

# Promotion of Physics in Asia Pacific toward sustainable development





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President of the Association of Asia Pacific Physical Societies







Trans-Scale Quantum Science Institute



## Association of Asia Pacific Physical Societies

Established in 1990 on occasion of 4<sup>th</sup> Asia Pacific Physics Conference (APPC) in Seoul, Korea.

It is aimed at being one of the three major physics association in the world, comparable to American Physical Society (APS) and European Physical Society (EPS).----a dream...

First President : C.N. Yang Vice President : Michiji Konuma(2<sup>nd</sup> President)





## Mongolia •

Kazakhstan Beijing Korea Uzbekistan India Nepal Taipei Pakistan Vietnam Lao PDR Hong Kong Thailand Philippines

> Malaysia Singapore Indonesia (*cf* IUPAP has 60 members) No individual members





Australia

New Zealand

## Mongolia

Kazakhstan Beijing Korea Uzbekistan India Nepal Taipei Pakistan Vietnam Lao PDR Hong Kong Thailand Philippines

> Malaysia Singapore Indonesia (*cf* IUPAP has 60 members) No individual members





Australia

New Zealand

Australia Australian Institute of Physics <u>http://www.aip.org.au/</u>

The Chinese Physical Society, Beijing http://www.cps-net.org.cn/

The Physical Society of Hong Kong https://www.pshk.org.hk/

18 member 7 societies at the time of the previous council election in 2020 Beijing

Hong Kong

Indian Physics Association <u>http://www.tifr.res.in/~ipa1970/</u> India Indonessia Indonesian Physical Society http://hfi.fisika.net/ Japan The Physical Society of Japan http://www.jps.or.jp/english/ The Japan Society of Applied Physics <u>http://www.jsap.or.jp/english</u> Japan Kazakhstan Kazakh Physical Society <u>http://kazps.kz/index.php?page=home</u> Korea The Korean Physical Society <u>http://www.kps.or.kr/home/kor/</u> **Malaysia** Malaysian Institute of Physics <u>http://ifm.org.my/</u> Mongolia Mongolian Physical Society Nepal Nepal Physical Society http://www.nps.org.np/ New Zealand New Zealand Institute of Physics <u>http://nzip.org.nz/</u> Philippines Physics Society of the Philippines <u>www.spp-online.org</u> Singapore Institute of Physics, Singapore <u>http://ipssingapore.org/</u> Taipei The Physical Society located in Taipei https://www.ps-taiwan.org/ Thailand Thai Physics Society http://www.thaiphysoc.org/ Vietnam Vietnam National Institute of Physics council member

★ These 5 societies provide extra support



Headquarter is hosted by and located in APCTP, Asia Pacific Center for Theoretical Physics, Pohang University of Science and Technology (POSTECH), Pohang, Korea.



## established in 1996 endorsed by AAPPS in 1994

# Main activities of AAPPS

**1** Publication of AAPPS Bulletin 2 Asia Pacific Physics Conference APPC Every three years. The most recent one was held in Borneo in November 2019. 3 Other conferences,ASEPS (ASia-Europe Physics Summit) Cooperation with European Physical Society (EPS) 4 CN Yang award (For young scientists <10yr after PhD) In cooperation with APCTP, it is now annual prize. **5** Division Activities

#### Publication of AAPPS Bulletin 1

## **Bimonthly journal** Editorial office at APCTP

## "Physics Today in Asia Pacific"

## http://aappsbulletin.org/



#### Vol.29 No.3

## Printed version





Vol.30 No.2



Vol.29 No.4



Vol.28 No.6





Vol.30 No.3

























## 1 Publication of AAPPS Bulletin

Since	Deringer	Search $\mathbb Q$ Authors & Editors Log in	
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locat	<u>AAPPS Bulletin is the flagship publication of the Association of Asia Pacific Physical Societies (AAPPS). The journal publishes high-quality cutting-edge research articles, reviews in all areas of physics, which all will be reviewed. In addition, it also publishes research highlights, news and views about AAPPS and its member societies, contributed by members of or authors invited by the members of the editorial board. (Back issues could be found at appsbulletin.org) — show all Editor-in-Chief Gui-Lu Long</u>	For authors Submission guidelines Ethics & disclosures Fees and funding Contact the journal Submit manuscript	
	Publishing model         Open Access. How to publish with us         43 days       17,730 (2021)         Submission to first decision (Median)       Downloads         Latest issue       Volume 32         Issue 1, December 2022       View all volumes and issues >	Explore         Volumes and issues         Sign up for alerts         Advertisement         Submit your research via Gold OA today.         Willetin         Wartisement         Submit your research via Gold OA today.         Wartisement         Submit your research via Gold OA today.         Submit your submission.         Submit your manuscript         Springer         Springer.com	

## 1 Publication of AAPPS Bulletin

Since 2021, it has been published through Springer-Nature with the financial support of APCTP, and printed version with the support from 4 member societies (The Chinese physical society, Beijing, Physical society of Japan, Korean Physical Society, and Physical society located in Taipei).

We are now publishing invited review articles as well as accepting submission of original papers. All articles are open access.

The editor-in-chief is trying hard to make it a high-impact-factor journal, but Japanese member societies do not like the idea...

## 2 Asia Pacific Physics Conference General Assembly of AAPPS covering all fields of physics. It has a longer history than AAPPS itself, as the establishment of AAPPS was discussed during APPC1-3 and realized with APPC4.



## $2\,{\rm Asia}$ Pacific Physics Conference

General Assembly of AAPPS covering all fields of physics. APPC14 was held in Borneo in November 2019, where the three divisions organized sessions on Plasma Physics, Astrophysics, and Nuclear Physics with a great success.

400 plasma physicists attended APPC12 in Japan in 2013 occupying 1/3 of total participants of 1200, which led formation of Division of Plasma Physics.



We were planning to organize APPC15 in Gyeongju, a historic city in Korea this summer...

**APPC**15

The 15<sup>th</sup> Asia Pacific

Physics Conference

August 21-26, 2022

Organized by Association of Asia Pacific Physical Societies and Korean Physical Society

We had to make it fully online event due to Covid-19.

As a part of APPC15, we are planning to organize a meeting "The Role of Physics in the Green Economy" on August 22.

Topics and speakers include

Welcome remarks :Tae Won Noh (President of KPS)Opening & Introduction :Michel Spiro (President of IUPAP)Climate Change :Christian Franzke (Pusan University)Nuclear Fusion :Gyung Su Lee (Former ITER Deputy Director)Accelerator Driven System:Federico Carminati (Transmutex, France)Solar Cells :William Jo (C4 member, IUPAP)Smart Grid :Jürgen Kurths (Potsdam Institute)Panel Discussion :Michel Spiro

Chair of program committee: Young Dong Kim





## 3 AAPPS has been sponsoring a number of regional conferences.

## INTERNATIONAL CONFERENCE ON FRONTIERS OF PHYSICS - 2022 (ICFP - 2022)

#### January 22-24, 2022

#### Kathmandu, Nepal conference in virtual mode



#### **Nepal Physical Society**

Tri-Chandra Multiple Campus Ghantaghar, Kathmandu



#### नेपाल भौतिक विज्ञान समाज Nepal Physical Society

Tri-Chandra Multiple Campus, Ghantaghar, Kathmandu, Nepal

#### **International Conference on Frontier of Physics (ICFP)-2022**

Table of ICFP -2022 Session on-line e-conference

Time zone	22 <sup>nd</sup> January 2022	23 <sup>rd</sup> January 2022	24 <sup>th</sup> January
NST/ UT/ CH/ JP / NY	(Saturday)	(Sunday)	(Monday
8:00/2:15/10:15/11:15/21:15(-1)	8:00 Zoom open	8:00 Zoom open	8:00 Zoom open
9:00//3:15/11:15/12:15/22:15(-1)	Opening Session (9:00-10:30) (Chair:) Chief Guest Special Guests	Plenary-3 8:30-10:30 (D. Poudel, D. Adhikari, N. Adhikari) PL-7 Michael Flatte (Saturday 20:45 of IW) PL8 Jun'ichi Yokoyama (12:25 of JP) PL9 Hyoung Joon Choi (13:05of KR)	Plenary-5 8:30-10:3 Chair (B. Aryal, H. 1 Nilam Shrestha) PL-12 Jason Jackiew: 19:45 of NM) PL-13 Bishal N. Upre PL-14 Anisa Qamar (
10:30/4:45/12:45/13:45/23:45(-1)	15 min break	15 min break	15 min break
10:45/5:00/13:00/13:45/24:00(-1)	Plenary-1. 10:45-12:45 (N. Chapagain, R. Khanal, L. Pradhan) PL-1 Bruce Tsurutani (Friday 21:00 of CA) PL-2 Kazuo Shiokawa (14:40 of JP) PL-3 Christine-Amory (7:20 AM of FR)	Topical Session-2 10:45- 12:45 Invited -2 (S. P. Byahut, P. K. Bhattrai) Inv4 Binil Aryal. Inv5 A. Taori, Contributed -2 Chair (S. P. Shrestha, L. N. Mishra) AASP7. P. B. Adhikari AASP8. Jeevan Regmi AASP9. Daya N. Chhatkuli	Topical Session-5 12:45 Invited-4 Chair (A. Panthi, D. Inv&Dibakar Sigdel Inv9 Bhawani Datt Jc Contributed -5 Chair (B. Bhattrai, , Regmi) AASP12 Prakash M. AASP13 Usha Joshi CMCP2 Nagaiah Kat
12:45/7:00/15:00/16:00/2:00	12:45-13:30 Break	10 REDUCED INEQUALITIES	4 QUALITY EDUCATION
13:30/7:45/15:45/16:45/2:45	Plenary-2. 13:30-15:30 (U. R. Khanal, B. Pokhare, N. Shrestha) PL-4 Fernando Quevedo (7:45 of UK) PL-5 Gui-Lu Long (16:30 of CH) PL-6 S. N. Pandey (14:25 of IN)		

3 AAPPS has been sponsoring a number of regional conferences.

# Siam Physics Congress 2022 "Carbon Neutrality"

## 22 - 24 June 2022

**AFFORDABLE AND** 

**CLEAN ENERGY** 

Khao Yai Convention Center (KYCC) Nakhon Ratchasima, Thailand

3 CLIMATE ACTION

**Plenary speakers** 



Prof. Hiroshi Segawa The University of Tokyo, Japan



Prof. Manabu Ihara Tokyo Institute of Technology Tokyo, Japan



## 3 ASEPS (ASia-Europe Physics Summit)

European Physical Society has a similar structure as an association of physical society, although it also has individual members (from those countries which has no regional society).

ASEPS is a joint symposium between AAPPS and EPS.



## ASEPS (ASia-Europe Physics Summit)

At the third ASEPS in Chiba, Japan, both presidents signed Chiba statement. The next one was planned in 2020 in association with EPS' divisional conference of condensed matter physics, but it was suspended due to Covid-19. We hope to resume it soon as a face-to-face conference.

# and and the set of the

AAPPS president Nagamiya and EPS president Dudley signed Chiba statement



#### Sign Chiba Statement

## **5** Divisional activities

i) Division of Plasma Physics

The first AAPPS Division established after the success of APPC12



Annual meetings 2017成都 Chengdu 2018金沢 Kanazawa 2019合肥 Hefei 2020 Online 2021 Online 2022 Online (October)

Publishing a review journal entitled "Reviews of Modern Plasma Physics" from Springer.

It has a legal personality in Japan.

## **Regional Distribution of AAPPS-DPP2021 participants**

2021. 09.26-2021.10.01 online conference: Total = 1,109



Online conferences make the world borderless! While we certainly miss the real face-to-face meetings, these online conferences open a way to sustainable development.

#### They are publishing their own review journal entitled "Reviews of Modern Plasma Physics" with Springer.

Deringer

Search Q Authors & Editors Log in



## ii) Division of Astrophysics, Cosmology, and Gravitation, DACG

It was established by the organizers of three regional meetings, CosPA, ICGC, AP-School on Gravitation and Cosmology. CosPA(=International workshop on cosmology and particle astrophysics) is playing a role of its annual meeting, but this year, it was suspended, and they are going to hold an online annual meeting instead.

#### Division of Astrophysics, Cosmology and Gravitation,

ssociation of Asia Pacific hysical Societies

Welcome to Division of Astrophysics, Cosmology and Gravitation, Association of Asia Pacific Physical Societies.

Home

History

Committee

Rule of DACG



The Association was founded in 1990 at Seoul, Korea when the Fourth Asia Pacific Physics Conference was held. Since then the series of the Asia Pacific Physics Conference (APPC) has been the Conference organized by the AAPPS. The next conference will be held in Kuching, Malavsia in November 2019.

TheAAPPS Bulletin is the official publication of the Association, and carries both news items and review articles. Its online version is available from here.

Currently AAPPS has three divisions, namely, DPP (plasma physics), DACG, and DNP (nuclear physics). About DACG Chair: San Pyo Kim (Kunsan U) Secretary General: Bogeun Gwak



iii) Division of Nuclear Physics, DNP
 ANPhA(Asian Nuclear Physics Association)
 as a whole is playing the role of AAPPS-DNP.
 ANPhA itself has a longer history since 2009.



Endorsing a number of conferences and awards

-To strengthen "Collaboration" among Asian nuclear research scientists through the promotion of nuclear physics and its transdisciplinary and applications To promote "Education" in Asian nuclear science through mutual exchange and coordination -To coordinate among Asian nuclear scientists by actively utilizing existing research facilities -To discuss future planning of nuclear science facilities and instrumentation in Asia.





They are conducting important activities in Myanmar, to which I will return later.

## iv) Division of Condensed Matter Physics, DCMP



## **AAPPS-Division of Condensed Matter Physics**

Networking the Asia-Oceania physics communities



## Prof. Je-Geun Park Chair of DCMP



Prof. Hiroyuki Nojiri Vice-Chair of DCMP



Prof. S M Yusuf Vice-Chair of DCMP

Exco members from Beijing, India, Japan, Korea and Taipei



# DICATE Division of Condensed Matter Physics Association of Asia Pacific Physical Societies

# Dec.1-3, 2021 Online

Asia-Pacific Conference on Condensed Matter Physics 2021

covers all fields of condensed matter physics.

NB. At Physical Society of Japan, condensed matter physics is divided into 10 different divisions.

## EPS has 12 divisions.

Our divisions have mutual agreements with corresponding division of EPS (and APS, for DPP.)

#### Divisions

Atomic, Molecular and Optical Physics Division see related sections Condensed Matter Division see related sections Physics Education Division

Environmental Physics Division Gravitational Physics Division High Energy & Particle Physics Division Nuclear Physics Division

Division of Physics in Life Sciences Plasma Physics Division see related sections Quantum Electronics & Optics Division

European Solar Physics Division Statistical & Nonlinear Physics Division

#### Groups

Accelerator Group Computational Physics Group Energy Group History of Physics Group Physics for Development Group Technology and Innovation Group

Division of Particles and Fields is under preparation. Division of Computational Physics is under discussion. AAPPS divisions are rapidly increasing. We have not reached a stationary state yet.

## AAPPS Women In Physics Group activities

AAPPS

Home Message from Chair Working Group Members Activities Activities of Member Societies

Contacts Links



Welcome to the AAPPS Working Group on Women In Physics Home Page!

Actually, in some countries there are far more female physicists, than male.

> Malaysia 65% Myanmar 95%













## Our problems: Huge diversity

Name	Established in	Number of regular members	Total number of members	Regular annual membership fee in Euro	Annual number of presentations at the meetings	Number of Divisions
Physical Society of Japan	1877	16442	20366	89	8500	19
Chinese Physical Society, Beijing	1932	6150	6442	15	1400	31
Japan Society of Applied Physics	1946	14681	20254	74	8000	11
Korean Physical Society	1952	3695	7431	37	2040	11
Physical Society located in Taipei	1958	524	1993	17	1050	4
Australian Institute of Physics	1963	447	1809	133	450	7
Physical Society of Hong Kong	1966	150	400	?	110	0
Vietnam Physical Society	1966	1200	1260	4	a few times	8
Indian Physics Association	1971	4020	4040	38(Lifetime)	once	44
Institute of Physics Singapore	1972	120	200	?	190	0
Physical Society of Indonesia	1973	1424	1424	6	140	10
Institute of Physics Malaysia	1973	369	443	6	120	5
Physics Society of Phillipins	1979	102	606	8	168	0
Nepal Physical Society	1982	680	2687	15(Lifetime)	62	0
Thai Physics Society	1984	448	451	?L	370	0
Mongolian Physical Society						
New Zealand Institute of Physics			1 NO			
Physical Society of Kazakhstan				VERTY		
			<b>Å</b> ¥⁴	d d	ata collec	ted in 2

## Our problems: Huge diversity

Not only diversity in size and financial scale, but also that in the stage of development and decline.

Let me take an example of Japan, in order to consider how the *social* environment affects sustainable development of physics, although I do understand that the scope of this symposium as a part of IYBSSD is to discuss how we may achieve sustainable development of the society preserving the *natural* environment in terms of physics. For we may understand the problem the better if we see it from the opposite side.



## Our problems: Huge diversity

Not only diversity in size and financial scale, but also that in the stage of development and decline.

Japan is the only country whose physical society has a competent history with Western counterparts. It also has a unique society for applied physics (only two in the world!).

Japan is also the only founding member of IUPAP from Asia.

- 1660 Royal Society (UK)
- 1845 Berlin Physical Society (Germany)
  - →Deutsche Physikalische Gesellschaft (DPG)
- 1874 Institute of Physics (UK)
- 1877 Tokyo Mathematical Society (Japan)
- 1884 →Tokyo Mathematical and Physical Society (Japan)
- 1897 Societa Italiana di Fisica (SIF)
- 1899 American Physical Society

**1922 IUPAP** with 13 founding members: Belgium, Canada, Denmark, France, Holland, Japan, Norway, Poland, Spain, Switzerland, United Kingdom, United States of America and the Union of South Africa



1603 Edo period (Feudal era governed by Tokugawa shogunate)

1634-1854 Japan was closed; no international trade nor visitors. It established a closed sustainable economic system.

1660s-70s Japanese Mathematics by Seki Kowa (11 digits calculation of  $\pi$ , determinant, "differential" calculus)

1868 Meiji reformation (modern Japan governed by Meiji emperor) started catching up Western civilization and technology rapidly.1872 Tomioka Silk Mill (World heritage) the largest factory in the world then.







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1868 Meiji reformation (modern Japan governed by Meiji emperor) rapidly started catching up Western civilization and technology.
1872 Tomioka Silk Mill (World heritage) the largest factory in the world then.
1877 Tokyo Mathematical Society
1894-5 First Sino-Japan War
1902 Anglo-Japanese Alliance
1904-5 Russo-Japanese War
1914-18 WWI
1920 Leagues of Nations (France, Italy, UK, Japan: permanent members)
1931 Manchurian Incident (invasion to northern China)
1937- Sino-Japan War
1941- Asia-Pacific War, WWII
1945 End of the Japanese Empire, End of the militaristic Japan

- 1945 Start of the democratic Japan
  - 1946 New constitution prohibiting military action
  - 1950-53 Korean War
  - 1955-73 Rapid economic growth  $\sim 10\%$  annually
  - 1973 Oil shock
  - 1987-91 Bubble economy -
  - 1991-93 Economic bubble burst

2020-21 UK

- 1991- Lost 30+ years
- 1998- Zero-interest rate policy of Bank of Japan (central bank)

2003-4 Switzerland 2014- negative interest rate 2008-15, 20-22 USA 2014- Sweden 2016- EU

Total price of land in Tokyo was

higher than that of entire USA.



## Japan realized stationary economy

(until very recently)



Japan Inflation Index All Items, % from Year Ago

## Japan realized stationary economy



## Japan realized stationary economy

Established an environment-friendly society





## Japan realized stationary but not sustainable economy (I)



## Japan realized stationary but not sustainable economy (I)





Japan realized stationary but not sustainable economy (II)

(出典)総務省「国勢調査」、「人口推計」、国立社会保障·人口問題研究所「日本の将来推計人口(平成29年4月推計)」

These two factors are severely affecting the physics in Japan.

The Japanese physics is now in a declining stage as seen from the number of members of JPS which peaked out around 1996.

Social environments affect sustainable development of physics!



On the other hand, physics in Asia Pacific other than in Japan is rapidly developing in both quantity and quality.





## Ukraine is not the only country facing difficulties: Myanmar (former Burma).

2011 Transition from military rule to democratic government
2015 General election Aung San Suu Kyi won
2021 Coup d'etat Military rule again



Some Japanese members of Division of Nuclear Physics of AAPPS have been supporting Myanmar's physicists (95% female), organizing both lectures and experimental classes in Myanmar and inviting them to Japan for further education, even though Myanmar is not AAPPS member.



supported by



After the Coup, many people joined the Campaign for Civil Disobedience (CDM) to organize strikes and mass protests.

Many university researchers joined it, and were fired. Some of them have been prosecuted. Those who did not join CDM are not free from difficulties, because universities are not supported by the new military rulers. There exists a division between those who

participated in CDM and those who have not.



Our DNP members are organizing online education program for both of them without any discriminations.

Such an education program without any discrimination is very important for sustainable development of our world.



Online seminarData taking & Error analysisData taking & Error analysisfor upgrading Experimental Physics Education (EPE)\$27/February/202210:00 – 11:30 (Myanmar time)1. Education of Data taking for students\* How to read calipar and micrometer\* How to record data2. Error analysis\* Direct measurement\* Indirect measurement\* Least squere fitting13:00 – 16:30 (Myanmar time)

3. Practices

## **Concluding Remarks**

Asia-Pacific region is experiencing rapid changes overall, and physics there is developing both in quantity and quality (except for Japan maybe).

Japan realized a stationary economy in the recent 30 years but not in a sustainable manner (unlike in Edo-period for 200 years), which is severely affecting the sustainable development of physics.

AAPPS is also growing; the numbers of members and divisions are increasing toward one of the three poles of the world physics.

Divisions and discriminations must be overcome to achieve sustainable development.