

16th IAEA Technical Meeting on Energetic Particles in Magnetic Confinement Systems - Theory of Plasma Instabilities

Tuesday, 3 September 2019 - Friday, 6 September 2019

**Shizuoka City, Japan
Programme**

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Tuesday 03 September 2019

Registration (3 Sep 2019, 09:15-09:45)

Arrival of participants, distribution of badges, possibility to register and pay for events.

Opening Remarks (3 Sep 2019, 09:45-10:05)

Welcome addresses by the IAEA Scientific Secretary, Host Organization, and International Programme Advisory Committee (IPAC).

-Conveners: Takeiri, Yasuhiko (National Institute for Fusion Science); Barbarino, Matteo (International Atomic Energy Agency)

Plenary: Session 1 - Control of Energetic Particle Confinement (3 Sep 2019, 10:05-11:40)

Plenary sessions collect all contributions invited or accepted by the IPAC for a complete in depth plenary session.

The reserved time slot for invited talks is 35 minutes (25' for presentation and 10' for discussion).

The reserved time slot for oral talks is 25 minutes (18' for presentation and 7' for discussion).

time	[id] title	presenter
10:05	[27] Modification of Alfvén Eigenmode Drive and Nonlinear Saturation Through Variation of Beam Modulation in DIII-D	VAN ZEELAND, Michael (General Atomics)
10:40	[59] Characteristics of fast ions profile with MHD activities and improvement of fast ion confinement with AE suppression by counter-ECCD in LHD	NAGAOKA, Kenichi (National Institute for Fusion Science)
11:15	[62] Efficient generation of energetic D ions with the 3-ion ICRH+NBI synergetic scheme in H-D plasmas on JET-ILW	KAZAKOV, Yevgen (Laboratory for Plasma Physics, LPP-ERM/KMS)

Social: Group Photo (3 Sep 2019, 11:40-12:00)

Lunch (12:00-13:30)

Plenary: Session 2 - Multiscale Physics and Instabilities in Burning Plasmas (3 Sep 2019, 13:30-15:30)

Plenary sessions collect all contributions invited or accepted by the IPAC for a complete in depth plenary session.

The reserved time slot for invited talks is 35 minutes (25' for presentation and 10' for discussion).

The reserved time slot for oral talks is 25 minutes (18' for presentation and 7' for discussion).

time	[id] title	presenter
13:30	[9] Electromagnetic turbulence suppression by energetic particle driven modes	DI SIENA, Alessandro (Max Planck Institute for Plasma Physics)
14:05	[92] Study of shaping effect on ITG/TEM instabilities through full-f gyro-kinetic simulation	WANG, Wei (Rokkasho Fusion Institute. QST, Japan.)

14:40	[3] Excitation of Alfvén Eigenmodes and Formation of ITB during off-axis Sawteeth in EAST	XU, Ming (Institute of Plasma Physics, Chinese Academy of Sciences)
15:05	[72] Magnetic Reconnection during Fast Ion Driven Alfvénic Activity	BIERWAGE, Andreas (National Institutes for Quantum and Radiological Science and Technology)

Coffee Break (15:30-16:00)**Plenary: Session 3 - Collective Phenomena (3 Sep 2019, 16:00-18:00)**

Plenary sessions collect all contributions invited or accepted by the IPAC for a complete in depth plenary session.

The reserved time slot for invited talks is 35 minutes (25' for presentation and 10' for discussion).

The reserved time slot for oral talks is 25 minutes (18' for presentation and 7' for discussion).

time	[id] title	presenter
16:00	[45] Stability of Low Frequency Fast-ion Driven Instabilities in DIII-D	HEIDBRINK, w.w. (UC Irvine)
16:35	[6] Effects of spatial channeling on the structure of Alfvén eigenmodes	TYKHYYI, Anton (Institute for Nuclear Research, Kyiv, Ukraine)
17:10	[31] MHD spectroscopy of pellet injected plasmas	OLIVER, James (University of Texas at Austin)
17:35	[104] Fast ion instabilities in DIII-D hybrid discharges	LIU, Deyong (University of California, Irvine)

Wednesday 04 September 2019

Plenary: Session 4 - Effects of Energetic Particles in Magnetic Confinement Fusion Devices (4 Sep 2019, 09:15-10:40)

Plenary sessions collect all contributions invited or accepted by the IPAC for a complete in depth plenary session.

The reserved time slot for invited talks is 35 minutes (25' for presentation and 10' for discussion).

The reserved time slot for oral talks is 25 minutes (18' for presentation and 7' for discussion).

time	[id] title	presenter
09:15	[30] Observation of Non-Collisional Bulk Ion Heating by Energetic Ion Driven Geodesic Acoustic Modes in LHD	TOI, K. (Professor Emeritus, National Institute for Fusion Science, Toki, Japan)
09:50	[51] Residual Zonal Flows for non-Maxwellian Equilibrium Distribution Function	HAHM, Taik Soo (Seoul National University)
10:15	[90] Influence of fishbone-induced fast-ion losses on rotation and transport barrier formation in MAST	MICHAEL, Clive (University of California, Los Angeles)

Coffee Break (10:40-11:00)

Plenary: Session 5 - Transport of Energetic Particles & Effects of Energetic Particles in Magnetic Confinement Fusion Devices (4 Sep 2019, 11:00-12:25)

Plenary sessions collect all contributions invited or accepted by the IPAC for a complete in depth plenary session.

The reserved time slot for invited talks is 35 minutes (25' for presentation and 10' for discussion).

The reserved time slot for oral talks is 25 minutes (18' for presentation and 7' for discussion).

time	[id] title	presenter
11:00	[87] Investigation of beam-ion transport and acceleration during edge localized modes in the ASDEX Upgrade and MAST Upgrade tokamaks	RIVERO RODRIGUEZ, Juan Francisco (University of Seville)
11:35	[5] Explosive Alfvén Event in HL-2A H-mode Plasmas	CHEN, Wei (Southwestern Institute of Physics, P.O. Box 432 Chengdu 610041, China)
12:00	[95] Non-linear 3D hybrid kinetic-MHD simulations of ELMs in the ASDEX Upgrade tokamak with MEGA	DOMINGUEZ-PALACIOS, Jesus (University of Seville)

Lunch (12:25-13:30)

Poster: P1 Session (4 Sep 2019, 13:30-15:30)

All submissions accepted as "Poster" should provide a poster conforming to the rules published in the conference announcement and by the Local Organizing Committee.

As a recommendation the presenter should at least be present at his poster during 80% of the poster session duration.

[id] title	presenter	board
[4] Passing fast ion transport induced by fishbone on the HL-2A	HAO, G.Z. (Southwestern Institute of Physics, Chengdu, China)	
[12] Effects of the non-perturbative mode structure on energetic particle transport	MENG, Guo (Max Planck Institute for Plasma Physics)	
[15] Design optimization of a fast-neutron detector with scintillating fibers for triton burnup experiments at fusion experimental devices	TAKADA, Eiji (National Institute of Technology, Toyama College)	
[23] Validation of the Imaging Neutral Particle Analyzer via Pitch Angle Scattering of Injected Beam Ions*	LIN, Daniel (University of California, Irvine)	
[32] Role of fast-ion transport to sustain the high q min profile in KSTAR discharges	KANG, Jisung (National Fusion Research Institute)	
[44] Observation of neutron emission anisotropy by neutron activation measurement in beam-injected LHD deuterium plasmas	SUGIYAMA, Shota (Kyushu University)	
[52] Effects of 3D magnetic field on fast ion loss and Alfvénic activities in KSTAR	KIM, Kimin (National Fusion Research Institute)	
[8] ECCD effect on the Helitoron J and LHD plasma stability	VARELA, Jacobo (National Institute for Fusion Science)	
[101] 1 MeV triton confinement study on KSTAR	JO, Jungmin (Seoul National University)	
[99] Extensions of FIDASIM capabilities: Passive signals, 3D geometry and neutron collimator signals	GARCIA, Alvin V. (University of California, Irvine)	
[76] Spatially resolved measurements of the tail temperature of RF accelerated deuterons at JET	SAHLBERG, Arne (Uppsala University)	
[71] Fast-ion D α spectroscopy diagnostics in KSTAR	YOO, Jeongwon	
[61] Modelling of toroidal ripple field and fast ions in the COMPASS Upgrade tokamak	JAULMES, Fabien (IPP of the CAS, Prague)	
[57] Evaluation of beam-beam fusion reaction rate considering local beam profile in toroidal plasmas	KOTERA, Ryusei (Department Nuclear Engineering)	
[49] Suppression of Toroidal Alfvén Eigenmodes by the Electron Cyclotron Current Drive in KSTAR Plasmas	KIM, Junghee (National Fusion Research Institute)	
[48] Gyrofluid Studies on Avalanche-like Transport and Formation of Transport Barrier	CHO, YoungWoo (Seoul National University (SNU))	
[25] Characterization of Intermittent Fast Ion Transport in DIII-D	GAGE, Kenneth (UCI)	
[19] Effects of Electron Cyclotron Heating on the Toroidal Flow in Helical Plasmas	MURAKAMI, Sadayoshi (Department Nuclear Engineering, Kyoto University)	
[18] The LHD Neutron Diagnostics	ISOBE, Mitsutaka (National Institute for Fusion Science)	
[11] Effects of anisotropic energetic particle distributions on the residual zonal flow	LU, Zhixin (Max Planck Institute for Plasma Physics)	

[7] Impact of Suprathermal Ions on Neutron Yield at Pre-DT Phase of ITER Operation	POLEVOI, Alexei (ITER Organization)
[97] Impact of externally applied 3D fields on plasma rotation and correlation to fast-ion losses	CANO-MEGIAS, Pilar (University of Seville)
[94] Fast ion driven electron drift instability in reversed shear plasmas	KANG, ByungJun (Seoul National University)
[91] Hybrid kinetic-MHD simulations of TAE active control using RMPs in the ASDEX Upgrade tokamak	GONZALEZ-MARTIN, Javier (University of Seville)
[88] Simulation study on impact of pedestal height on energy loss process with resistive ballooning mode turbulence during pedestal collapse	SETO, Haruki (National Institutes for Quantum and Radiological Science and Technology, Rokkasho Fusion Institute)
[81] Electric field and q profile effects on the NTM driven energetic particles redistribution	FERRARI, hugo (Comision Nacional de Energia Atomica CNEA)
[73] Study on particle pinch mechanism for DEMO	YAGI, Masatoshi (National Institutes for Quantum and Radiological Science and Technology)
[63] Fast-ion D alpha diagnostic with enhanced FIDASIM in the Large Helical Device	FUJIWARA, Yutaka (National Institute for Fusion Science)
[58] STABILITY ANALYSIS OF TJ-II STELLARATOR NBI DRIVEN ALFVÉN EIGENMODES IN ECRH AND ECCD EXPERIMENTS	CAPPA, Álvaro (Laboratorio Nacional de Fusión CIEMAT)
[56] Modeling of Supra-thermal Electron Flux and Toroidal Torque by ECH in Non-Axisymmetric Toroidal Plasmas	MURAKAMI, Sadayoshi (Departement Nuclear Engineering, Kyoto University)
[55] Electrostatic potentials generated by NBI fast ions in tokamak and helical plasmas	YAMAGUCHI, Hiroyuki (National Institute for Fusion Science, National Institutes of Natural Science)

Coffee Break (15:30-16:00)

Plenary: Session 6 - Runaway Electrons and Disruptions (4 Sep 2019, 16:00-17:50)

Plenary sessions collect all contributions invited or accepted by the IPAC for a complete in depth plenary session.

The reserved time slot for invited talks is 35 minutes (25' for presentation and 10' for discussion).

The reserved time slot for oral talks is 25 minutes (18' for presentation and 7' for discussion).

time	[id] title	presenter
16:00	[66] Observation of rapid frequency chirping driven by runaway electrons in DIII-D	LVOVSKIY, Andrey (Oak Ridge Associated Universities)
16:35	[35] Kinetic Aspects of High-Z Pellet Modeling for Disruption Mitigation	BREIZMAN, Boris (The University of Texas at Austin)

17:00	[98] Runaway electron driven high frequency kinetic instabilities during quiescent phase of KSTAR discharge	KIM, Jayhyun (National Fusion Research Institute)
17:25	[77] Deuterium experiment on LHD and its contribution on Energetic Particle Physics in Toroidal Plasmas	OSAKABE, Masaki (National Institute for Fusion Science)

Social: Dinner (4 Sep 2019, 19:00-21:00)

Thursday 05 September 2019

Plenary: Session 7 - Transport of Energetic Particles (5 Sep 2019, 09:15-10:40)

Plenary sessions collect all contributions invited or accepted by the IPAC for a complete in depth plenary session.

The reserved time slot for invited talks is 35 minutes (25' for presentation and 10' for discussion).

The reserved time slot for oral talks is 25 minutes (18' for presentation and 7' for discussion).

time	[id] title	presenter
09:15	[67] Energetic particle transport in NSTX/NSTX-U multi-mode scenarios through integrated simulations	PODESTA, Mario (Princeton Plasma Physics Laboratory)
09:50	[100] Analysis of TAEs and FBs induced fast ions redistribution and losses in MAST using a reduced fast ion transport model	CECCONELLO, Marco (Uppsala University)
10:15	[36] Fast-ion loss simulation with MEGA code in the Large Helical Device	SEKI, RYOSUKE (National Institute for Fusion Science)

Coffee Break (10:40-11:00)

Plenary: Session 8 - Control of Energetic Particle Confinement (5 Sep 2019, 11:00-12:25)

Plenary sessions collect all contributions invited or accepted by the IPAC for a complete in depth plenary session.

The reserved time slot for invited talks is 35 minutes (25' for presentation and 10' for discussion).

The reserved time slot for oral talks is 25 minutes (18' for presentation and 7' for discussion).

time	[id] title	presenter
11:00	[64] Experiments on Control of TAEs in ASDEX Upgrade and TCV plasmas with ECRH / ECCD	SHARAPOV, Sergei (CCFE)
11:35	[89] Experimental assessment of Toroidal Alfvén Eigenmode control using externally applied resonant magnetic perturbations in the ASDEX Upgrade tokamak	GARCIA-MUNOZ, Manuel (Max-Planck Institute for Plasma Physics)
12:00	[34] Simulations of Alfvén Eigenmode Destabilized by Energetic Electrons and Energetic Electron Effects on Energetic-Ion Driven Alfvén Eigenmode	WANG, Jialei (National Institute for Fusion Science)

Lunch (12:25-13:30)

Poster: P2 Session (5 Sep 2019, 13:30-15:30)

All submissions accepted as "Poster" should provide a poster conforming to the rules published in the conference announcement and by the Local Organizing Committee.

As a recommendation the presenter should at least be present at his poster during 80% of the poster session duration.

[id] title	presenter	board
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[17] NBI fast ion modelling of the LHD heliotron and W7-X stellarator with the ASCOT code	ÄKÄSLOMPOLO, Simppa (Max-Planck-Institut für Plasmaphysik, Teilinstitut Greifswald)	
[21] Study of Alfvénic modes driven by energetic particles using the code HYMAGYC for the NLED AUG testcase and DTT equilibria	VLAD, Gregorio (ENEA - FSN Department)	
[10] Frequency chirping of an energetic particle driven mode in the presence of kinetic thermal ions	WANG, Xin (Max Planck Institute for Plasma Physics) BRIGUGLIO, Sergio (ENEA, FSN, C. R. Frascati)	
[13] Global electromagnetic gyrokinetic simulations of TAEs in ITER	HAYWARD-SCHNEIDER, Thomas (Max Planck Institute for Plasma Physics)	
[14] Gyrokinetic investigation of the dynamics of Alfvénic instabilities in ASDEX Upgrade	VANNINI, Francesco (Max Planck Institute for Plasma Physics)	
[16] Analytical estimation of drift-orbit island-width for passing ions in static magnetic perturbation	SHINOHARA, Kouji (National Institutes for Quantum and Radiological Science and Technology)	
[107] Validating the LOCUST-GPU fast ion code	WARD, Samuel (University of York, UK; CCFE, UK; ITER Organization)	
[105] The collisional resonance function in discrete-resonance quasilinear plasma systems	DUARTE, Vinicius (PPPL)	
[96] Relativistic guiding-center motion of runaway electrons	PARK, Dongho (NFRI)	
[83] Geodesic modes driven by untrapped bounce resonances of NB energetic ions in tokamaks	CAMILO DE SOUZA, Fabio (Sao Paulo University)	
[82] Impact of poloidal convective cells on transport processes with kinetic electrons	ASAHI, YUUICHI (QST)	
[79] The impact of anisotropy on ITER scenarios and Edge Localised Modes	HOLE, Matthew (Australian National University)	
[74] Long range Alfvénic frequency chirping in tokamaks	HEZAVEH HESAR MASKAN, Hooman (Mathematical Sciences Institute, The Australian National University)	
[68] Feasibility of using Orbit Tomography to infer the Runaway Electron Distribution Function from Bremsstrahlung Measurements	STAGNER, Luke (Oak Ridge Institute for Science and Education)	
[78] Hybrid Simulation of Global Alfvén Eigenmode and Energetic Particle Mode in Heliotron J, a Low Shear Helical Axis Heliotron	ADULSIRISWAD, Panith (Graduate School of Energy Science, Kyoto University)	
[60] Gamma ray measurements of the runaway electron distribution function in disruption mitigation experiments at the ASDEX Upgrade and JET tokamaks	NOCENTE, Massimo (Dipartimento di Fisica, Università di Milano-Bicocca)	
[54] Parametric Study of Linear Stability of Toroidal Alfvén Eigenmode in KSTAR and JET	SEO, Jaemin (Seoul National University)	

[75] The electron drift effect on the axi-symmetric global Alfvén eigenmodes	ZHOU, Deng (Institute of Plasma Physics, CAS)	
[70] HALO : A GPU code for calculating the non-linear evolution of fast particle driven eigenmodes in Tokamaks	BUCHANAN, James (CCFE)	
[69] Ion species mix, magnetic field, and distribution function dependence of instabilities in the ion cyclotron range of frequencies	DEGRANDCHAMP, Genevieve (University of California, Irvine)	
[53] Numerical analysis of two-fluid and finite Larmor radius effects on reduced MHD equilibrium with flow	ITO, Atsushi (National Institute for Fusion Science)	
[50] Investigation of the effective confinement time of energetic ions in LHD by using neutron measurement and simulation	NUGA, Hideo (National Institutes for Natural Sciences, National Institute for Fusion Science)	
[42] Long-term Alfvén instability nonlinear simulations and high-bandwidth linear eigenmode surveys	SPONG, Donald (Oak Ridge National Laboratory)	
[40] The systematic investigation of energetic particle driven geodesic acoustic mode channeling using MEGA code	WANG, Hao (National Institute for Fusion Science)	
[39] Correlation between Beam Power and Knock-on Effect of Energetic Protons on Slowing-down Deuterons Observed in the Large Helical Device	MATSUURA, Hideaki (Kyushu University)	
[38] Alfvén Eigenmode evolution in NBI-heated plasmas with dynamic magnetic configuration in the TJ-II stellarator	MELNIKOV, Alexander (National Research Centre "Kurchatov Institute")	
[37] effects of trapped energetic particles on double tearing modes	CAI, Huishan (University of Science and Technology of China)	
[33] Numerical investigation of energetic particle driven interchange mode in LHD	IDOUAKASS, Malik (NIFS)	
[29] Fully gyro-kinetic PIC simulations of Alfvén Eigenmodes in LHD using the EUTERPE code	KÖNIES, Axel (Max-Planck-Institut für Plasmaphysik)	

Coffee Break (15:30-16:00)

Plenary: Session 9 - Collective Phenomena (5 Sep 2019, 16:00-17:50)

Plenary sessions collect all contributions invited or accepted by the IPAC for a complete in depth plenary session.

The reserved time slot for invited talks is 35 minutes (25' for presentation and 10' for discussion).

The reserved time slot for oral talks is 25 minutes (18' for presentation and 7' for discussion).

time	[id] title	presenter
16:00	[24] Quasi-periodic frequency sweeping in electron cyclotron emission of mirror-confined plasma sustained by high-power microwaves	VIKTOROV, Mikhail (Federal Research Center Institute of Applied Physics of the Russian Academy of Sciences)
16:35	[47] Analysis of velocity distribution of D-D fusion products driving ion cyclotron emission on JT-60U	SUMIDA, Shuhei (National Institutes for Quantum and Radiological Science and Technology)

17:00	[28] First investigation of fast-ion-driven modes in Wendelstein 7-X	SLABY, Christoph (Max-Planck-Institut für Plasmaphysik, Teilinstitut Greifswald)
17:25	[43] Validation of the TGLF-EP+Alpha critical-gradient model of energetic particle transport in DIII-D scenarios for ITER	BASS, Eric M. (University of California San Diego)

Friday 06 September 2019

Plenary: Session 10 - Transport of Energetic Particles & Diagnostics for Energetic Particles (6 Sep 2019, 09:15-10:15)

Plenary sessions collect all contributions invited or accepted by the IPAC for a complete in depth plenary session.

The reserved time slot for invited talks is 35 minutes (25' for presentation and 10' for discussion).

The reserved time slot for oral talks is 25 minutes (18' for presentation and 7' for discussion).

time	[id] title	presenter
09:15	[26] High-Resolution Imaging Neutral Particle Analyzer Measurements of the Local Fast Ion Distribution Function and Instability Induced Transport in DIII-D	DU, Xiaodi (General Atomics)
09:50	[46] Observation of Hole-Clump Pair Using an Upgraded E//B-NPA during TAE Burst in LHD	KAMIO, Shuji (National Institute for Fusion Science)

Coffee Break (10:15-10:35)

Plenary: Session 11 - Transport of Energetic Particles (6 Sep 2019, 10:35-12:00)

Plenary sessions collect all contributions invited or accepted by the IPAC for a complete in depth plenary session.

The reserved time slot for invited talks is 35 minutes (25' for presentation and 10' for discussion).

The reserved time slot for oral talks is 25 minutes (18' for presentation and 7' for discussion).

time	[id] title	presenter
10:35	[20] Energetic-particle Transport and Loss Induced by Helically-trapped Energetic-ion-driven Resistive Interchange Mode in the Large Helical Device	OGAWA, Kunihiro (National Institute for Fusion Science)
11:10	[65] Excitation of elliptical and toroidal AE modes by 3 He - ions of the MeV energy range in hydrogen - rich JET plasma	KIPTILY, Vasily (United Kingdom Atomic Energy Authority)
11:35	[102] Predator-prey paradigm for Alfvén instability dynamics in realistic RBQ simulations	GORELENKOV, Nikolai (PPPL, Princeton University)

Lunch Break / IPAC Meeting (12:00-14:00)

Summary: Session 12 (6 Sep 2019, 14:00-15:20)

Summary presentations

time	[id] title	presenter
14:00	[108] Experimental Progress	PODESTA, Mario (Princeton Plasma Physics Laboratory)
14:40	[109] Theoretical Progress	BIERWAGE, Andreas (National Institutes for Quantum and Radiological Science and Technology)

Closing Remarks (6 Sep 2019, 15:20-15:40)

Closing addresses by the Host Organization and IAEA Scientific Secretary.

-Conveners: Barbarino, Matteo (International Atomic Energy Agency)