

# Hierarchical Self-Organization of Turbulence and flows in Plasmas, Oceans and Atmospheres

Place: Clock Tower Centennial Hall 4, main campus in Kyoto University

[http://www.kyoto-u.ac.jp/en/access/campus/yoshida\\_all.htm](http://www.kyoto-u.ac.jp/en/access/campus/yoshida_all.htm)

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Date: Oct. 24 (Monday) – 26(Wednesday), 2011

October 24 (Monday)

09:20–09:50 Registration

09:50–10:00 (10) Opening

Y. Kishimoto (GSES, Kyoto Univ.) and P. H. Diamond (UCSD/WCI)

## **Session 1 : Flow and structure in Geophysics and plasmas physics (Chair : K. Shibata)**

10:00–10:45 (45) 1 Rossby waves and zonal flow generation

M. Yamada and S. Takehiro (RIMS, Kyoto Univ.)

10:45–11:30 (45) 2 Issues in Zonal Flows : A Look Back and a Look Ahead

P. H. Diamond (UCSD/WCI)

11:30–12:05 (35) 3 Theoretical and experimental study of drift wave turbulence

K. Itoh (NIFS)

12:05–12:20 (15) 4 Discussion and comment

12:20–13:30 (70) Lunch

## **Session 2 : Dynamics and structure in turbulence I (Chair : K. Ida)**

13:30–14:05 (35) 5 Turbulence Spreading in Magnetically Confined Plasmas

T. S. Hahm (Seoul National Univ.)

14:05–14:40 (35) 6 Spatio-temporal structure of the interaction between turbulence and flows at the L–H transition in TJ–II plasmas

T. Estrada (CIEMAT, Spain)

14:40–15:15 (35) 7 A one-dimensional model for L–I–H transition and review on spatial effects on ecosystems

K. Miki (WCI)

15:15–15:30 (15) Coffee break

## **Session 3 : Momentum transport and symmetry breaking in plasmas (Chair : M. Yagi)**

15:30–16:05 (35) 8 Flow structure in symmetric torus and symmetry breaking

M. Kikuchi (JAEA)

16:05–16:40 (35) 9 Gyrokinetic Simulation Studies of Fluctuation Symmetry Breaking and Intrinsic Rotation

J. M. Kwon (UCSD/WCI)

16:40–17:15 (35) 10 Momentum transport in full-f gyrokinetic simulation

Y. Idomura (JAEA)

October 25 (Tuesday)

**Session 4 : Plasma rotation and nonlocal transport (Chair : S. S. Kim)**

09:15–09:50 (35) 11 Intrinsic rotation in toroidal plasmas  
K. Ida (NIFS)

09:50–10: 25 (35) 12 Nonlocal Electron Heat Transport Event in Magnetically–Confined Toroidal Plasmas  
N. Tamura (NIFS)

10:25–10:40 (15) Coffee break

**Session 5 : Turbulence–flow interaction I (Chair : K. Kusano)**

10:40–11:15 (35) 13 Atmospheric superrotation of cloud–covered terrestrial planets  
M. Yamamoto (RIAM, Kyushu Univ.)

11:15–11:50 (35) 14 Instability and merging of jets in turbulent flows on the beta–plane  
K. Obuse (RIMS, Kyoto Univ.)

11:50–12:25 (35) 15 Flow–turbulence interaction in magnetic reconnection  
N. Yokoi (IIS, Univ. of Tokyo)

12:25–13:30 (65) Lunch

**Session 6 : Dynamics and structure in turbulence II (M. Kikuchi)**

13:30–14:05 (35) 16 PV Dynamics and Phase Space Structure Evolution in Drift Wave and Vlasov  
Turbulence  
P. H. Diamond (UCSD/WCI)

14:05–14:40 (35) 17 On relaxation and transport in inhomogeneous phase space turbulence  
with zonal flow  
Y. Kosuga (UCSD/WCI)

14:40–15:15 (35) 18 Growth of phase–space structures as a wave–particle momentum  
exchange mechanism  
M. Lesur (WCI)

15:15–15:30 (15) Coffee break

**Session 7 : Reconnection dynamics and trigger mechanism I (Chair : J. Cho )**

15:30–16:05 (35) 19 Solar and Stellar Flares – from nanoflares to superflares  
K. Shibata (GSS, Kyoto Univ.)

16:05–16:40 (35) 20 Self–organization of magnetized plasmas and magnetic reconnection  
R. Horiuchi (NIFS)

16:40–16:50 (10) Coffee break

**Session 8 : Reconnection dynamics and trigger mechanism II (Chair : R. Horiuchi)**

16:50–17:25 (35) 21 Trigger Mechanism of Solar Eruptions  
K. Kusano (STE–Lab, Nagoya Univ.)

17:25–18:00 (35) 22 Hall EMHD in laser plasmas  
K. Mima (Osaka Univ.)

18:30–20:30 Reception (Shiran–Kaikan, Kyoto Univ.)

October 26 (Wednesday)

**Session 9 : Dynamics and structure in turbulence III (Chair : T. S. Hahm)**

- 09:15–09:50 (35) 23 Dynamics of formation and back transition of internal transport barrier in reversed shear plasma  
S. S. Kim (WCI)
- 09:50–10:25 (35) 24 Non-local transport simulation based on RMHD model  
M. Yagi (RIAM, Kyushu Univ./JAEA)
- 10:25–11:00 (35) 25 Avalanching heat transport in steady state ITB with reversed magnetic shear  
S. Tokunaga (WCI)

11:00–11:15 (15) Coffee break

**Session 10 : MHD turbulence and reconnection (Chair : J. M. Kwon)**

- 11:15–11:50 (35) 26 Scaling relations of electron MHD turbulence  
J. Cho (Chungnam National Univ.)
- 11:50–12:25 (35) 27 Magnetic reconnection at various heights in the solar atmosphere  
H. Isobe (GSS, Kyoto Univ.)

12:25–13:30 (65) Lunch

**Session 11 : Turbulence–flow interaction II (Chair : N. Yokoi)**

- 13:30–14:05 (35) 28 High resolution general circulation model experiment of the Martian atmosphere: resolution dependence of disturbances and dust lifting  
Y. Hayashi (GSS, Kobe Univ.)
- 14:05–14:40 (35) 29 Interaction between turbulence and magnetic reconnection  
A. Ishizawa (NIFS)
- 14:40–15:15 (35) 30 Secondary instability as a trigger of explosive dynamics  
Y. Kishimoto (GSES, Kyoto Univ.)

15:15–15:30 (15) Coffee break

**Session 12 : Discussion and comment (Chair : Y. Kishimoto)**

- 15:30–16:05 (35) 31 TBD  
P. H. Diamond (UCSD/WCI)
- 16:05–16:15 (10) Closing  
P. H. Diamond (UCSD/WCI) and Y. Kishimoto (GSES, Kyoto Univ.)

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WCI	WCI Center for Fusion Theory, Korea
NFRI	National Fusion Research Center, Korea
GSS	Graduate School of Science
GSES	Graduate School of Energy Science
RIMS	Research Institute for Mathematical Sciences
STE-Lab	Solar–Terrestrial Environment Laboratory
RIAM	Research Institute for Applied Mechanics
IIS	Institute of Industrial Science