# APEF2018 Program Overview

**Nov. 12 (Mon) @Koshiba Hall** (Faculty of Science Bldg. 1)

| | |
|---|---|
| 9:00 – 10:00 | registration |
| 10:00 – 11:30 | opening, session #1 |
| 11:30 – 13:00 | lunch |
| 13:00 – 15:30 | session #2, #3 |
| 15:30 – 17:30 | poster session (group A) |

**Nov. 13 (Tue) @Koshiba Hall** (Faculty of Science Bldg. 1)

| | |
|---|---|
| 9:00 – 11:50 | session #4, #5 |
| 11:50 – 13:20 | lunch |
| 13:20 – 14:30 | session #6 |
| 14:30 – 15:30 | short poster session (group A) |
| 15:30 – 17:50 | session #7, #8 |

**Nov. 14 (Wed) @Ito Hall** (Ito International Research Center)

| | |
|---|---|
| 9:00 – 10:20 | session #9 |
| 10:20 – 11:50 | poster session (group B) |
| 11:50 – 13:20 | lunch |
| 13:20 – 17:40 | session #10, #11, #12 |
| 18:00 – 20:00 | banquet |

**Nov. 15 (Thu) @Ito Hall** (Ito International Research Center)

| | |
|---|---|
| 9:00 – 10:10 | session #13 |
| 10:10 – 11:10 | short poster session (group B) |
| 11:10 – 11:40 | session #14 |
| 11:40 – 13:00 | lunch |
| 13:00 – 16:00 | session #15, #16, #17 |
| 16:00 – 16:30 | award ceremony, closing |

Program as of Nov. 9

# Map


Program as of Nov. 9

# Program

## Nov. 12 (Mon) @Koshiba Hall

9:00-10:00 **registration**

10:00-10:10 **opening**

10:10-10:50 **Ken Sekimoto** (ESPCI & Univ. Paris Diderot)
"Progressive Quenching"

10:50-11:30 **Takahiro Sagawa** (Univ. Tokyo)
"Second law of thermodynamics for many-body pure quantum states"

11:30-13:00 **lunch**

13:00-13:40 **Udo Seifert** (Univ. Stuttgart)
"From Stochastic Thermodynamics to Thermodynamic Inference"

13:40-14:10 **Hyuk Kyu Pak** (UNIST & IBS-CSLM)
"Converting nearly all available information into work by a Brownian information engine"

14:10-14:30 **break**

14:30-15:10 **Kyogo Kawaguchi** (Riken BDR)
"Nonequilibrium stat-mech in multicellular fate dynamics"

15:10-15:30 **break**

15:30-17:30 **poster session (group A)**

## Nov. 13 (Tue) @Koshiba Hall

**9:00- 9:40** **Nigel Goldenfeld** (Univ. Illinois)
"Non-equilibrium statistical mechanics of the laminar-turbulence transition"

**9:40-10:20** **Jun Zhang** (New York Univ.)
"Symmetry Breaking Bifurcations in Fluid-Structure Interaction"

**10:20-10:40** **break**

**10:40-11:20** **Stéphan Fauve** (ENS Paris)
"Statistics of large scales in turbulent flows"

**11:20-11:50** **Susumu Goto** (Osaka Univ.)
"Coherent structures in turbulence and their universality"

**11:50-13:20** **lunch**

**13:20-14:00** **Hugues Chaté** (CEA, CSRC)
"Linking alignment-dominated to repulsion-dominated active matter"

**14:00-14:30** **Hepeng Zhang** (Shanghai Jiao Tong Univ.)
"Data-driven quantitative modeling of bacterial active nematics"

**14:30-15:30** **break / short poster session (group A)**

**15:30-16:10** **Jean-François Joanny** (ESPCI)
"Physical properties of suspensions of active particles"

**16:10-16:50** **Sriram Ramaswamy** (Indian Institute of Science)
"Nematic and polar two-dimensional active matter: stability, fluctuations, defects, condensation"

**16:50-17:10** **break**

**17:10-17:50** **Dieter Braun** (LMU Munich)
"Nonequilibrium physics to drive the chemistry of early Life"

## Nov. 14 (Wed) @Ito Hall

**9:00- 9:40** **Tsvi Tlusty** (UNIST & IBS-CSLM)
"Is protein function Green? Green functions of correlated genes and the mechanical evolution of protein"

**9:40-10:10** **Qianyuan Tang** (Univ. Tokyo)
"Functional Sensitivity and Evolutionary Robustness of Proteins"

**10:10-10:20** **break**

**10:20-11:50** **poster session (group B)**

**11:50-13:20** **lunch**

**13:20-14:00** **G V. Shivashankar** (MBI, National Univ. Singapore)
"Mechanical regulation of genome dynamics and function"

**14:00-14:30** **Hideki Nakamura** (Johns Hopkins Univ.)
"Manipulating force generation in living cells"

**14:30-14:40** **break**

**14:40-15:20** **Frank Jülicher** (Max Planck Institute)
"Minimal model for cellular self-organization"

**15:20-16:00** **Jean-Paul Rieu** (Univ. Lyon 1, ILM)
"What kind of relation between Traction Forces and Motility in Slime Molds?"

**16:00-16:20** **break**

**16:20-17:00** **Chi Keung Chan** (Academia Sinica)
"Synchronizations in a developing Glia-Neuron Coculture"

**17:00-17:40** **Qi Ouyang** (Peking Univ.)
"The free energy cost of biological circadian clock"

**18:00-20:00** **banquet**

## Nov. 15 (Thu) @Ito Hall

9:00- 9:40 **Namiko Mitarai** (Niels Bohr Institute)
"Persistent coexistence of spatially distributed bacteria and phage"

9:40-10:10 **Takuro Shimaya** (Tokyo Tech & Univ. Tokyo)
"Critical coarsening in a model of bacterial competition inside a channel"

10:10-11:10 **break / short poster session (group B)**

11:10-11:40 **Hajime Tanaka** (IIS, Univ. Tokyo)
"Physical nature of intermittent dynamics in glasses"

11:40-13:00 **lunch**

13:00-13:40 **Antoine Naert** (ENS Lyon)
"Non-Equilibrium Statistical Physics, measurements in granular gases"

13:40-13:50 **break**

13:50-14:30 **Elisha Moses** (Weizmann Institute of Science)
"Memory, Correlation and Structures in Language"

14:30-15:10 **Helmut Rainer Brand** (Univ. Bayreuth)
"On the influence of noise on dissipative solitons and their interaction"

15:10-15:20 **break**

15:20-16:00 **Masaki Sano** (Univ. Tokyo)
"Nonequilibrium Phase Transition in Shear Flow"

16:00-16:30 **award ceremony / closing**

# Poster sessions

## Group A main session: Nov. 12, short session: Nov. 13

**A01 Kenji Harada**
"Entropy of the (1+1)-dimensional directed percolation"

**A02 Tsuyoshi Mizuguchi**
"Heterogeneity of Japanese Name Distribution"

**A03 Shin Nakamura**
"Critical Exponents of Nonequilibrium Phase Transitions in AdS/CFT Correspondence"

**A04 Yuhei Yamada**
"Duration time of mesoscopic clusters in percolation with an edge selection rule depending on cluster sizes"

**A05 Yohsuke Fukai**
"Universal Kardar-Parisi-Zhang fluctuations with finite-curvature initial conditions"

**A06 Kosuke Ito**
"Backaction of generalized measurements compatible with quantum fluctuation theorems"

**A07 Janaki Sheth**
"Effects of stochasticity in nonequilibrium limit cycle oscillators : Fluctuation analysis in inner ear hair bundles"

**A08 Kentaro Sugimoto**
"Effects of Boundary Conditions on Magnetic Friction"

**A09 Masahiko Ueda**
"Consistency of payoff relations in zero-determinant strategies"

**A10 Takayuki Ariga**
"Energetics of molecular motor kinesin"

**A11 Masayo Inoue**
"Cooperative reliable response from sloppy gene-expression dynamics"

**A12 Toshinori Namba**
"Mathematical model for alignment and orientation order of basal bodies in a multi-ciliated cell"

**A13 Hiroto Shoji**
"Analysis on directionalities of hepaticyte in hepatic lobule"

**A14 Tadashi Sugawara**
"Emergence of Information Flow in GV-based Model Protocell"

A15 **Natsuhiko Yoshinaga**

"Geometric control of wave instability in Min oscillations"

A16 **Taihei Fujimori**

"Contact activation of locomotion and chemotaxis dictate cell segregation and pattern formation in Dictyostelium"

A17 **Tetsuhiro Hatakeyama**

"Symmetry breaking in relaxation paths in allosteric molecules: enzymatic kinetically constrained model"

A18 **Yukariko Komasaka**

"Light intensity dependence of adaptive photo-response of Volvox"

A19 **Yoshiya Matsubara**

"Kinetic Selection of Template Polymer with Complex Sequences"

A20 canceled

A21 **Tomoaki Okaniwa**

"Measurement of Thermodynamic Efficiency of F1-ATPase at High Temperature"

A22 **Seiichiro Sakai**

"Dependence of precision of photo response on number of cells in Volvocales"

A23 **Takuya Sato**

"Emergence of low-dimensional structure in high-dimensional cell model and convergent evolution in phenotypic space"

A24 **Takaki Yamamoto**

"Theoretical model of dynamics of epithelial cells with cellular chiral torque generation"

A25 **Yoshiki Hori**

"Collective motion of self-propelled rods with finite excluding volume"

A26 **Simon Schnyder**

"Collective motion of cells on a substrate"

A27 **Jun-Ichi Wakita**

"Dynamical Phase Transitions of Collective Motion of Bacterial Cells in a Shallow Circular Pool"

A28 **Kazusa Beppu**

"Geometric principle of active polar vortices in dense and dilute bacterial suspension"

A29 **Shun Imamura**

"Collective motion of self-propelled droplets by Marangoni effect"

A30 **Junichiro Iwasawa**

"Interplay of polarity and motion in swarming Janus particles"

A31 **Yuki Koyano**

"Hydrodynamic collective effect of active proteins"

A32 **Sakurako Tanida**

"Rotation phenomena in collective motion of microtubules gilding on glass surface"

A33 **Marguerite Bienia**

"Flow of ceramic dispersions"

A34 **Kazue Kudo**

"Simulations of nonlinear buckling in coatings"

A35 **Daichi Matsumoto**

"Pinching an open cylindrical shell"

A36 **Michiko Shimokawa**

"Mode selection of the breakup of a droplet falling into a miscible solution"

A37 **Takayuki Narumi**

"Anomalous diffusion in soft-mode turbulence"

A38 **Sonja Babel**

"Simulation and theory of feedback-driven colloids"

A39 **Hirofumi Ishii**

"Tearing an elastic film with an elastic rod"

A40 **Shota Kumayama**

"Mechanical stability of a single twisted DNA"

A41 **Kouki Morinaga**

"Morphology of crystal from evaporated droplet with pinning the edge"

A42 **Masahide Okada**

"self-split of oil droplets on surfactant solution"

A43 **Tomohiko Sano**

"Twist-induced snap-buckling in a bent elastic ribbon"

A44 **Satoshi Takatori**

"Collective behavior for numerous particles under non-equilibrium environment"

A45 **Tsuyoshi Tsukada**

"3-dimensional pattern induced by a phase separation with radial quenching"

A46 **Naoya Yanagisawa**

"In-situ observation of collective bubble collapse"

A47 **Taiju Yoneda**

"Elastic basis of geometric mulitstability of a truncated conical shell"

A48 **Federico Fadda**

"The squirmer model and beyond"

## Group B　main session: Nov. 14, short session: Nov. 15

**B01　Chi-Ho Cheng**

"Non-equilibrium physics in the Ehrenfest model with interaction"

**B02**　canceled

**B03　Sosuke Ito**

"Stochastic thermodynamics and information geometry"

**B04　Takayasu Iwatsuka**

"Generation of turbulence with arbitrary shape and application to surface growth experiment"

**B05　Yuki Izumida**

"Nonlinear dynamics analysis of a low-temperature-differential kinematic Stirling engine"

**B06　Yonggun Jun**

"Experimental study of isothermal process at the finite transition time"

**B07　Sreekanth Kizhakkumpurath Manikandan**

"Optimal, finite-time functioning of microscopic machines"

**B08　Pik-Yin Lai**

"Fluctuations of inter-beat cardiac dynamics under periodic external stretching"

**B09　Kanae Mukai**

"Discrete-time quantum walk on complex networks for community detection"

**B10　Shousuke Ohmori**

"Decomposition space entropy for geometric patterns of condensed matters"

**B11　Hidetsugu Sakaguchi**

"Ginzburg-Landau equation for Barkhausen noises"

**B12　Taro Shimizu**

"Measuring Lyapunov exponents of large chaotic systems with global coupling by time series analysis"

**B13　Renan Almeida**

"Coarsening, ageing and percolation in twisted nematic liquid crystals"

**B14　Masato Itami**

"Singular behavior of time-averaged stress fluctuations on surfaces"

**B15　Kana Nataochi**

"Numerical study on a directed percolation in the thermodynamic limit"

**B16　Tomohiro Shitara**

"Scalings of higher order fluctuations of work and the violation of the fluctuation-dissipation theorem　in thermodynamic control"

**B17 Keisuke Taga**

"Mean field analysis for Kuramoto model with general time delay"

**B18 Shumpei Yamamoto**

"An extended Contrastive Divergence algorithm as excess entropy production minimization"

**B19 Hsuan-Yi Chen**

"Dynamics of a membrane coupled to cytoskeleton"

**B20 Hiroyuki Ebata**

"Domain-size dependent cellular durotaxis on micro-elastically stripe patterned gels"

**B21 Tatsuya Fukuyama**

"On the relation between mechanics and signaling in collective cell migration"

**B22 Kohei Inoue**

"Observation of competition of two Escherichia coli strains in a perfusion system"

**B23 Atsushi Kamimura**

"Importance of compartments and horizontal gene transfer for stable replication of fragmented ribozymes"

**B24 Macoto Kikuchi**

"Robustness against Fluctuations and Mutation in Gene Regulatory Networks"

**B25 Hiroshi Koyama**

"Three-dimensional morphogenesis of multi-cellular organisms based on cell-cell interaction properties"

**B26 Daisuke Mizuno**

"Nonequilibrium mechanics, fluctuations and energetics in living systems"

**B27 Yukinori Nishigami**

"Statistical analysis of amoeboid locomotion on the constant photo-irradiation"

**B28 Martin Robert**

"Patterns of metabolic gene expression within Escherichia coli biofilms and macro-colonies"

**B29 Nen Saito**

"Phase-field modeling for 3D morphodynamics of macropinocytosis"

**B30 Yuji Sakai**

"Model of autophagosome formation regulated by curvature-generators"

**B31 Ryota Sakamoto**

"Actomyosin waves and percolation control nucleus-like cluster positioning in a cell-sized space"

**B32 Ashwin S.S**

" Inferring chromatin packing properties from the dynamical characterization of nucleosomes in live cells"

**B33 Hirokazu Taminoto**

"Cytoskeletal Force in the Cell Author"

**B34 Shunpei Yamauchi**

"Cumulant expansion of population growth rate of cellular reproductive systems"

**B35 Kyosuke Adachi**

"First-order phase transition in a model of epigenetic-mark spreading"

**B36 Arifumi Fushimi**

"The study of polymerisation and depolymerisation of actin filaments"

**B37 Takuma Hoshino**

"Pattern formation of skin cancers: Effects of cancer proliferation and hydrodynamic interactions"

**B38 Yohei Nakayama**

"Langevin description of rotational motion of F1-ATPase"

**B39 Daiki Nishiguchi**

"How bacteria extend & retract filaments from their bodies: type IV pili dynamics of Neisseria meningitidis"

**B40 Yusuke Noguchi**

"Numerical study on biofilm growth"

**B41 Kenji Okubo**

"Evolution and Genetics of Gene Regulatory Network in Diploid Recombination"

**B42 Hiroki Sakuta**

"Self-Emergence of Cell-Like Structure of Actin and DNA in Cell-Sized Aqueous/Aqueous Micro Droplets"

**B43 Mitsusuke Tarama**

"Modeling of cell crawling by means of force-free intracellular motion"

**B44 Hong-Ren Jiang**

"Orientation-dependent induced-charge electrophoresis of magnetic metal-coated Janus particles with different coating thicknesses"

**B45 Felix Kempf**

"Active Matter Invasion into Capillaries"

**B46** **Ken Nagai**

"Dynamical network formation of C. elegans"

**B47** **Xiaqing Shi**

"Dynamical sub-classes of dry active nematics"

**B48** **Isamu Sou**

"Probability flux of a three-sphere micromachine having different temperatures"

**B49** **Ryojiro Honda**

"Ordering Mechanism of Collective Motion of Bacterial Cells in a Shallow Circular Pool"

**B50** **Kazuya Ishibashi**

"Collective motion of self-propelled particles in one-dimensional nonlinear Kramers equation"

**B51** **Airi Kato**

"Asymmetric periodic motion and chaos of a Quincke roller driven periodically"

**B52** **Takuma Narizuka**

"Burstiness in adjacency relationships of Vicsek model"

**B53** **Yuri Akiba**

"Isotropy and Anisotropy of Desiccation Crack Patterns"

**B54** **Jose Carnerero**

"Quantitative Evaluation on Fluctuating Single DNA Molecule: Significant Change by Gold Nanoparticle Decollation"

**B55** **Yuichi Iwasaki**

"Colloidal Aggregation in Binary Colloidal Suspensions Under AC Electric Field"

**B56** **Shigeyuki Komura**

"A three-sphere microswimmer in a structured fluid"

**B57** **Takashi Mashiko**

"Thermal convection of a phase-transitioning fluid"

**B58** **Akio Nakahara**

"Mechanism of memory effect of paste which controls crack formation"

**B59** **Tetsuo Yamaguchi**

"Topology and toughening of elastic networks"

**B60** **Soichi Tatsumi**

"Trial to realize ideal glass in experiment"

**B61** **Ryoichi Tosaka**

"Reversible-to-irreversible transition in dense granular materials"

**B62** **Yuto Hosaka**

"Rheological properties of an enzyme suspension"

**B63** **Kazuya Kobayashi**

"Thermal convection dynamics in a well-mixed two component fluid with concentration dependent viscosity"

**B64** **Mizuki Kuroda**

"Elastic three-sphere microswimmers in a viscous fluid"

**B65** **Rina Nishimura**

"How a viscous droplet is stretched on substrate"

**B66** **Norihiro Oyama**

"Vortex-Clusters in Three-Dimensional Dense Granular Flow"

**B67** **Kazu Suehiro**

"How a disc falls inside a column"

**B68** **Marie Tani**

"How a Soft Rod Coils around a Cylinder"

**B69** **Chiho Watanabe**

"Heterogeneous molecular diffusion induced by molecular crowding and micrometric confinement"

**B70** **Kento Yasuda**

"Swimmer-microrheology"

**B71** **Masatoshi Ichikawa**

"Wall sliding movement of Tetrahymena pyriformis"

**B72** **Ariane Gayout**

"Bistability of a pendulum in a flow"