

INTRODUCTION TO THE INTERNATIONAL CENTRE FOR RESEARCH AND POSTGRADUATE TRAINING IN MATHEMATICS (ICRTM) UNDER THE AUSPICES OF UNESCO

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Mathematics (ICRTM)
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I. ESTABLISHMENT OF THE CENTRE

General information:

- Name: **International Centre of Research and Postgraduate Training in Mathematics (under the auspices of UNESCO).**
- Decision on the establishment of the Centre: Decision No. 307/QĐ-VHL dated March 5, 2018, by the President of the Vietnam Academy of Science and Technology.
- Director: Assoc. Prof. PHAN Thi Ha Duong
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1. Approval process for agreements between the Government and UNESCO

- October 26, 2015: At the 38th session of the UNESCO General Conference in 2015, a decision was adopted to establish two Mathematics and Physics Centres in Vietnam under the auspices of UNESCO (Category 2 Centres).
- August 24, 2017, in Hanoi: The Ministry of Science and Technology of Vietnam and the Director-General of UNESCO signed an agreement to establish the centre.
- April 11, 2020: The Prime Minister of Vietnam signed Decision No. 43/NQ-CP approving the Agreement between the Government of the Socialist Republic of Vietnam and the United Nations Educational, Scientific and Cultural Organization (UNESCO) on the establishment of the centre.
- May 12, 2021: The Prime Minister of Vietnam issued Decision No. 701/QĐ-TTg approving the Implementation Plan of the Agreement between the Government of the Socialist Republic of Vietnam and UNESCO on the establishment of the International Centre for Research and Training in Mathematics (ICRTM).

2. Objectives, and tasks of the Centre

i. The objectives of the Centre

- Undertake research and training in mathematics at the highest international standards;
- Provide an international centre for capacity building in the basic sciences, through schools and workshops;
- Support research in those countries in Southeast Asia, Asia-Pacific and in the least developed countries in Africa, where mathematical research is not yet well-developed; and,
- Provide expertise to decision makers, educators and the general public to strengthen the research and development potential in the region and beyond.

ii. Tasks of the Centre

The functions of the Centre shall be to develop training and regional capacity-building activities with a focus on:

- Advanced training and development through scientific research, carried out by the Centre's permanent staff and by short/long term visitors, in cooperation with national

and international institutions and with participation in international research projects; and,

- Scientific events and knowledge transfer through short-term activities, developed in cooperation with UNESCO's IBSP, ICTP and other scientific institutions, including schools, workshops, conferences and seminars compatible with UNESCO programmes.

- On May 12, 2021, the Government approved the Centre's activity plan, which specifies 7 tasks:

- Organization of the Centre's structure,
- Organization of training in mathematics at the international level,
- Organization of mathematical research activities at the international level,
- Organization of international cooperation activities,
- Organizing consultancy activities for policy makers, education experts and public propaganda on mathematics,
- Ensure conditions for activities of the Centre,
- Meeting and reporting mode.

II. ACTIVITIES REPORT 2020 - 2025

Since 2020, the Centre has successfully achieved its objectives: completing the organizational structure, equipping physical facilities, establishing regulations to ensure the implementation of activities; developing 12 outstanding research projects and 40 training projects (postdocs, PhDs, masters); publishing 106 articles in SCIE journals, enhancing international cooperation with 13 international conferences with over 600 scientists participating, 15 international schools with over 500 students; organizing 20 mathematics promotion events and spreading the spirit of UNESCO with over 2,000 participants, 300,000 online views, and coverage by 200 media articles. Below is the report on the 7 tasks according to Decision No. 701/QD-TTg.

1. Organization of the Centre's structure

i. Establishment and issuance of organizational operation regulations

- On March 5, 2018, the President of the Vietnam Academy of Science and Technology issued Decisions regarding the establishment and issuance of organizational operation regulations for the International Centre for Research and Postgraduate Training in Mathematics under the Institute of Mathematics.

- On December 31, 2021, the President of the Vietnam Academy of Science and Technology issued Decision regarding the issuance of organizational and operational regulations for the International Centre for Research and Postgraduate Training in Mathematics, replacing Decision 308/QD-VHL.

ii. Organizational structure and address of the Centre

- Former Director: On April 13, 2018, the President of the Vietnam Academy of Science and Technology issued Decision 558/QD-VHL appointing Prof. Dr. Pham Hoang Hiep as the director of the centre.

- Deputy Director: On August 21, 2020, the President of the Vietnam Academy of Science and Technology issued Decision 1286/QD-VHL appointing Assoc. Prof. Dr. Phan Thi Ha Duong as the deputy director of the centre.

- Current Director: On April 15, 2024, the President of the Vietnam Academy of Science and Technology issued Decision 778/QD-VHL appointing Assoc. Prof. Dr. Phan Thi Ha Duong as the director of the Centre, replacing Prof. Dr. Pham Hoang Hiep upon the completion of his term.
- Permanent staff: The Institute of Mathematics transferred Prof. Dr. Ngo Viet Trung and Prof. Dr. Vu Ngoc Phat to serve as the heads of the Algebra and Optimization Research Group and the Control Theory Research Group at the centre, respectively.
- Part-time staff: Chief Accountant Tran Thi Thanh Ha, Secretary Khong Phuong Thuy (2020-2024), Nguyen Thi Khuyen (01/2025-current).
- Centre's Address: 6th Floor, Building A6, Institute of Mathematics, Vietnam Academy of Science and Technology, 18 Hoang Quoc Viet, Hanoi, Vietnam.

iii. Establishment of the Governing Board

The current Governing Board of the Centre consists of 05 members established by the President of the Vietnam Academy of Science and Technology according to Decision No. 1230/QD-VHL dated June 28, 2018, and amended by Decision No. 1705/DQQ-VHK, dated October 18, 2021:

- Ms. Le Quynh Lien, Head of International Cooperation Department, Vietnam Academy of Science and Technology, Chairperson.
- Ms. Nguyen Thi Thanh Ha, Deputy Head of the Department of Social Sciences and Humanities, representing the Ministry of Science and Technology, Member.
- Mr. Atish Dabholkar, Director of the Abdus Salam International Centre for Theoretical Physics, Member.
- Mr. Shaofeng Hu, Director (D-1) of the Division of Science Policy and Capacity Building in the Natural Sciences Sector, IBSP, Member.
- Mr. Phung Ho Hai, Institute of Mathematics, VAST, Member.

iv. Inauguration ceremony and presentation of the Governing Board

On October 29, 2021: The inauguration ceremony of the Mathematics and Physics Centres and of the Governing Board of the two Centres took place. The ceremony was attended by representatives of the National Commission for UNESCO of Vietnam, UNESCO Office in Vietnam, ICTP Centre, leaders of the Ministry of Science and Technology, leaders of the Vietnam Academy of Science and Technology. The event included two public lectures on the Nobel Prize in Physics and the Abel Prize in Mathematics.

v. Establishment of the Scientific Committee

Former Scientific Committee: On March 18, 2020, the President of the Vietnam Academy of Science and Technology issued Decision 333/QD-VHL regarding the establishment of the Scientific Committee of the Centre, including:

- Prof. Dr. Dinh Nho Hao, Chairman of the Scientific Committee;
- Prof. Dr. Nguyen Dinh Cong;
- Prof. Dr. Phung Ho Hai;
- Prof. Dr. Le Tuan Hoa;
- Prof. Dr. Vu Ngoc Phat;

- Prof. Dr. Nguyen Minh Tri;
- Prof. Dr. Ngo Viet Trung.

Current Scientific Committee: On July 10, 2024 the President of the Vietnam Academy of Science and Technology issued Decision 1657/QĐ-VHL regarding the establishment of the Scientific Committee of the Centre, including:

- Prof. Dr. Phùng Hồ Hải, Chairman of the Scientific Committee;
- Assoc. Prof. Dr. Nguyễn Tất Thắng, Deputy chair of the Scientific Committee;
- Assoc. Prof. Dr. Phạm Việt Hùng, Secretary of the Scientific Committee;
- Assoc. Prof. Dr. Đoàn Trung Cường;
- Assoc. Prof. Dr. Phan Thị Hà Dương;
- Assoc. Prof. Dr. Trần Giang Nam;
- Assoc. Prof. Dr. Vũ Thế Khôi;
- Prof. Dr. Đoàn Thái Sơn;
- Prof. Dr. Ngô Việt Trung.

vi. Issuance of regulations on the Centre's activities

- In 2020 and 2021, the Centre developed and implemented systematic regulations regarding scientific and technological task groups to support excellent training and research activities. The Centre also formulated regulations for organizing workshops and scientific promotion activities, as well as establishing guidelines for cooperation and selecting collaborators to enhance its collaborative efforts.

- Decision on Excellent Research Projects;
- Decision on Young Talent Projects;
- Decision on Outstanding Research Projects;
- Decision on Excellent Young Scientist Projects (postdoc).

- The issuance of regulations for implementing training, capacity-building, cooperation, and dissemination activities of the Centre has been undertaken and issued by the Institute of Mathematics.

2. Organization of training in mathematics at the international level

i. Providing Graduate-Level Mathematics Training through Classes and Short-Term Courses (such as summer schools, autumn schools, and similar formats) for Vietnamese citizens and individuals from other regional countries in need, as well as some African nations where mathematics is not yet fully developed.

- The Centre has organized international schools with the participation of many renowned professors at the Institute of Mathematics, VAST. During the COVID-19 pandemic, the Centre adapted by shifting to online formats.

- Results: The Centre has held 13 specialized schools with 35 international lecturers and 500 students from various countries, including Germany, France, Malaysia, Italy, Cambodia, Canada, China, Thailand, Indonesia, the Philippines, Brazil, the United Kingdom, Argentina, Japan, Romania, Iraq, Austria, Russia, the United States, Belgium, Greece, Hong Kong, Hungary, India, Lebanon, Uzbekistan, Turkey, Slovenia, and hundreds of scientists and students from Vietnam.

ii. Talent development and advanced training in mathematics for Vietnamese citizens and individuals from other regional countries in need, as well as certain African nations where mathematics is not yet fully developed.

- Experts from the Centre have participated in teaching activities in several countries in the region.
- Teaching at the CIMPA School "Current Trends in Algebra", held from January 29 to February 9, 2024, in the Philippines.

iii. Organizing postdoctoral training in mathematics through research programs, contributing to the development of young mathematicians into experts.

- The Centre has developed a postdoctoral research program, in which outstanding PhD holders from the region, internationally, and domestically undertake research projects in key areas. These projects may also involve renowned scientists from the Institute of Mathematics, as well as PhD students and trainees.
- Results: 11 research projects for outstanding PhDs have been supported: 9 projects have been successfully completed, 2 are ongoing, and 19 research papers have been published. Among them, 9 projects were led by outstanding PhDs from institutions outside the Institute of Mathematics.

iv. Developing Training Programs, Selection Procedures, and Financial Support Mechanisms for International Master's and Doctoral-Level Education in Mathematics through Scientific Research Projects and Programs.

- The Centre has selected research topics and created optimal conditions for scientists and students. We select outstanding students to carry out scientific research projects, each supervised by a (Associate) Professor, with one or two students participating. Through these projects, students receive academic guidance and financial support for tuition and living expenses, enabling them to dedicate their full time to study and research.
- Results:
 - A total of 20 research papers have been published.
 - There were 13 research projects for doctoral students; 12 have been successfully completed, 1 is ongoing, with 17 papers published.
 - 14 research projects for young talents pursuing a master's degree, supporting 19 students: 14 projects have been successfully completed, with 5 research papers published.

3. Organization of mathematical research activities at the international level

i. Establishing research groups and research projects aimed at building strong research teams at both regional and international levels, with a focus on the participation of foreign mathematicians.

- Established two research directions led by two leading professors - Prof. Ngô Việt Trung and Prof. Vũ Ngọc Phát - working full-time at the centre.
- The centre develops outstanding research projects led by highly accomplished scientists in collaboration with reputable international experts. These research groups regularly organize specialized workshops and contribute to the training of many doctoral and master's students.

- Notably, the Research Group on Commutative Algebra led by Professor Ngô Việt Trung has attracted leading experts in the field and trained many outstanding doctoral students. The group has achieved prestigious awards, including the Ho Chi Minh Award (Prof. Ngô Việt Trung, Lê Tuấn Hoa, Nguyễn Tự Cường) and the Tạ Quang Bửu Award (Prof. Ngô Việt Trung and Dr. Nguyễn Đăng Hợp).

- Results: 2 consistent research directions and 12 outstanding research projects (8 projects successfully completed), with 48 papers in SCIE journals.

ii. Promoting Research Collaboration in Mathematics at Regional and International Levels through

- Consistently promoted the organization of international mathematics conferences with the participation of reputable scientists and many young researchers and students, including those from countries within the region. Despite the challenges posed by COVID, the centre has made efforts to conduct online conferences, focusing on the strengths of the mathematicians at the Institute.

- Results: Organized 8 international conferences with the participation of 250 leading experts and researchers from both domestic and international institutions.

4. Organization of international cooperation activities

i. Collaboration with IBSP of UNESCO, ICTP, and other scientific organizations aligned with UNESCO's programs. Collaboration with domestic and international universities with special attention to ASEAN countries, Asia-Pacific, and Africa, where mathematics is not yet well developed:

- Organized two meetings with professors from ICTP at the Centre to enhance scientific cooperation with ICTP in June, 2024 and December 2024.

- Professors from the Institute of Mathematics visited ICTP for exchanges and collaboration:

- Prof. Dr. Phạm Hoàng Hiệp worked and gave lectures at ICTP.
- Assoc. Prof. Phan Thị Hà Dương worked and gave lectures at University of Paris 6, Nice – Sophia Antipolis (2023), International Centre for Mathematical Sciences, Edinburgh (2023).
- Prof. Dr. Phùng Hồ Hải, Director of Scientific Committee, Member of the Centre worked at ICTP.
- In 2023, Prof. Dr. Ngô Việt Trung, in his role as Co-Chair of the Organizing Committee, participated in coordinating the workshop on Commutative Algebra at the International Centre for Theoretical Physics (ICTP).

ii. Research collaboration and mathematical applications with universities and research institutes domestically and internationally, with a focus on asean, asia-pacific, and African countries where mathematics is not yet fully developed. This includes: short-term expert exchanges, sending Vietnamese experts to teach short-term courses, participating in conferences and workshops, and hosting international experts and students for study and work at the Centre.

- The Centre has welcomed **4 international research groups** for scientific exchange: Algeria, India, Iran, Chile
- **Thematic Semester:** Since 2024, the Centre has launched a program of thematic semesters aimed at promoting in-depth academic exchange. The first thematic semester on Commutative Algebra, chaired by Prof. Dr. Lê Tuấn Hoa and held in

the fourth quarter of 2024, attracted considerable interest and participation from international students. Building on this success, the next thematic semester is scheduled for September 2025, with the topic Arithmetic Geometry and Algebra, chaired by Prof. Dr. Phùng Hồ Hải.

iii. Collaboration with other UNESCO Category 2 Centres in the Field of Basic Sciences.

- The Centre collaborated with CIMPA to organize a Summer School for students, in partnership with several international universities, and has organized a total of 10 schools for both domestic and international students.

- The Centre sponsored a PhD researcher from Nigeria to work at the Centre for two months in 2023 (co-sponsored by TWAS – The World Academy of Sciences for the advancement of science in developing countries).

iv. Fulfilling Other Obligations of a UNESCO Category 2 Centre (such as annual contributions, etc.).

- In previous years, the Centre was not required to pay an annual contribution to UNESCO. However, starting next year, the Centre will pay an annual fee of **USD 1,000**.

5. Organizing consultancy activities for policy makers, education experts and public propaganda on mathematics

i. Participation in advising policymakers and education experts in the field of mathematics.

- Policy consultation: Participation in the Asia-Pacific Women in Mathematics Conference, contributing to raising awareness of gender equality in mathematics and society. Successfully proposed opportunities for female mathematicians through the Vietnam Mathematical Society.

- December 2021: Workshop on "Applied Mathematics in Digital Transformation of Agriculture, Food, and Rural Areas" in collaboration with the People's Committee of Thua Thien Hue Province to connect researchers, managers, businesses, and farmers towards eco- agriculture, modern rural areas, and smart farmers. Attended by the Vice Chairman of the People's Committee of Thua Thien Hue Province, Directors of Institutes of Hydraulics and Agricultural Sciences, and representatives from the Ministry of Agriculture and Rural Development, with 5 invited reports and panel discussions.

- April 2022: Continued collaboration with the Chairman of the People's Committee of Hue City and 5 leaders of Hue's departments on human resources training and promoting the development of mathematics.

ii. Organizing promotional activities for the public about mathematics, such as science fairs, public lectures, talent training classes, etc.

- A series of activities including public lectures and seminars on the achievements of mathematics and science, following the spirit of UNESCO, attracting more than 1,000 direct participants and 200,000 online viewers annually.

- International Mathematics Day: This day is held annually on March 14th and is registered on the IMD map. It is broadcast live, featuring public lectures and discussions on the significance and applications of mathematics, attracting young scientists and students from across the country.

- 2021: Mathematics for a Better World

- 2022: Mathematics Unites
- 2023: Mathematics for Everyone
- 2024: Playing with Math
- 2025: Mathematics, Art, and Creativity

- Vietnam Science and Technology Day: Held annually on May 18th, in the years 2021, 2022, 2023, and 2024.

- Econometrics Olympic Competition: Featuring over 130 topics from 30 universities, held in the years 2021, 2022, 2023, and 2024.

iii. Organizing events to commemorate or support UNESCO's initiatives on basic science. (In collaboration with the National UNESCO Committee of Vietnam, UNESCO Office in Hanoi). Refer to Chapter III.

6. Ensure conditions for activities of the Centre

i. Allocating annual operating funds from the state budget for the Centre

- The operating budget of the Centre is provided annually by the Vietnam Academy of Science and Technology with an allocation of 5 billion VND (210 000 USD).

ii. Ensuring equipment, infrastructure, and other resources

- The Institute of Mathematics has allocated the entire 6th floor, Building A6 (within the premises of the VAST to the Centre, including 10 offices and 2 classrooms/seminar rooms. The Institute of Mathematics Library (considered the richest mathematics library in Vietnam) also allows all Centre trainees to use it as Institute staff.

- The Centre allocates part of its budget to invest in purchasing equipment for research and teaching activities, such as desks, chairs, cabinets for office space, meeting rooms, seminar rooms, classrooms, bookshelves for training and research, as well as to maintain the Centre's regular activities.

- The Centre has implemented the construction of a bilingual electronic newsletter (<http://icrtm.vast.vn>) in Vietnamese and English to regularly update information on the organization and activities of the Centre.

iii. Mobilizing other funding sources beyond the state budget for the activities of the International Centre of Research and Postgraduate Training in Mathematics, receiving donations, aid, and gifts from individuals and organizations both domestically and internationally

- Co-organized with the Vingroup Innovation Foundation many events such as Mathematics Day, Science and Technology Day, with financial contributions from both entities.

- Co-organized with the People's Committee of Thua Thien Hue province to deploy a working delegation for collaboration, with financial contributions from both entities.

7. Meeting and Reporting Mode

i. **The Governing Board meetings**

- October 29, 2021: Inauguration event for the Mathematics and Physics Centres and the inauguration of the Governing Board of the two Centres.

- Successfully organized the international Governing Board meeting of the ICRTM and ICP, with participation from international and Vietnamese members, held on 10

October 2023 at the VAST. The meeting approved the activity program for the following year.

It was recommended that the Centres:

- + Strengthen engagement with ASEAN and UNESCO-affiliated networks to broaden international impact.
- + Invest in scientific infrastructure and foster a supportive environment for young and female scientists.
- + Prepare actively for joint events, including the Vietnam Physics Day and the ICTP 60th Anniversary Celebration in 2024.
- + Pursue innovative research topics, particularly those aligned with UNESCO's global priorities, and maintain transparency and excellence in reporting and planning.
- The Chairwoman concluded the meeting by thanking all participants for their constructive input and reaffirmed VAST's dedication to ensuring the Centres' continued success.

- May 3, 2024: The International Executive Board meeting of the ICRTM and ICP Centres, with the participation of international and Vietnamese members, representatives from the Ministry of Science and Technology, the Vietnam Academy of Science and Technology, the Vietnam UNESCO Committee, and UNESCO representatives in Hanoi. The meeting evaluated the excellent performance of both centres over the past period and approved full support for the extension of the two centres.

*Conclusions and Recommendations

- The Governing Boards unanimously endorsed the extension of the Agreements establishing ICP and ICRTM as UNESCO Category 2 Centres under the auspices of UNESCO.

The following recommendations were made:

- The Centres should finalize and supplement their extension dossiers following UNESCO's updated guidelines, ensuring clear articulation of how their activities contribute to UNESCO's outcomes and global priorities.
- A detailed timeline should be developed to guide the extension process, structured around four main stages: internal preparation, national endorsement, submission to UNESCO, and UNESCO Executive Board approval.
- A formal request for extension should be submitted to UNESCO no later than September 2024, after obtaining authorization from the relevant Vietnamese authorities.
- Efforts should be made to organize a high-profile event in 2024, celebrating the extension of the two Centres and commemorating the 60th Anniversary of ICTP.

The Chairwoman thanked all participants for their valuable contributions and reaffirmed VAST's commitment to supporting the continued development of ICP and ICRTM as centres of scientific excellence.

- May 10, 2024: The meeting on the extension of the two centres, with the participation of Deputy Minister of Science and Technology Tran Hong Thai, Vice President of the Vietnam Academy of Science and Technology Chu Hoang Ha, Secretary-General of the Vietnam UNESCO Committee Le Thi Hong Van, along with many representatives from various ministries and agencies. The meeting assessed the centres as having accomplished their tasks excellently, with a need to enhance and expand their activities. Full support for the extension of both centres was given.

ii. Reports

- Each year, the completed report is submitted to the National Commission for UNESCO in Vietnam and to UNESCO's International Basic Sciences Program (IBSP).

- At the end of each year, the Centre participates in and reports at the annual review meeting of VAST and of the Ministry of Science and Technology.

- In November 2023, the Centre attended and delivered speeches at the UNESCO General Conference in Paris, followed by discussions with members of the Centre's Governing Board.

- On May 3, 2024: The International Executive Board of ICRTM and ICP, with the participation of international and Vietnamese members, including representatives from the Ministry of Science and Technology of the Vietnam Academy of Science and Technology, the UNESCO Committee in Vietnam, and the UNESCO Office in Hanoi. The meeting evaluated the excellent performance of both centres during the past period and approved and fully supported the extension of both centres.

- On May 10, 2024: Meeting regarding the extension of the two centres, attended by Deputy Minister of the Ministry of Science and Technology, Vice President of the Vietnam Academy of Science and Technology, Secretary-General of the UNESCO Committee in Vietnam, and representatives from various departments. The meeting acknowledged the outstanding completion of tasks by both centres and emphasized the need to enhance and expand their activities. Full support was given for the extension of both centres.

- From May 15-17, 2024, representatives from the Governing Board and two Centres attended the "International Symposium of Category 2 Centres under the Auspices of UNESCO in the Field of Natural Sciences" organized by UNESCO in Malaysia. The symposium provided an opportunity for leaders of Category 2 Centres to report to UNESCO on their activities, exchange information, and build collaborations. The Director of the Mathematics Centre delivered a speech at the symposium and participated in the Roundtable "Session 6: The Role of Basic Sciences in Advancing Emerging Technologies and Breakthrough Innovations." Additionally, the director of the centre presented about the Centre to the Deputy Director-General of UNESCO, the Minister of Education, and the Minister of Science, Technology, and Innovation of Malaysia, discussing the Centre and the opportunities for cooperation between the centres of the two countries.

- October 12-25, 2024: The Director of the Centre participated in the 220th session of the UNESCO Executive Board. During this session, the Director of the Centre, along with representatives from the Ministry of Science and Technology of Vietnam, met with Mr. Shaofeng Hu, Director (D-1) of the Science Policy and Capacity Building Section in the Natural Sciences field, and the representative of IBSP to discuss the extension and development plans for the Centre.

- On September 10, 2024, the International Centre of Research and Postgraduate Training in Mathematics hosted Mrs. Lidia Brito, Assistant Director-General for Natural Sciences at UNESCO.

- On November 29–30, 2024, the Centre, in cooperation with the Institute of Mathematics, VAST, and ICTP, organized the 60th Anniversary Celebration of ICTP, with the participation of the Director of ICTP, VAST leaders, ministry representatives, and experts and scientists from various research institutes and universities.

III.CONTRIBUTION TO SPREADING THE SPIRIT OF UNESCO

1. Contribution to the 17 Sustainable Development Goals (SDGs) and other international development agendas

- The centre has organized over 20 major events, attracting about 2000 direct participants, over 300,000 online views, and coverage in 100 articles and television broadcasts. Reputable scientists, cultural researchers, historians, and artists have contributed to various workshops, conferences, and public lectures aimed at raising awareness in the community about the 17 Sustainable Development Goals (SDGs). Each event deeply explores a specific theme, focusing on:

- Quality education
- Gender equality
- Climate change adaptation
- Knowledge dissemination
- Access to clean energy

- Environmental Science and Technology Day, in collaboration with the International Centre of Physics and the UNESCO Biosphere Centre Vietnam, May 18, 2021.

- Vietnam Book Day, April 20, 2021: Connecting scientific and technological fields with social sciences and humanities.

- Exhibition “Agent Orange Disaster – 60 Years Later”, July-August 2021, Military History Museum, Hanoi co-organized with the Chemical Corps – Ministry of National Defense and Vingroup Innovation Foundation resentating of mathematical models. More than 20 news articles and reports.

- Cooperation with the French Embassy to organize the Sustainable Cities Program: a series of public lectures on Sustainable Cities in November 2021, June 2022, and December 2022.

- Open Science Day: In cooperation with the Ministry of Science and Technology, the Ministry of Information and Communications, the International Centre of Physics, the conference titled "OPEN SCIENCE - From Different Perspectives" was organized on May 18, 2023.

- UNESCO's Sustainable Development Goals Day - August 24, 2023: With the participation of international and Vietnamese scientists, cultural and social experts, leaders of several agencies under the Ministry of Science and Technology and research institutes, as well as leaders of some businesses, on August 24, 2023.

- Participation in the Seminar "20 Years of Protecting Intangible Cultural Heritage in Vietnam: From UNESCO to the Community" (12/2023) - Through this, cooperation was exchanged with the Head of the Vietnamese Delegation to UNESCO, scientists, and managers from the Vietnam Heritage Association regarding future cooperation on several UNESCO programs.

- On May 10, 2024: The Science and Technology Day "Cooperation and Development between Centres and UNESCO's Natural Science Programs" organized by the two centres, with the participation of Deputy Minister of the Ministry of Science and Technology Tran Hong Thai, Vice President of the Vietnam Academy of Science and Technology Chu Hoang Ha, Secretary-General of the UNESCO Committee in Vietnam Le Thi Hong Van, along with many directors of centres and UNESCO programs. Deputy

Minister Tran Hong Thai commented: "The establishment of the two centres has been a correct direction contributing to the achievements of the science and technology sector over the past 65 years."

- March 13, 2025: International Mathematics Day: "Mathematics, Art, and Creativity". Mathematics will be explored through two public lectures and a roundtable discussion, featuring speakers and mathematicians alongside physicists and social scientists, offering diverse perspectives.

2. Incorporate gender considerations in education, sustainable development, and policy-making

- Female researchers or trainees are always encouraged at the Centre.
- Gender equality factors have been considered in the centre's regulations, such as prioritizing age for women in some young scientific topics.
- Writing articles on gender equality and gender equity in Vnexpress newspaper.
- Attending the "Opening meeting of Asian-Pacific Women in Mathematics (AOWM), 2023".
- Invited speaker at the Workshop on Gender Equality organized by the French Embassy to commemorate 50 years of France-Vietnam relations. March 8, 2023.
- Guest speaker at the panel discussion "International Women's Day - Dialogue among inspiring women", organized by the French Institute in Vietnam in Ho Chi Minh City. March 8, 2024.
- Successfully proposed with the Vietnam Mathematical Society to implement special regulations for women, such as granting 30 scholarships to female mathematics lecturers to attend the 10th National Mathematics Conference in August 2024.

	Category	Number (estimate)
Beneficiaries (disaggregated by sex)	1. Projects for outstanding research	Male: 12
	2. Projects for PhD students	Female students: 9 Male students: 4
	3. Projects for Postdoctoral researchers	Female researchers: 3 Male researchers: 8
	4. Projects for young students in mathematics	Female students: 4 Male students: 15

IV. CHALLENGES AND LESSONS

1. The main challenges faced in implementation and how they were addressed

- To overcome the challenges during the early years of the pandemic, the Centre organized online courses and workshops. This also opened up opportunities for a combination of in-person and online activities, attracting a larger audience.

- There aren't many categories 2 centres operating strongly worldwide, especially during the COVID pandemic. To overcome this, we plan to visit and participate in exchanges with other centres more often to promote collaborations.

2. Lessons learned

- The Ministry of Science and Technology and the Vietnam Academy of Science and Technology have always shown interest in and supported the Centre. The Ministry of Science and Technology has promptly and significantly focused on developing proposals for the Prime Minister's approval of the Centre's operational plan. It can be said that the provisions in the proposal and plan have been flexible to enable the Centre to operate substantially and effectively.

- Based on the approved operational plan by the Prime Minister, the Centre has established regulations regarding research topics for doctoral training, topics for training master's talents, and notably topics for outstanding young scientists' post-doctoral research. This is also a way to provide opportunities for outstanding young talents to study and conduct research.

- The scientific and technological revolution has demonstrated the necessity of applied mathematics. The Centre has actively introduced mathematics and its applications to young science and technology enthusiasts. Additionally, the Centre is gradually establishing collaborations to develop applied mathematics.

V. FUTURE PLANS AND DEVELOPMENT PROSPECTS OF THE CENTRE

The centre will leverage the achievements already made while supplementing additional activities to further excel in the contents outlined in the approved Activity Plan by the Prime Minister:

- Continuously leverage the successes achieved in supporting scientific research and excellent training, **supplementing the Topic-based Project Program with reputable scientists from Vietnam and around the world collaborating for 2 - 6 months (following the tradition of major scientific centres worldwide).**

- Continue to build on the successes achieved in training activities. In collaboration with the University of Science and Technology Hanoi (USTH), develop an international Master's program in Mathematics. Partner with the International Centre for Theoretical Physics (ICTP) in the training of Master's students, PhD candidates, and interns.

- Continuously strengthen international cooperation activities, especially through diplomatic representatives, international organizations in Vietnam. **Supplement the co- organization and visits to other Category 2 research centres in the region and worldwide.**

- Actively promote scientific outreach activities: scientific events, public lectures reaching out to scientists, students, and pupils; particularly disseminate UNESCO's 17 Sustainable Development Goals, **supplementing topics on digital transformation, ethics in artificial intelligence.**

- Support activities connecting mathematics with other fields of science, technology, social sciences, and humanities: support the development of applied mathematics models in disease prevention, environment, agriculture. **Supplement additional cooperation activities with other UNESCO programs in Vietnam.**

- Contribute opinions to policymakers on mathematics-related issues, applied mathematics (when requested). **Actively participate in activities proposed by the Ministry of Science and Technology, the Vietnam Academy of Science and Technology, and the UNESCO Committee.**

VI.CONCLUSION AND PROPOSAL

- The Centre has completed all 7 tasks according to Decision No. 701/QD-TTg. and has closely followed the objectives outlined in the Agreement between the Government of Vietnam and UNESCO. Among these, the most prominent tasks include scientific development (evidenced by 82 publications in reputable journals and strong research groups), the mission of providing internationally accredited mathematics training with significant support for students both domestically and internationally to participate in international schools, and the dissemination of UNESCO's principles. In the upcoming period, the Centre will continue to leverage these strengths and further enhance international cooperation as well as exchanges with other category 2 centres.