

Report on AAPPS-DPP 2020

2021.01.20

Mitsuru Kikuchi, AAPPS-DPP CEO

1. 4th DPP Annual Conference

Division of plasma physics (DPP) annually holding Asia-Pacific conference on Plasma Physics. The fourth annual conference (AAPPS-DPP2020) was held as remote online e-conference using Zoom system from October 26-31, 2020. Figure 1 shows Opening session speakers of AAPPS-DPP2020.



Figure 1 Opening session speakers of AAPPS-DPP2020

Table 1 Distribution of presentations

	Plenary	Top. Pl	Invited	Oral	Poster	Total
Host	1	-	-	-	-	1
AAPPS(CondM)	1	-	-	-	-	1
Chandra/PIP/Daw	3	-	-	-	-	3
CrossDisciplinary	4	-	23	7	0	34
Fundamental	4	-	47	11	2	64
Basic	4	5	33	12	10	64
Applied	4	4	33	3	6	50
Laser plasma	5	9	48	14	5	81
Space/Geomag	4	4	29	3	5	45
Solar/Astro	4	5	26	19	1	55
Magnetic Fusion	5	9	89	27	18	148
Poster P. select	1	-	-	-	-	1
Total	40	36	328	96	47	547

Table 1 shows distribution of 547 presentations among plenary, topical plenary, invited, oral, and poster for various sub-disciplines. AAPPS-DPP2020 consists of 40 plenary talks, 36 topical plenary talks, 328 invited talks, 96 oral talks, and 47 poster presentations. Cross-disciplinary session focussed on magnetic reconnection led by Yasushi Ono having 34 talks. Fundamental session is fundamental discipline common to all plasma physics area and had joint session with magnetic fusion plasma led by Patrick Diamond and Taik-Soo Hahm having 64 presentations. Basic session discussed methods (computation and diagnostics) common to all plasma physics as well as small scale plasma research and dusty/quantum plasmas led by R. Ganesh having 64

presentations. Applied session discussed applied plasma physics such as semi-conductor, medicine, agriculture, etc led by Wonho Choe having 50 presentations. Laser plasma session discussed Laser-plasma interaction, Laser fusion, wake-field acceleration led by Yutong Li having 81 presentations. Space / Geomagnetism session discussed mostly space plasma physics and magnetic reconnection on space plasma led by Tohru Hada having 45 presentations. Solar/Astro session discussed solar plasma physics and astro plasma physics led by Peng Fei Chen having 55 presentations. Magnetic Fusion session is the largest session having two parallel sessions (divided into core and edge) led by Min Xu, SiWoo Yoon, Kazunobu Nagasaki, Liang Wang having 148 presentations. Among them, 2020 S. Chandrasekhar lecture is given by Hyeon Park on ECE imaging diagnostics and 2020 plasma innovation lecture is given by Massaru Hori on plasma etching and medicine. We also celebrated 6 U40 winners and 7 U30 winners to give oral talks.

Table 2 Regional distribution of participants

Region	No	Female	Speaker	Region	No	Female	Speaker
Beijing	239	49	154	Malaysia	4	2	0
Japan	175	10	98	Sweden	4	0	2
Korea	129	7	51	Netherland	3	1	2
USA	98	9	65	Kazakhstan	2	0	1
India	86	20	63	Spain	2	0	1
France*	41	9	26	Czech	2	0	1
Germany	36	5	24	Philippines	1	0	1
Australia	31	7	14	Singapore	1	0	1
Italy	16	4	9	Thailand	1	0	0
Taipei	12	1	6	Nepal	1	0	0
England	11	1	6	Pakistan	1	0	1
Belgium	11	2	6	Israel	1	0	1
Swiss	8	0	4	Norway	1	0	1
Russia	7	2	4	Ireland	1	0	1
Austria	5	2	4	Total	930	131	547

* France include ITER organization

Table 2 shows distribution of region/countries and gender balance. This conference was 1st e-conference held by AAPPS-DPP due to COVID-19 pandemic. Nonetheless, conference was great success to have 930 participants all over the world. We have regional distribution of Beijing(239), Japan(175), Korea(129), USA (98), India(86), France(41), Germany(36), Australia(31), Italy(16), Taipei(12), England(11), Belgium(11), Swiss(8), Russia(7), etc.

Report to AAPPS-DPP BoD 2021.01.20



While participation from APS (98) and EPS(149) are significant, we need more efforts to attract participants from ASEAN region.

As for the gender balance, we had 131 female participants among 930 total. Many female researchers joined from China and India, especially. There are number of congratulatory messages from participants on this great success of remote online conference.

2. AAPPS-DPP S. Chandrasekhar Prize

DPP select S. Chandrasekhar Prize annually to recognize outstanding contributions to plasma physics since 2014. Chandrasekhar prize selection committee chaired by TH Watanabe selected 2020 laureate is Prof. Hyeon K. Park (UNIST). Especially on this development of ECE imaging diagnostics to uncover rich phenomena in Tokamaks. This year's sponsor is Dawonsys Co. Ltd. Medal is sponsored by IPR/PSSI.

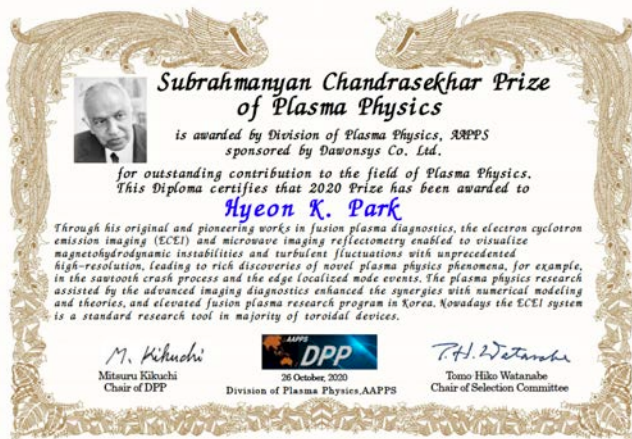


Fig.1 2020 Chandrasekhar prize certificate and cash prize ceremony from Dawonsys president

3. AAPPS-DPP Plasma Innovation Prize

Year 2020 is second year of “AAPPS-DPP Plasma Innovation Prize” to recognize outstanding contributions to experimental and / or theoretical research in all fields of plasma applications, focusing on impacts on industry.

Plasma Innovation Prize selection committee chaired by R. Rawat selected 2020 laureate is Prof. Masaru Hori (Nagoya University) especially for his inventions such as plasma activated medium in plasma medicine.



Fig.2 2020 Plasma Innovation prize certificate, laureate online photo and Medal

4. AAPPS-DPP Young Research (U40) Award

DPP is recognizing annually young talented plasma researchers not more than 40 years old since 2016 as AAPPS-DPP Young Research Award (U40). U40 selection committee chaired by D. Escande selected 6 young talents; Jiansen He (Space, Peking U.), Su-Ming Weng (Laser, Shanghai Jiao Tong U.), Atsushi Ito (Basic, National Institute for Fusion science), Minjun Choi (Fundamental, Korean Institute of Fusion Energy), Liang Wang (Magnetic Fusion, Institute of Plasma Physics, CAS), Yutaka Ohira (Solar/Astro, U. Tokyo) as U40 winners at DPP2020. Winners received cash prize 500USD, plates and certificate. Dr. Minjun Choi is 1st winner from Korea. Their citations can be seen at <http://aapsdpp.org/AAPPSDPPF/youngawardtable.html>.

Report to AAPPS-DPP BoD 2021.01.20

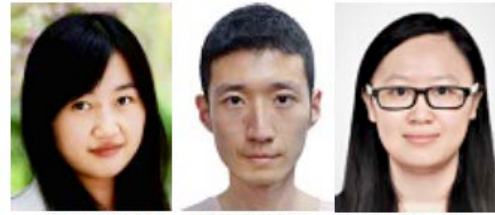
Photos of winners, a certificate and plate to Jiansen He are shown in Fig.3.



Jiansen He Su-ming Weng Atsushi Ito



Minjun Choi Liang Wang Yutaka Ohira



Tingyu Gou Zheng Gong Yuxue Zhang



Xing-Long Zhu Po-Cheng Lin Prasun Dhang Guoliang Xiao



Figure 4 AAPPS-DPP U30 Awardees and a certificate (Tingyu Gou)



Figure 3 2020 AAPPS-DPP Young Research Awardees and certificate and plate (Jiansen He)

5. U30 Scientist and Student Award

DPP is recognizing young talented doctoral scientists/students not more than 30 years old since 2018 as AAPPS-DPP U30 Doctoral Scientist / Student Award. This award is sponsored by IFE-Forum. 2020 U30 award selection committee chaired by K. Mima selected 2020 Winners are Tingyu Gou (SA, USTC), Zheng Gong (Laser, Peking U.), Yuxue Zhang (Laser, Peking U.), Xing-Long Zhu (Laser, SJTU), Po-Cheng Liu (Basic, NCU), Prasun Dhang (SA, Tsinghua U.), Guoliang Xiao (Magnetic Fusion, SWIP) (Figure 4). Winners received cash prize 300USD, plate, and certificate. Their citation can be seen at <http://aappsdp.org/AAPPSDPPF/U30awardtable.html>

6. AAPPS-DPP2020 Poster Prize

DPP is recognizing significant poster presentation at the annual conference as AAPPS-DPP Poster Prize since 2018 for both students and young/senior researchers. Among 45 poster presentations, 11 posters (N. Imagawa, G. Yu, P. Adulsiriswad, C.W. Domier, M.S. Hussain, J.X. Ji, W. Tan, H. Miura, S. Barman, S.S. Mishra, D. Behmani) were selected by the selection committee chaired by Abhijit Sen. Poster selection and their abstracts are published in AAPPS Bulletin December issue. Winners received certificate and a gift (Springer book on plasma physics) <http://aappsdp.org/AAPPSDPPF/posteraward.html>.

The poster session has been done for full week and large number of participants visited poster Web site during the conference, especially poster prize selection committee members (A. Sen (Chair), ZM Sheng, SSH Chen, S. Sengupta, H. Shiraga, V. Tikhonchuk, T. Murphy, R. Hatakeyam, C. Chang, H. Akatsuka, K. Takahashi, A. Misra, D. Verma, M. Hoshino, G. Lakhina, S. Liu, R. Matsumoto, C. Chhabtree, P. Mantica, H. Jhang, G. Zhuang, T. Hoang, J. Dong, M. Hole, K. Ida). Number of posters are smaller while we encouraging more discussion in poster session.



7. Membership Status

AAPPs-DPP started from 92 founding members in 2014. As of Oct 30, 2020, DPP has 2011 members all over the world. It took 6 years for members to reach two thousands. While it might be difficult to attract all plasma physicists in Asia-Pacific region, there is huge opportunity to increase membership from China, Japan, Korea as well as ASEAN region. Members of BoD have to take a leadership in encouraging membership registration.

Table 3 Member distribution

Country/Region	'14.7.24	'19.6.4	'20.10.30
1. India	856	782	793
2. Beijing	110	371	440
3. Japan	97	278	308
4. Korea	36	106	123
5. US	11	51	70
6. Australia	30	45	48
7. Taipei	21	30	35
8. Nepal	1	26	26
9. France	1	17	25
10. Thailand	14	18	18
11. Pakistan	0	13	13
12. Germany	0	10	13
13. Malaysia	2	12	12
14. UK	0	9	12
15. Italy	0	9	11
16. Philippines	6	8	9
17. Belgium	0	2	9
18. Indonesia	0	8	8
19. Iran	0	5	5
20. Vietnam	0	4	4
21. Singapore	4	4	4
22. Russia	0	2	6
23. Bangladesh	0	3	3
24. Netherland	0	3	3
25. Lao PDR	0	2	2
26. Austria	0	0	2
27. Canada	0	1	1
28. Czech	0	1	1
29. Egypt	0	1	1
30. Ireland	0	1	1
31. Israel	0	1	1
32. Myanmar	0	1	1
33. Norway	0	0	1
34. Spain	0	0	1
35. Switzerland	0	1	1
Total	1,212	1,825	2,011

*: Beijing includes Hong Kong

8. Status of RMPP Journal

RMPP is review journal specialized to plasma physics. The first volume (2017) published 10 articles. The second volume (2018) published 9 articles and third volume (2019) published 15 articles, 4th volume (2020) published 12 articles.

Springer Tokyo told me RMPP must increase number of published papers in each volume by at least factor of two to proceed to get impact factor. Stronger invitations from DPP annual conferences are in progress.

Table 4 RMPP publication list

Authors	Title
Reviews of Modern Plasma Physics Volume 1 https://link.springer.com/journal/41614/1/1	
G. K. Park, et al	Shocks in collisionless plasmas
P. Kaw	Nonlinear laser-plasma interactions [Chandrasekhar Lecture]
H. Tanaka, et al.	State of the art in medical applications using non-thermal atmospheric pressure plasma
P. H. Yoon	Kinetic instabilities in the solar wind driven by temperature anisotropies
D. B. Melrose	Coherent emission mechanisms in astrophysical plasmas [Chandrasekhar Lecture]
S. Ichimaru	Phase transitions, interparticle correlations, and elementary processes in dense plasmas [Chandrasekhar Lecture]
R. Hatakeyama	Nanocarbon materials fabricated using plasmas
A. Sen	Obituary: Predhiman Krishan Kaw
H. Sugama	Modern gyrokinetic formulation of collisional and turbulent transport in toroidally rotating plasmas
Q. Zong et al.	The interaction of ultra-low-frequency pc3-5 waves with charged particles in Earth's magnetosphere
Reviews of Modern Plasma Physics Volume 2 https://link.springer.com/journal/41614/2/1	
A. Hillier	The magnetic Rayleigh–Taylor instability in solar prominences
A.E. Dubinov, et al	Above the weak nonlinearity: super-nonlinear waves in astrophysical and laboratory plasmas
J. Li, et al	Summary of magnetic fusion plasma physics in 1st AAPPs-DPP meeting
O. Baranov, et al	Towards universal plasma-enabled platform for the advanced nanofabrication: plasma physics level approach
P.F. Chen, et al.	Recent progress in Asia-Pacific solar physics and astrophysics
A. Sen	Summary of basic plasma physics sessions at the first Asia Pacific Plasma Conference, 2017
D. Moseev, et al.	Recent progress in fast-ion diagnostics for magnetically confined plasmas
Z.M. Sheng	Summary of laser plasma physics sessions at the first AAPPs-DPP conference
D.F. Escande et al	Basic microscopic plasma physics from N-body mechanics - A tribute to Pierre-Simon de Laplace
Reviews of Modern Plasma Physics Volume 3 https://link.springer.com/journal/41614/3/1	
Y. Todo	Introduction to the interaction between energetic particles and Alfvén eigenmodes in toroidal plasmas
S. Fujita	Response of the magnetosphere-ionosphere system to sudden changes in solar wind dynamic pressure
K. Takahashi	Helicon-type radiofrequency plasma thrusters and magnetic plasma nozzles
M. Xu et al	Summary of the fundamental plasma physics session in the first AAPPs-DPP conference
Z. Zhang et al	A review of the characterization and optimization of ablative pulsed plasma thrusters
D.R. Lev et al	Recent progress in research and development of hollow cathodes for electric propulsion
O. Baranov, et al	Direct current arc plasma thrusters for space applications: basic physics, design and perspectives
J. Weiland et al	A. Drift wave theory for transport in tokamaks
M.Y. Tanaka	Vortex in plasma
Y. Feng et al	Dynamics and transport of magnetized two-dimensional Yukawa liquids
D. Kalnfeld et al	Numerical modeling of high efficiency multistage plasma thrusters for space applications
F. Taccogna et al	Latest progress in Hall thrusters plasma modelling
G. Manfredi et al	Phase-space modeling of solid-state plasmas
R. Keppens et al	Ideal MHD instabilities for coronal mass ejections: interacting current channels and particle acceleration
Y. Ding et al	Extending service life of hall thrusters: recent progress and future challenges
Reviews of Modern Plasma Physics Volume 4 https://link.springer.com/journal/41614/4/1	
J. Hong et al	Plasma-digital nexus: plasma nanotechnology for the digital manufacturing age
Y. Ebihara et al	Evolution of auroral substorm as viewed from MHD simulations: dynamics, energy transfer and energy conversion
H. Saleem et al	Theoretical models for unstable IAWs and nonlinear structures in the upper ionosphere
F. Sahaoui et al.	Magnetohydrodynamic and kinetic scale turbulence in the near-Earth space plasmas: a (short) biased review
T.G. Blackburn	Radiation reaction in electron-beam interactions with high-intensity lasers
A.E. Dubinov et al.	Research with plasma foci in countries of Asia, Africa, and Latin America
T. Tajima et al.	Wakefield acceleration [Chandrasekhar Lecture]
D.B. Melrose	Quantum kinetic theory for unmagnetized and magnetized plasmas
L.C. Lee	Fluid and kinetic aspects of magnetic reconnection and some related magnetospheric phenomena [Chandrasekhar Lecture]
A. Das	Laser plasma session: AAPPs-DPP Conference, 12–17 Nov 2018, Kanazawa
W. Zhong	Recent progress on turbulence and multi-scale interactions in tokamak plasmas [Special Topics]
G. Ganguri	Behavior of compressed plasmas in magnetic fields