 6 of the regulation of degree, and who are able to be certified by a president that they are expected to complete the course and are expected to apply for a conferment of a

<Note 2> Article 102, Section 2 of the School Education Law is the regulation of early admission entrance to graduate schools, which stipulates that a graduate school is allowed to accept those who have been enrolled in a university or college of the aforementioned graduate school for more years than designated by MEXT, including those who have been approved by MEXT as equivalent, and have been recognized as having earned specified credits with excellent grades.

<Note 3> Applicants who satisfy (9) or (10) need to be authorized for qualification prior to application

2. Application Procedures

(1) Application Period

Application documents will be accepted from Monday, November 18, 2019 through Monday, November 25, 2019.

Application documents must be submitted to Graduate School of Advanced Sciences of Matter Student Support Office from 8:30 to 12:00, and from 13:00 to 17:15 except Saturday, Sunday and Holidays. If sent by mail, the documents must be sent by registered mail to arrive by 17:15, Monday, November 25, 2019.

(2) Application Documents

* English or Japanese translation should be attached if the following documents are written in other languages.

* The certificates to be submitted must be the originals or certified photocopies. Uncertified photocopies would not be recognized as official certificates.

No.	Application Documents	Notes
1	Application form, Examination card	Use the prescribed forms
2	Academic transcript	Must be issued by a university or college president or dean
3	Certificate of graduation, or certificate of expected graduation	Must be issued by a university or college president or dean If you are a university graduate, please make sure that the certificate includes information about your degree. *Applicants who are graduates or current students of a university in China (excluding Taiwan, Hong Kong and Macau) need to submit additional documents. Refer to (3) for details.
4	TOEIC® or TOEFL® score certificate	An original score certificate of TOEIC®, TOEIC® IP, TOEFL PBT®, TOEFL iBT® or TOEFL ITP® test Refer to (4) for details.

5	Application fee Receipt of application fee payment	30,000 Japanese yen Fill out your name and address on the prescribed payment form and pay the application fee at a bank in Japan (If you want to pay at Japan Post Network (JPN) or Japan Post Banks (JPB), some other procedures will be required. Please show the payment form at a window of JPN or JPB for necessary procedures. You cannot pay from ATMs of each bank, JPN and JPB). A processing fee will be charged, and receipts of payment with a bank stamp dated on and before November 25, 2019 only shall be recognized as valid as an application document. The receipt of bank payment must be attached to the prescribed sheet.
6	Return envelope for sending examination card	Fill out your name, address, and postal code on an envelope and affix an 84 Japanese yen stamp (12cm wide × 23.5cm high).
7	Name and address seal	Use the prescribed form
8	A copy of resident card	Required for foreign applicants residing in Japan only. If applicant s address is written on the back side of the card, please make a both sided copy.
9	Other certificates	Applicants who satisfy application qualification (2) are required to submit the following certificates: : the National Institution for Academic Degrees and Quality Enhancement of Higher Education Those who are expec : Certificate of expected completion of advanced course of the junior college or specialized vocational high school in which the applicant is enrolled Certificate which states that the applicant is expected to apply for (Issued by the president of the junior college or specialized vocational high school.)

<Note > Please note that application fees are non-refundable for any reason after the application forms have been accepted.

However, in the following 1 and 2 cases, the application fees are refundable after deducting the processing fees. Therefore in such cases, please state the “reason of demand for return”, “name”, “postal code”, “address” and “contact telephone number in writing (in any format) and send it surely with the attachment of the proof of payment of the application fee to the address mentioned below by mail or fax by Friday, February 28th, 2020.

Then, we will send you by mail a “demand for return” form used for demand for the refund of the application fee. Please write the necessary information and put your seal on the form, and send it by mail to the address mentioned below.

1 If the application documents have not been submitted, or they have not been accepted
2 If duplicate payments of the application fee have been made by error

Address: 3-2, Kagamiyama 1 Chome, Higashi-Hiroshima, Japan 739-8511
Accounts, Higashi-Hiroshima Campus Management Support Office, Hiroshima University
(TEL) 082-424-7811 (FAX) 082-424-6962

(3) If you are a graduate or a current student of a university in China (excluding Taiwan, Hong Kong
中国高等教育学

(Certificate of Graduation) 学士学位

- Graduates: Online Verification Report of Higher Education Qualification Certificate (教育部学子注册 案表)
- Expected Graduates: Online Verification Report of Student Record (教育部学籍在 告)

Please note that applicants must pay the issuing fee for the Online Verification Report (2元/certificate) by themselves. Also be sure that there are 15 or more days left until the expiration date of the online verification at the time of its submission.

(4) TOEIC® or TOEFL® Score Used for Foreign Language Evaluation

Quantum Matter Program uses the score from the following five kinds of tests to evaluate the ability.

There is no English examination separately conducted by Quantum Matter Program as part of the entrance examination.

A score certificate from one of the five tests, conducted **within two years before the date of this entrance examination**, must be submitted together with other application documents during the designated application period. The score certificate is not allowed to be replaced after submitted. It will be returned to the applicant after confirmation.

Should an applicant be unable to submit a score certificate during application period due to some unavoidable reasons, he or she will be allowed to submit it to the Graduate School of Advanced Sciences of Matter Student Support Office, but must do so by 13:00, Tuesday, December 10, 2019.

Should an applicant fail to submit a score certificate, the application to the entrance examination can be accepted with no English examination score.

Valid English Test	Score Certificate to be Submitted (Original Certificate Only)
TOEIC® Official Test	Official Score Certificate
TOEIC®－IP	Score Report
TOEFL®－PBT	
TOEFL®－iBT	
TOEFL ITP®	Score Report

*If you want to use the results of the TOEIC® IP conducted for Hiroshima University students and do not have the score report, please contact the Graduate School of Advanced Sciences of Matter Student Support Office.

(5) Application Method

Applicants must submit all application documents mentioned above (2) during the designated application period. Should an applicant wish to submit a TOEIC® or TOEFL® score certificate after the designated application period, a paper stating that he or she will submit it later must be included in the application documents (no prescribed form). Applications will not be accepted should any application documents be missing.

(6)Prior Consultation Regarding Exams and Learning for Students who Need Special Consideration

r Applicants with handicaps and other special considerations for exams and learning, please fill out an application (The style of the application is not specified.) stating the following information, and submit it to the Graduate School of Advanced Sciences of Matter Student Support Office.

Should the applicant be considered to require a health exam as a result of prior consultation, the exam shall be conducted at Hiroshima University.

a. Consultation Period

Applicants who wish to have their exams in Braille or need other special preparation should have a consultation by Friday, September 20, 2019.

As a general rule, others are asked to have a consultation by Friday, October 18, 2019.

Depending on the details of the consultation, preparations may require substantial time. Therefore, we ask you to make your consultation as early as possible.

b. Application form for prior consultation must contain the following information:

	Contents	Note
1	Name, address, and telephone number	
2	Name of applicant	
3	Type and degree of handicap	physical disability certificate will be required

●Applicants who wish to study under supervisors marked with ” ① “ in the lists of p.28～p.30

<table>
<tr><th>Date</th><th>Examination Time</th><th colspan="2">Examination Details</th></tr>
<tr><td rowspan="4">Tuesday,
December 10</td><td>Basic Subject
10:30　12:00</td><td colspan="2">・Mathematics</td></tr>
<tr><td rowspan="3">Major Subject
(Oral Assessment)
13:00</td><td colspan="2">Choose problems from the engineering or science field <Note 1></td></tr>
<tr><td>Engineering Field Problems</td><td>Science Field Problems</td></tr>
<tr><td>Applicants will answer questions on the following three subjects;
・Electromagnetism
・Quantum mechanics
・Semiconductor engineering</td><td>Applicants will answer questions on the following four subjects;
・Classical mechanics
・Electromagnetism
・Quantum mechanics
・Statistical thermodynamics</td></tr>
<tr><td>Wednesday,
December 11</td><td>Oral Examination
13:00</td><td colspan="2">Oral examination details will be announced on test day.
Selection of examinees may be conducted according to the number of applicants, evaluation of English ability, or the results of academic ability examination. In this case, the ID numbers of those who are able to take oral examination will be announced at 12:00 (expected) on the oral test day.</td></tr>
</table>

<Note 1> Whether the applicant is suitable for his/her preferred research field will be determined by the oral examination. Applicants are allowed to choose either field of major subject problems (engineering or science). At the time of application, applicants must specify either engineering or science on the application form.

●Applicants who wish to study under supervisors marked with ” ② “ in the lists of p.28～p.30

Date	Examination Time	Examination Details
Tuesday, December 10	Basic Subject 10:30　12:00	・Mathematics
	Major Subject (Oral Assessment) 13:00	Applicants will answer questions on three subjects which they choose out of the following four subjects; ・Electromagnetism ・Electronic circuits ・Semiconductor engineering ・Quantum mechanics
Wednesday, December 11	Oral Examination 13:00	Oral examination details will be announced on test day. Selection of oral examination examinees may be conducted according to the number of applicants, evaluation of English ability, or the results of academic ability examination. In this case, the ID numbers of those who are able to take oral examination will be announced at 12:00 (expected) on the oral test day.

4. Announcement of Admission

13:00 (expected), Tuesday, December 17, 2019

A list of the ID numbers of accepted applicants will be posted at the entrance of the Graduate School of Advanced Sciences of Matter and notification of admission will also be sent to accepted applicants by mail.

In addition, an announcement will be made on the Graduate School of Advanced Science and Engineering website (https://www.hiroshima-u.ac.jp/en/adse).

No telephone enquiries regarding admission shall be accepted.

5. Fees

Enrollment fee 282,000 Japanese yen

Tuition fee 535,800 Japanese yen (one year) (267,900 Japanese yen for one semester)

<Note>

- Enrollment fees will not be returned for any reason after payment.
- Enrollment and tuition fee amounts are shown as of April 2019. Should the amount be revised at the time of or after enrollment, students will be required to pay the revised fee.
- The Graduate School of Advanced Science and Engineering Student Support Office will inform accepted applicants separately of the details of enrollment procedures which are required during the designated period in mid-March 2020. Detailed information on how and when to pay enrollment and tuition fees and our exemption system of these fees will be also informed together with enrollment procedure details.

6. Authorization for Qualified Applicants

(1) Applicants who satisfy application qualification (9) or (10) need to be authorized by Hiroshima University Graduate School for qualification prior to application procedures. If an applicant needs to be authorized as a qualified applicant, he or she must submit the documents in the table below between Friday, October 11, 2019 and Friday, October 18, 2019 to the Graduate School of Advanced Sciences of Matter Student Support Office.

(If sending the documents by mail, use registered mail and Documents for Preliminary Authorization of Entrance Examination Qualification (Quantum Matter Program) on the envelope.)

If applying under Application Qualification (9):

No.	Documents to be Submitted	Notes
1	Application form for preliminary authorization of entrance examination qualification	Use the prescribed form
2	Statement for preliminary authorization of entrance examination qualification (For Japanese Applicant)	Use the prescribed form. Required for Japanese Applicants.

3	Statement for preliminary authorization of entrance examination qualification (For Foreign Applicant)	Use the prescribed form. Required for foreign Applicants.
4	Statement stating the applicant s reasons for applying for admission	Use A4 size paper with approximately 400 Japanese characters or 100 English words
5	Research plan	at our graduate school -- A4 size paper; approximately 400 Japanese characters or 100 English words
6	Certificate of student registration from your current graduate school or certificate of graduation	
7	Academic transcript from your previous university or college	
8	Return Envelope	Write your address, name, and postal code and affix 404 Japanese yen worth of stamps on an envelope (12cm wide × 23.5cm high)

If applying under Application Qualification (10):

No.	Documents to be Submitted	Notes
1	Application form for preliminary authorization of entrance examination qualification	Use the prescribed form
2	Statement for preliminary authorization of entrance examination qualification (For Japanese Applicant)	Use the prescribed form. Required for Japanese Applicants.
3	Statement for preliminary authorization of entrance examination qualification (For Foreign Applicant)	Use the prescribed form. Required for foreign Applicants.
4	Statement stating the applicant s reasons for applying for admission	Use A4 size paper with approximately 400 Japanese characters or 100 English words
5	Research Plan	at our graduate school -- A4 size paper; approximately 400 Japanese characters or 100 English words
6	Certificate of graduation from the last school attended	Applicants who are graduates of a university in China (excluding Taiwan, Hong Kong and Macau) need to submit additional documents. Refer to 2. Application Procedures (3) for details.
7	Academic transcript from the last school attended	
8	Return Envelope	Write your address, name, and postal code and affix 404 Japanese yen worth of stamps on an envelope (12cm wide × 23.5cm high)

(2) Results of application for authorization will be sent to the applicant by Friday, November 15, 2019.
(3) 2. Application Procedures, (2) Application D

7. Disclosure of Examination Results

Disclosure regarding entrance e Course is as follows.

(1) How to apply

・Please submit an application form to the Graduate School of Advanced Sciences of Matter student support office. Application form is available at the following URL (https://www.hiroshima-u.ac.jp/adsm/admission/disclosure）.

(2) Application Period

・Disclosure of Information about examination held in December

-Application form will be accepted from the following April 1 to May 31.

(3) Procedure of Disclosure

・The results of examination will be disclosed at the Graduate School of Advanced Sciences of Matter Student Support Office.

・The result of the application will be notified within 30 days after the receipt of application.

・The presentation of the examination card will be requested. In case it is lost, please show your ID card.

(4) Items of Disclosure

Items	Contents of Disclosure
１． Test results (Individual record)	・Score of examination (basic subject, major subject) and foreign language ・Evaluation of oral examination and academic transcript
２． Test results (Candidates statistics)	・Highest score, lowest score and the average score of examination (basic subject, major subject) and foreign language for each type of examination (① or ②) (Regarding major subject of the Examination Type ①, those scores are offered by fields; Engineering Field problems or Science Field problems)
３． Test results (Successful candidates statistics)	・Highest score, lowest score and the average score of examination (basic subject, major subject) and foreign language for each type of examination (① or ②) (Regarding major subject of the Examination Type ①, those scores are offered by fields; Engineering Field problems or Science Field problems)

8. Notes

(1) If an applicant would like to receive the application forms by mail, please send a return envelope (24cm wide × 33.2 cm high) with your postal code, address, and name with 250 Japanese yen worth of stamps to the Graduate School of Advanced Sciences of Matter Student Support Office. Please write Request for application forms for the Quantum Matter Program Course, the Graduate School of Advanced Science and Engineering in red on the envelope.

(2) If sending application documents by mail, please documents fo Course, the Graduate School of Advanced Science and Engineering in red on the envelope.

(3) Documents and application fees will not be returned for any reason after application.

(4)Any forgery or falsification of the documents and/or academic fraud would result in cancellation of acceptance even after passing examination or admission.

(5) If an applicant could not graduate from the university or be awarded Bachelor s degree before the admission date, he/she would lose the eligibility to enter our graduate school in this session.

(6) All personal data contained in the application documents, including name, date of birth, gender, and any other personal information, will be used for selection, result notification, and enrollment formalities only. After enrollment, the data will be under the control of Hiroshima University and will be used for student supports, such as application for scholarships and exemption from tuition. It will not be used for any other purposes and will be provided only to the University faculty members concerned.

(7) In the difficult case of carrying out the entrance examination because of bad weather, epidemic, etc, please make sure to visit the website of Graduate School of Advanced Science and Engineering, Hiroshima University.
(https://www.hiroshima-u.ac.jp/en/adse)
We will notify you of postponement of the examination, extension of the starting time of the examination and so forth on the website.

(8) For inquiries, please contact:

Student Support Office, Graduate School of Advanced Sciences of Matter, Hiroshima University
Address 1-3-1 Kagamiyama Higashi-Hiroshima, Japan 739-8530
TEL 082-424-7008, 7009 (Inside Japan) +81-82-424-7008,7009 (Outside Japan)
E-mail sentan-gaku-sien@office.hiroshima-u.ac.jp
URL https://www.hiroshima-u.ac.jp/adsm/ (Japanese)
https://www.hiroshima-u.ac.jp/en/adsm (English)

*For telephone inquiries, please f you are calling from Hiroshima City, Fuchu-cho, Kaita-cho, Kumano-cho, or Saka-cho of Aki-Ward, which have same area code.

Towards a smoke-free campus
Smoking will be prohibited entirely in all HU campuses from January, 2020.
The Kasumi Campus has been smoke-free since April, 2018.

Lists of Academic Staffs and Research Subjects

Quantum Matter Program

＊For more detailed information, please see AdSM website (https://www.hiroshima-u.ac.jp/en/adsm).

Position	Name	Subjects of Research	Examination
Professors	OKAMOTO, Hiromi	Study of charged-particle beams and non-neutral plasmas.	①
	ONIMARU, Takahiro	Experimental research on magnetic property of rare-earth compounds and thermal property of clathrate compounds. Macroscopic measurements and neutron scattering experiments are performed to reveal origins of new phenomena.	①
	KADOYA, Yutaka	Development of the devices for generation and detection of terahertz waves using ultrafast pulse lasers, and the devices for lightwave control using artificial material (meta-material).	①
	KURIKI, Masao	Theoretical and experimental study for beam dynamics. Research and development of high energy accelerator and its applications for light source, X-ray source. Research for high brightness (polarized) electron and (polarized) positron sources and study for photo-cathode and laser as key technologies of the high brightness particle sources.	①
	SHIMAHARA, Hiroshi	Mechanism of anisotropic superconductivity and interplay between magnetism and superconductivity in strongly correlated electron systems and quasi-low-dimensional systems. Superconductivity in high magnetic fields including the Fulde-Ferrell-Larkin-Ovchinnikov state. Magnetism in low and quasi-low dimensional systems.	①
	SUZUKI, Takashi	Experimental studies on the strongly correlated electron systems and new multiferroics in multiple extreme conditions (low temperature, high magnetic field and high pressure). Recently, we focus on exotic properties of compounds with a chiral structure.	①
	TAKANE, Yositake	Theory of quantum electron transport in mesoscopic systems and low-dimensional electron systems.	①
Associate Professors	SUZUKI, Hitoshi	Experimental study of the mechanisms of self-assembled/self-organized structures consisting of organic molecules with scanning probe microscopes and their application for nanotechnology. Development of new analysis methods of organic molecules and/or bio-molecules and new application techniques of bio-molecules(motor protein, etc.) using micro/nano structures.	①
	TAKAHASHI, Tohru	High Energy Physics and its application: Physics of Tera-scale by high energy electron-positron collider R&D of intense photon sources by the Laser-Compton scattering Physics in intense electromagnetic fields	①
	TANAKA, Arata	Theoretical studies on the 3d and 4f electrons and high-energy spectroscopies in transition-metal and rare-earth compounds.	①
	NISHIDA, Munehiro	Theoretical study of resonant optical response produced by surface plasmons in metallic nano-structures, and development of fast electromagnetic simulation softwares.	①
	HIGAKI, Hiroyuki	Experimental research on trapped charged particles and related physics. Production of low energy particle beams and their application for atomic physics, plasma physics, and beam physics research.	①
	HIGUCHI, Katsuhiko	Development of the energy-band theory beyond the local density approximation and its application to solids.	①
	Holger F. HOFMANN	Theoretical research on quantum optics and quantum information; quantum computation and communication using highly non-classical states of light	①
	MATSUMURA, Takeshi	Experimental study on ordered structures and fluctuations of charge, spin, orbital, and higher multipole moments in strongly correlated electron systems by means of neutron and resonant x-ray scatterings. Also by studying thermal and transport properties, we aim at total understanding from microscopic and macroscopic points of view.	①

Quantum Matter Program

＊For more detailed information, please see AdSM website (https://www.hiroshima-u.ac.jp/en/adsm).

Position	Name	Subjects of Research	Examination
Associate Professors	YAGI, Ryuta	Experimental investigation of nano-scale physics. Quantum coherence, single electron phenomena and non-equilibrium transport are studied by fabricating extremely small structures and measuring low-temperature transport.	①
	UMEO, Kazunori	Studies of the thermal, transport and magnetic properties of rare-earth and transition-metal compounds under high pressures. Main research subjects are pressure-induced quantum critical phenomena of heavy-fermion systems, anomalous magnetism in geometrically frustrated systems under pressure, and pressure dependence of the quasi-localized vibrational modes in clathrates.	①
	MIYAOKA, Hiroki	Experimental study of fundamental material properties and reactivity for light elements based materials. Main subjects are research and development of hydrogen production, hydrogen storage, and material conversion. Functional materials are newly created through research on material properties and reaction mechanism by original sample synthesis methods and various analyses from wide points of view.	①
Lecturer	TOMINAGA, Yoriko	Crystal growth of semiconductor thin films and quantum structures, investigation of their optical characteristics, and development of novel optical devices.	①
Assistant Professors	IINUMA, Masataka	Experimental studies on quantum optics and its application; applications to quantum information science, fundamental physics, and bioengineering by quantum optical methods and techniques.	①
	ISHII, Isao	Experimental studies on the strongly correlated electron systems by means of ultrasonic spectroscopy. Our research focuses on novel physical properties originating from magnetism, multipoles, and a large-amplitude atomic oscillation under multiple extreme conditions.	①
	ITO, Kiyokazu	Experimental study on collective motions in charged particle systems. Application of non-neutral plasma systems to beam physics. Production of nano-ion beam sources.	①
	SAKAUE, Hiroyuki	Experimental studies on the fabrication of the surfaces and films with new properties by using 2- or 3-dimensional self-assembled integration of molecules and nanoparticles.	①
	SHIMURA, Yasuyuki	Single crystal growth of new rare-earth compounds and measurements for magnetic/thermal properties at very-low temperature mainly below 1 K, to find exotic phase transition and anomalous metallic state.	①
	HIGA, Nonoka	Experimental study in strongly correlated electron systems by means of neutron, resonant x-ray and nuclear magnetic resonance under multiple extreme conditions. We clarify the electronic properties on a microscopic point of view.	①

Academic staffs below are in charge of plural programs including this program.

Staff		Other Program
Professor	EKINO, Toshikazu	Transdisciplinary Science and Engineering Program
Professor	OGITA, Norio	Transdisciplinary Science and Engineering Program
Professor	HIGASHITANI, Seiji	Transdisciplinary Science and Engineering Program
Assistant Professor	SUGIMOTO, Akira	Transdisciplinary Science and Engineering Program
Assistant Professor	NAGATO, Yasushi	Transdisciplinary Science and Engineering Program
Assistant Professor	HASEGAWA, Takumi	Transdisciplinary Science and Engineering Program

Quantum Matter Program

For more detailed information, please see

ONIMARU, Takahiro, KADOYA,Yutaka, TAKANE,Yositake, SUZUKI, Hitoshi, TAKAHASHI Tohru, TANAKA, Arata, NISHIDA, Munehiro, HIGUCHI, Katsuhiko, MATSUMURA,Takeshi, MIYAOKA, Hiroki, IINUMA, Masataka, SAKAUE, Hiroyuki, SHIMURA, Yasuyuki, HIGA, Nonoka