[Session Title: Percolation]

Date and Time	**Wednesday, June 1, 2016 / 14:00-15:40**
Room	**Dongkang A, Avenue 3F**
Session Chair	**Byungnam Kahng, Seoul Nat'l Univ., Korea**

14:00-14:20 **Hybrid Percolation Transition in Cluster Merging Processes: Continuously Varying Exponents**
B. Kahng[1], Y. S. Cho[1], J. S. Lee[2], and H. J. Herrmann[3]
[1]Seoul Nat'l Univ., Korea, [2]KIAS, Korea, [3]ETH Zurich, Switzerland

14:20-14:40 **Beyond the Locally Tree-like Approximation for Percolation on Real Networks**
Filippo Radicchi[1] and Claudio Castellano[2,3]
[1]Indiana Univ., USA, [2]Istituto dei Sistemi Complessi (ISC-CNR), Italy, [3]Sapienza Universit a di Roma, Italy

14:40-15:00 **Color Avoiding Percolation**
Vinko Zlatic[1], Sebastian Krause[1], and Michael Danziger[2]
[1]Rudjer Boskovic Institute, Croatia, [2]Bar-Ilan Univ., Israel

15:00-15:20 **Inferring the Dynamics in Complex Networks with Percolations**
Nino Antulov-Fantulin[1] and Dijana Tolic[2]
[1]Institute Rudjer Boskovic, Croatia, [2]ETH Zurich, Switzerland

15:20-15:40 **Aging Effects in Topological and Percolation Properties of Non-Markovian Temporal Networks**
Antoine Moinet[1,2], Michele Starnini[3], and Romualdo Pastor-Satorras[1]
[1]Universitat Politécnica de Catalunya, Spain, [2]CNRS, France, [3]Universitat de Barcelona, Spain

[Session Title: Community]

Date and Time	**Wednesday, June 1, 2016 / 14:00-15:40**
Room	**Dongkang B, Avenue 3F**
Session Chair	**Aaron Clauset, Univ. of Colorado, USA**

14:00-14:20 **The Trouble with Community Detection**
M. E. J. Newman[1,2] and Aaron Clauset[2,3]
[1]Univ. of Michigan, USA, [2]Santa Fe Institute, USA, [3]Univ. of Colorado, USA

14:20-14:40 **Withdrawn**

14:40-15:00 **Generalized Communities in Networks**
M. E. J. Newman[1,2] and Tiago P. Peixoto[3,4]
[1]Univ. of Michigan, USA, [2]Santa Fe Institute, USA, [3]Universität Bremen, Germany, [4]ISI Foundation, Italy

15:00-15:20 **The Ground Truth about Metadata and Community Detection in Networks**
Leto Peel[1,2], Daniel B. Larremore[3], and Aaron Clauset[3,4]
[1]Université catholique de Louvain, Belgium, [2]Université de Namur, Belgium, [3]Santa Fe Institute, USA, [4]Univ. of Colorado, USA

15:00-15:20 **The Ground Truth about Metadata and Community Detection in Networks**
Leto Peel[1,2], Daniel B. Larremore[3], and Aaron Clauset[3,4]
[1]Université catholique de Louvain, Belgium, [2]Université de Namur, Belgium, [3]Santa Fe Institute, USA, [4]Univ. of Colorado, USA

15:20-15:40 **Ranked Communities and the Detection of Dominance and Influence Hierarchies**
Laurent Hébert-Dufresne, Daniel Larremore, and Eleanor Power
Santa Fe Institute, USA

[Session Title: Spreading]

Date and Time	**Wednesday, June 1, 2016 / 14:00-15:40**
Room	**Dongkang C, Avenue 3F**
Session Chair	**Zi-Ke Zhang, Hanghou Normal Univ., China**

14:00-14:20 **How Events Determine Spreading Patterns: Information Transmission via Internal and External Influences on Social Networks**
Chuang Liu[1], Xiu-Xiu Zhan[1], Gui-Quan Sun[2], Zi-Ke Zhang[1], and Pak Ming Hui[3]
[1]Hangzhou Normal Univ., China, [2]Shanxi Univ., China, [3]The Chinese Univ. of Hong Kong, China

14:20-14:40 **The Dynamics of Information-Driven Coordination Phenomena: a Transfer Entropy Analysis**
Javier Borge-Holthoefer[1], Nicola Perra[2], Bruno Gonçalves[3], Sandra González-Bailón[4], Alex Arenas[5], Yamir Moreno[6], and Alessandro Vespignani[2]
[1]Interdisciplinary Internet Institute (IN3), Spain, [2]Northeastern Univ., USA, [3]New York Univ., USA, [4]Univ. of Pennsylvania, USA, [5]Universitat Rovira i Virgili, Spain, [6]Universidad de Zaragoza, Spain

14:40-15:00 **Flockworks: A Class of Dynamic Network Models for Face-to-Face Interactions**
Benjamin F. Maier and Dirk Brockmann
Humboldt-Universität zu Berlin, Germany

15:00-15:20 **Network Segregation and the Spread of Misinformation**
Marcella Tambuscio[1], Giovanni Luca Ciampaglia[2], Diego F. M. Oliveira[3], Giancarlo Ruffo[1], Alessandro Flammini[2,3], and Filippo Menczer[2,3]
[1]Univ. of Turin, Italy, [2]Indiana Univ.Network Science Institute, USA, [3]Indiana Univ., USA

15:20-15:40 **Modeling the Dynamics of Dissent**
Eun Lee[1], Petter Holme[1], and Sang Hoon Lee[2]
[1]Sungkyunkwan Univ., Korea, [2]KIAS, Korea

[Session Title: Economy and Other Interdisciplinary Applications]

Date and Time	**Wednesday, June 1, 2016 / 14:00-15:40**
Room	**Dongkang D, Avenue 3F**
Session Chair	**Irena Vodenska, Boston Univ., USA**

14:00-14:20 **Currency Classification and Structural Changes in Foreign Exchange Markets**
Marcel Wollschlager[1], Alexander P. Becker[2], Irena Vodenska[2], H. Eugene Stanley[2], and Rudi Schafer[1]
[1]Univ. of Duisburg-Essen, Germany, [2]Boston Univ., USA

14:20-14:40 **Contagion in Banking Networks: The Role of Uncertainty**
Stojan Davidovic[1], Mirta Galesic[1,2], Konstantinos Katsikopoulos[1], Amit Kothiyal[1], and Nimalan Arinaminpathy[3]
[1]Max Planck Institute for Human Development, Germany, [2]Santa Fe Institute, USA, [3]Imperial College London, UK

14:40-15:00 **Systemic Risk Analysis on Reconstructed Economic and Financial Networks**
Giulio Cimini[1,2], Tiziano Squartini[1,2], Diego Garlaschelli[3], and Andrea Gabrielli[1,2]
[1]IMT School for Advanced Studies, Italy, [2]Universit a di Roma, Italy, [3]Univ. of Leiden, Netherlands

15:00-15:20 **How the Network of Products Drives the Economic Development of Countries**
Andrea Zaccaria[1,2], Matthieu Cristelli[1,2], Andrea Tacchella[1,2], and Luciano Pietronero[1,2]
[1]Institute for Complex Systems, Italy, [2]"Sapienza" Universitàdi Roma, Italy

15:20-15:40 **Unraveling Complexity of Various Cancers through Combined Framework of Multilevel Theory, Network Theory and Spectral Graph Theory**
Sarika Jalan
IIT Indore, India

[Session Title: Multiplex]

Date and Time	**Wednesday, June 1, 2016 / 16:10-17:50**
Room	**Dongkang A, Avenue 3F**
Session Chair	**Marton Posfai, Univ. of California, USA**

16:10-16:30 **Controllability of Multilayer, Multi-Timescale Networks**
Márton Pósfai[1], Jianxi Gao[2], Sean Cornelius[2], Albert-László Barabási[2], and Raissa M. D'Souza[1]
[1]Univ. of California, USA, [2]Northeastern Univ., USA

16:30-16:50 **Hybrid Phase Transition into an Absorbing State: Percolation and Avalanches in Multilayer Networks**
Deokjae Lee[1], S. Choi[1], M. Stippinger[2], J. Kertész[2,3], and B. Kahng[1]
[1]Seoul Nat'l Univ., Korea, [2]Budapest Univ. of Technology and Economics, Hungary, [3]Central European Univ., Hungary

16:50-17:10 **Competing Spreading Processes on Multiplex Networks: Awareness and Epidemics**
C. Granell, S. Gomez, and A. Arenas
Universitat Rovira i Virgili, Spain

17:10-17:30 **Layer-Switching Cost and Optimality in Information Spreading on Multiplex Networks**
Sang-Hwan Gwak[1], Byungjoon Min[1,2], Nanoom Lee[1], and K. -I. Goh[1]
[1]Korea Univ., Korea, [2]City College of New York, USA

17:30-17:50 **Interests Diffusion in a Semantic Multiplex**
Gregorio D'Agostino and Antonio De Nicola
ENEA Italian Nat'l Agency for New Technologies, Italy

[Session Title: Geometry, Spectra]

Date and Time	**Wednesday, June 1, 2016 / 16:10-17:50**
Room	**Dongkang B, Avenue 3F**
Session Chair	**Dmitri Krioukov, Northeastern Univ., USA**

16:10-16:30 **Quantifying Randomness in Real Networks**
Chiara Orsini[1,2], Marija M. Dankulov[3,4], Pol Colomer-de-Simón[5], Almerima Jamakovic[6], Priya Mahadevan[7], Amin Vahdat[8], Kevin E. Bassler[9,10], Zoltán Toroczkai[11], Marián Boguñá[5], Guido Caldarelli[12], Santo Fortunato[13], and Dmitri Krioukov[1,14]
[1]Univ. of California San Diego, USA, [2]Univ. of Pisa, Italy, [3]Univ. of Belgrade, Serbia, [4]Aalto Univ., Finland, [5]Universitat de Barcelona, Spain, [6]Univ. of Bern, Switzerland, [7]Palo Alto Research Center, USA, [8]Google, USA, [9]Univ. of Houston, USA, [10]Max Planck Institut für Physik Komplexer Systeme, Germany, [11]Univ. of Notre Dame, USA, [12]IMT Alti Studi, Italy, [13]Aalto Univ. School of Science, Finland, [14]Northeastern Univ., USA

16:30-16:50 **Complex Networks as Lorentzian Geometries**
David Rideout
Univ. of California, San Diego, USA

16:50-17:10 **Homological Scaffolds as Networks: What Can We Learn?**
Paul Expert[1], Giovanni Petri[2], and Louis-David Lord[3]
[1]King's College London, UK, [2]ISI Foundation, Italy, [3]Univ. of Oxford, UK

17:10-17:30 **Spectral Analysis of Echo State Networks**
Pau Vilimelis Aceituno[1], Gang Yan[2], and Yang-Yu Liu[1]
[1]Harvard Medical School, USA, [2]Northeastern Univ. USA

17:30-17:50 **Competition between Resolution and Detectability in Spectral Graph Partitioning**
Tatsuro Kawamoto and Yoshiyuki Kabashima
Tokyo Institute of Technology, Japan

[Session Title: Social Networks]

Date and Time	**Wednesday, June 1, 2016 / 16:10-17:50**
Room	**Dongkang C, Avenue 3F**
Session Chair	**Márton Karsai, ENS Lyon/INRIA, France**

16:10-16:30 **Socioeconomic Correlations and Stratification in Social Communication Networks**
Yannick Leo[1], Eric Fleury[1], J. Ignacio Alvarez-Hamelin[2], Carlos Sarraute[3], and Márton Karsai[1]
[1]ENS Lyon/INRIA, France, [2]Universidad de Buenos Aires, Argentina, [3]Grandata Labs, Argentina

16:10-16:30 **Socioeconomic Correlations and Stratification in Social Communication Networks**
Yannick Leo[1], Eric Fleury[1], J. Ignacio Alvarez-Hamelin[2], Carlos Sarraute[3], and M arton Karsai[1]
[1]CNRS, France, [2]Universidad de Buenos Aires, Argentina, [3]Grandata Labs, Argentina

16:30-16:50 **A Static Model for Stylized Facts in Social Networks**
Hang-Hyun Jo[1,2], Yohsuke Murase[3], János Török[4,5,] János Kertész[5,4,2,] and Kimmo Kaski[2]
[1]POSTECH, Korea, [2]Aalto Univ., Finland, [3]RIKEN Advanced Institute for Computational Science, Japan, [4]Budapest Univ. of Technology and Economics, Hungary, [5]Central European Univ., Hungary

16:50-17:10 **The Interplay between Burstiness and Social Capital Allocation in Social Networks**
Enrico Ubaldi[1,2], Alessandro Vezzani[1,3] Nicola Perra[4], Márton Karsai[5], and Raffaella Burioni[1,2]
[1]Universitá di Parma, Italy, [2]INFN, Italy, [3]CNR-Istituto di Nanoscienze, Italy, [4]Univ.of Greenwich, UK, [5]Ecole Normale Sup erieure de Lyon, France

17:10-17:30 **The Multi-Scale Network Landscape of Collaboration**
Arram Bae[1], Doheum Park[1], Yong-Yeol Ahn[2], and Juyong Park[1]
[1]KAIST, Korea, [2]Indiana Univ., USA

17:30-17:50 **The Judge-Contestant Network in Competitions: Biases and Clusters from the 17th International Chopin Piano Competition**
Gyuhyeon Jeon and Juyong Park
KAIST, Korea

[Session Title: Synch and Control]

Date and Time	**Wednesday, June 1, 2016 / 16:10-17:50**
Room	**Dongkang D, Avenue 3F**
Session Chair	**Bing-Hong WANG, Univ. of Science and Technology of China, China**

16:10-16:30 **Effects of Assortativity on Controllability Transition in Complex Networks**
Bing-Hong Wang
Univ. of Science and Technology of China, China

16:30-16:50 **Fragmentation Properties of City Traffic**
Xiaoyun Xu[1,2], Guangquan Lu[1], Daqing Li[1,2], Feilong Wang[1,2], Guanwen Zeng[1,2], Yunpeng Wang[1], and Shlomo Havlin[3]
[1]Beihang Univ., China, [2]Science and Technology on Reliability and Environmental Engineering Laboratory, China, [3]Bar-Ilan Univ., Israel

16:50-17:10 **Concurrent Enhancement of Percolation and Synchronization in Adaptive Networks**
Young-Ho Eom[1], Stefano Boccaletti[2], and Guido Caldarelli[3]
[1]Universidad Carlos III de Madrid, Spain, [2]CNR-Istituto dei Sistemi Complessi, Italy, [3]IMT Institute for Advanced Studies Lucca, Italy

17:10-17:30 **Understanding the Transition Pattern of Synchronization Stability in Power Grids**
Heetae Kim[1], Sang Hoon Lee[2], and Petter Holme[1]
[1]Sungkyunkwan Univ., Korea, [2]KIAS, Korea

17:30-17:50 **Controlling Synchronous Patterns in Complex Networks**
Weijie Lin and Xingang Wang
Shaanxi Normal Univ., China

[Session Title: Resilience]

Date and Time	**Thursday, June 2, 2016 / 11:15-12:35**
Room	**Dongkang A, Avenue 3F**
Session Chair	**Jianxi Gao, Northeastern Univ., USA**

11:15-11:35 **Universal Resilience Patterns in Complex Networks**
Jianxi Gao[1], Baruch Barzel[2], and Albert-László Barabási [1]
[1]Northeastern Univ., USA, [2]Bar-Ilan Univ., Israel

11:35-11:55 **Optimizing the Robustness of Electrical Power Networks against Cascading Failures**
Yingrui Zhang and Osman Yağan
Carnegie Mellon Univ., USA

11:55-12:15 **Exact Calculation of Robustness Properties of Correlated Bimodal Networks**
Toshihiro Tanizawa[1] and Shogo Mizutaka[2]
[1]Nat'l Institute of Technology, Japan, [2]Hokkaido Univ., Japan

12:15-12:35 **A Transition in Growth and Robustness of Evolving Networks**
Takashi Shimada
The Univ. of Tokyo, Japan

[Session Title: Data Analysis]

Date and Time	**Thursday, June 2, 2016 / 11:15-12:35**
Room	**Dongkang B, Avenue 3F**
Session Chair	**Guido Caldarelli, IMT School for Advanced Studies, Italy**

11:15-11:35 **Networks of Plants: How to Measure Similarity in Vegetable Species**
Gianna Vivaldo[1], Elisa Masi[2], Camilla Pandol[2], Stefano Mancuso[2], and Guido Caldarelli[1]
[1]IMT School for Advanced Studies, Italy, [2]Università di Firenze, Italy

11:35-11:55 **Uncovering the Nutritional Landscape of Food**
Seunghyeon Kim[1,2], Jaeyun Sung[1,3,4], Mathias Foo[1,5], Yong-Su Jin[6], and Pan-Jun Kim[1,2]
[1]APCTP, Korea, [2]POSTECH, Korea, [3]Massachusetts General Hospital and Harvard Medical School, USA, [4]Broad Institute of MIT and Harvard, USA, [5]Univ. of Warwick, UK, [6]Univ. of Illinois at Urbana-Champaign, USA

11:55-12:15 **Quantitative Analysis of Color Contrast in the Evolution of Painting**
Byunghwee Lee[1], Daniel Kim[1,2], Hawoong Jeong[1,3], Seunghye Sun[4], and Juyong Park[1]
[1]KAIST, Korea, [2]Santa Fe Institute, USA, [3]APCTP, Korea, [4]The Asia Institute, Korea

12:15-12:35 **A Simple Model of Research Interest Evolution**
Tao Jia[1], Dashun Wang[2], and Boleslaw Szymanski[3]
[1]Southwest Univ., China, [2]Pennsylvania State Univ., USA, [3]Rensselaer Polytechnic Institute, USA

[Session Title: Network Model]

Date and Time	**Thursday, June 2, 2016 / 11:15-12:35**
Room	**Dongkang C, Avenue 3F**
Session Chair	**Claudio J Tessone, Univ. of Zurich, Switzerland**

11:15-11:35 **Temporal Fitness: a Modelling Framework for Systems with Rapidly Varying Network Interactions**
Claudio J. Tessone[1], Guido Caldarelli[2], and Diego Garlaschelli[3]
[1]Univ. of Zurich, Switzerland, [2]IMT Alti Studi Lucca, Italy, [3]Lorentz Institute for Theoretical Physics, The Netherlands

11:35-11:55 **Dynamic Scaling in Synchronization of Coupled Oscillators on Complex Networks**
Chulho Choi[1] and Meesoon Ha[2]
[1]Central European Univ., Hungary, [2]Chosun Univ., Korea

11:55-12:15 **Time-Dependent Spatial Growth of Complex Networks**
Charles Murphy, Edward Laurence, Guillaume St-Onge, Jean-Gabriel Young, and Louis J. Dubé
Université Laval, Canada

12:15-12:35 **A Random Graph Model based on a Given Set of Networks**
Jérôme Kunegis[1], Jun Sun[1], and Eiko Yoneki[2]
[1]Univ. of Koblenz-Landau, Germany, [2]Univ. of Cambridge, UK

[Session Title: NetMed]

Date and Time	**Thursday, June 2, 2016 / 11:15-12:35**
Room	**Dongkang D, Avenue 3F**
Session Chair	**Marc Santolini, Northeastern Univ., USA**

11:15-11:35 **IDEAL: Impact of Differential Expression Across Layers in Multiple Omics Networks Associated with Asthma**
Marc Santolini[1,2,3], Ayse Kilic[4], Taiji Nakano[4], Amal Al Garawi[4], Shizuka Uchida[4], Scott Weiss[1], Harald Renz[4], and Amitabh Sharma[1]
[1]Harvard Medical School,Boston, USA, [2]Northeastern Univ., USA., [3]Dana-Farber Cancer Institute, USA, [4]Philipps Univ., Germany

11:35-11:55 **Spatial Characteristics of Mesocopic Connections in the Mouse Brain Network**
Emma Towlson[1] and Albert-László Barabási[1,2,3,4]
[1]Northeastern Univ., USA, [2]Dana Farber Cancer Institute, USA, [3] Harvard Medical School, USA, [4]Central European Univ., Hungary

11:55-12:15 **Control Principles in the Caenorhabditis Elegans Nervous System**
Gang Yan[1], Petra Vértes[2], Buyun Zhao[2], Emma Towlson[1], William R. Schafer[2], and Albert-László Barabási[1]
[1]Northeastern Univ., USA, [2]Univ. of Cambridge, UK

12:15-12:35 **Multilevel Evolution of Chemical Reaction Networks**
Hyunju Kim, Harrison Smith, Jason Raymond, and Sara I. Walker
Arizona State Univ., USA

[Session Title: Dynamics]

Date and Time	**Thursday, June 2, 2016 / 14:00-15:40**
Room	**Dongkang A, Avenue 3F**
Session Chair	**Naoki Masuda, Univ. of Bristol, UK**

14:00-14:20 **Exactly Simulation of Interacting Non-Markovian Renewal Processes using the Laplace Transform**
Naoki Masuda[1] and Luis E. C. Rocha[2,3]
[1]Univ. of Bristol, Bristol, UK, [2]Universit e de Namur, Belgium, [3]Karolinska Institutet, Sweden

14:20-14:40 **How Cooperation May Behave Differently in Interacting SIS-SIR Dynamics**
Fakhteh Ghanbarnejad[1] and Nahid Azimi-Tafreshi[2]
[1]Technische Universität Berlin, Germany, [2]Institute for Advanced Studies in Basic Sciences, Iran

14:40-15:00 **Strength of Weak Layers in Cascading Failure Dynamics on Multiplex Networks**
Kyu-Min Lee and K. -I. Goh
Korea Univ., Korea

15:00-15:20 **Complex Contagions with Lazy Adoption**
Se-Wook Oh and Mason Alexander Porter
Univ. of Oxford, UK

15:20-15:40 **Degree-based Mean-Field Approximation of Six SIS Models on Scale-Free Networks**
Satoru Morita
Shizuoka Univ., Japan

[Session Title: Network Measure]

Date and Time	**Thursday, June 2, 2016 / 14:00-15:40**
Room	**Dongkang B, Avenue 3F**
Session Chair	**Sang Hoon Lee, KIAS, Korea**

14:00-14:20 **Core-Periphery Structures in Networks and Its Relation to Network Nestedness**

Sang Hoon Lee[1], Mihai Cucuringu[2], Puch Rombach[2], and Mason A. Porter[3]
[1]KIAS, Korea, [2]Univ. of California, Los Angeles, USA, [3]Univ. of Oxford, UK

14:20-14:40 **Effective Distances on Complex Networks**

A. Koher[1], F. Iannelli[2], P. Hövel[1], and I. M. Sokolov[2]
[1]Technische Universität Berlin, Germany, [2]Humboldt-Universität zu Berlin, Germany

14:40-15:00 **Versatility: a Nodal Metric to Quantify Ambiguity in Modular Classification**

Maxwell Shinn[1], Petra Vértes[1], and Ed Bullmore[1,2]
[1]Univ. of Cambridge, UK, [2]Immuno Psychiatry, UK

15:00-15:20 **The H-index of a Network Node and its Relation to its Degree and Coreness**

Linyuan Lu[1], Tao Zhou,[2], Qian-Ming Zhang[2,3], and H. Eugene Stanley[1,3]
[1]Hangzhou Normal Univ., China, [2]Univ. of Electronic Science and Technology of China, China, [3]Boston Univ., USA

15:20-15:40 **Multi-Scale Network Analysis and Reconstruction via a New Statistic: The Onion Decomposition**

Laurent H ebert-Dufresne[1], Joshua A. Grochow[1], and Antoine Allard[2]
[1]Santa Fe Institute, USA, [2]Universitat de Barcelona, Spain

[Session Title: Social]

Date and Time	**Thursday, June 2, 2016 / 14:00-15:40**
Room	**Dongkang C, Avenue 3F**
Session Chair	**Michele Coscia, Harvard Univ., Korea**

14:00-14:20 **Evidence that Calls-based and Mobility Networks are Isomorphic**
Michele Coscia and Ricardo Hausmann
Harvard Univ., USA

14:20-14:40 **Co-Presence as a Proxy for Group Structure and Face-to-Face Contacts**
Génois Mathieu[1], Vestergaard Christian L.[1], Cattuto Ciro[2], and Barrat Alain[1,2]
[1]Universit e de Toulon, France, [2]ISI Foundation, Italy

14:40-15:00 **The Building Blocks and Organizing Principles of Supply Network Complexity**
Tomomi Kito[1], Steve New[2], and Felix Reed-Tsochas[2]
[1]Univ. of Tsukuba, Japan, [2]Univ. of Oxford, UK

15:00-15:20 **Identifying Influential Individuals from Time-Varying Social Interactions**
Radu Tanase, Claudio J. Tessone, and René Algesheimer
Univ. of Zurich, Switzerland

15:20-15:40 **Modeling the Role of Relationship Fading and Breakup in Social Network Formation**
Yohsuke Murase[1], Hang-Hyun Jo[2,3], János Török[4,5], János Kertész[3,4,5], and Kimmo Kaski[3]
[1]RIKEN Advanced Institute for Computational Science, Japan, [2]POSTECH, Korea, [3]Aalto Univ., Finland, [4]Budapest Univ. of Technology and Economics, Hungary, [5]Central European Univ., Hungary

[Session Title: Epidemic]

Date and Time	**Thursday, June 2, 2016 / 14:00-15:40**
Room	**Dongkang D, Avenue 3F**
Session Chair	**Piet Van Mieghem, Delft Univ. of Technology, The Netherlands**

14:00-14:20 **Time-Varying SIS Prevalence in Networks: Theory and New Approximate Formula**
Piet Van Mieghem and Qiang Liu
Delft Univ. of Technology, The Netherlands

14:20-14:40 **Discrete vs. Continuous Time Formulation of the Epidemic Threshold on a Time-Varying Network**
Chiara Poletto[1], Eugenio Valdano[1], and Vittoria Colizza[1,2]
[1]Sorbonne Universités, France, [2]ISI Foundation, Italy

14:40-15:00 **Impact of Spatially Constrained Sampling of Temporal Contact Networks on the Evaluation of the Epidemic Risk**
Christian L. Vestergaard[1], Eugenio Valdano[2,3], Mathieu G enois[1], Chiara Poletto[2,3], Vittoria Colizza[2,3,4], and Alain Barrat[1,4]
[1]Université de Toulon, France, [2]INSERM, France, [3]Sorbonne Universités, France, [4]ISI Foundation, Italy

15:00-15:20 **A Prudent Adaptive Behaviour Accelerates Disease Transmission on Networks**
Samuel V. Scarpino[1,2,3], Antoine Allard[4], and Laurent Hébert-Dufresne[3]
[1]Univ. of Vermont, USA, [2]Univ. of Vermont, USA, [3]Santa Fe Institute, USA, [4]Universitat de Barcelona, Spain

15:20-15:40 **Quantitative Measures of Epidemic Spread on the German Swine Trade Network**
Jason Bassett[1], Hartmut H. K. Lentz[2], Andreas Koher[1], Philipp Hövel[1,3], and Jörn Gethmann[2]
[1]Technische Universität Berlin, Germany, [2]Friedrich-Loeffler-Institut für Tiergesundheit, Germany, [3]Bernstein Center for Computational Neuroscience Berlin, Germany

[Session Title: "IBS Session" Interference and Optimization]

Date and Time	**Thursday, June 2, 2016 / 16:10-17:50**
Room	**Dongkang A, Avenue 3F**
Session Chair	**Sergej Flach, Institute for Basic Science, Korea**

16:10-16:50 **Flat Bands**
Sergej Flach
Institute for Basic Science, Korea

16:50-17:10 **Understanding the XY Model Collective Behaviours through Graph Signal Analysis**
Paul Expert[1], Sarah de Nigris[2], Taro Takaguchi[3], and Renaud Lambiotte[2]
[1]King's College, UK, [2]Université de Namur, Belgium, [3]Nat'l Institute of Informatics, Japan

17:10-17:30 **Machine Learning Meets Network Science: Dimensionality Reduction for Fast and Efficient Embedding of Networks in the Hyperbolic Space**
Josephine Maria Thomas[1], Alessandro Muscoloni[1,2], Sara Ciucci[1,3], Ginestra Bianconi[4], and Carlo Vittorio Cannistraci[1]
[1]Technische Universität Dresden, Germany, [2]Università di Bologna - Via Zamboni, Italy, [3]Lipotype GmbH, Germany, [4]Queen Mary Univ. of London, UK

17:30-17:50 **Common Neighbours and the Local-Community-Paradigm for Topological Link Prediction in Bipartite Networks**
Simone Daminelli, Josephine Maria Thomas, Claudio Duran, and Carlo Vittorio Cannistraci
Technische Universität Dresden, Germany

[Session Title: Data]

Date and Time	**Thursday, June 2, 2016 / 16:10-17:50**
Room	**Dongkang B, Avenue 3F**
Session Chair	**Andrea Gabrielli, Istituto dei Sistemi Complessi (ISC) - CNR, Rome, Italy**

16:10-16:30 **The Scientific Competitiveness of Nations: a Network Analysis**
Andrea Gabrielli[1,2], Giulio Cimini[1,2], Francesco Sylos Labini[1,3], and Andrea Zaccaria[1]
[1]Istituto dei Sistemi Complessi (ISC) – CNR, Italy, [2]Institute for Advanced Studies – IMT, italy, [3]Centro Studi e Ricerche "Enrico Fermi", Italy

16:30-16:50 **Exploring the Anatomy of Physics**
Roberta Sinatra[1,2], Pierre Deville[3], Michael Szell[2], Dashun Wang[4], and Albert-László Barabási[1,2,5]
[1]Central European Univ., Hungary, [2]Northeastern Univ., USA, [3]Université Catholique de Louvain, Belgium, [4]Pennsylvania State Univ., USA, [5]Dana Farber Cancer Institute, USA

16:50-17:10 **Quantifying Multilevel Evolution of Technology Combination Network**
Daniel Kim[1,2,3], Young-Ho Eom[4], Hawoong Jeong[2,5], and Hyejin Youn[1,3]
[1]Univ. of Oxford, UK, [2]KAIST, Korea, [3]Santa Fe Institute, USA, [4]Universidad Carlos III de Madrid, Spain, [5]APCTP, Korea

17:10-17:30 **Which Publication is your Representative Work?**
Qikai Niu, Jianlin Zhou, An Zeng, Ying Fan, and Zengru Di
Beijing Normal Univ., China

[Session Title: Diffusion and Transport]

Date and Time	**Thursday, June 2, 2016 / 16:10-17:50**
Room	**Dongkang C, Avenue 3F**
Session Chair	**Bernat Corominas-Murtra, Medical Univ. of Vienna, Austria**

16:10-16:30 **Robustness of Scaling Patterns in Targeted Diffusion over Directed, Weighted Networks**
Bernat Corominas-Murtra[1], Rudolf Hanel[1], and Stefan Thurner[1,2,3]
[1]Medical Univ. of Vienna, Austria, [2]Santa Fe Institute, USA, [3]IIASA, Austria

16:30-16:50 **Mesoscopic Structures and Diffusion Process Memory**
Mauro Faccin and Jean-Charles Delvenne
Université Catholique de Louvain, Belgium

16:50-17:10 **Long-Range Correlations and Memory in the Dynamics of Internet Routing**
Maksim Kitsak[1], Ahmed Elmokash[2], Shlomo Havlin[3], and Dmitri Kriuokov[1]
[1]Northeastern Univ., USA, [2]Simula Research Lab, Norway, [3]Bar-Ilan Univ., Israel

17:10-17:30 **Link Structure Analysis of Urban Road Networks for Identifying Traffic Impact Areas**
Wei Chien Benny Chin, Tzai Hung Wen, and Pei Chun Lai
Nat'l Taiwan Univ., Taiwan

17:30-17:50 **Optimal Transport in Worldwide Metro Networks**
Wei Li[1,2], Jian Gu[2,3], Shiping Liu[2,4], Yueying Zhu[1,5,6], Shenfeng Deng[1], Longfeng Zhao[1], Jihui Han[1], and Xu Cai[1]
[1]Huazhong Normal Univ., China, [2]Max-Planck-Institute for Mathematics in the Sciences, Germany, [3]Jiangnan Univ., China, [4]Durham Univ., UK, [5]LUNAM Universite, France, [6]Universitye du Maine, France

[Session Title: Epidemics]

Date and Time	**Thursday, June 2, 2016 / 16:10-17:50**
Room	**Dongkang D, Avenue 3F**
Session Chair	**Huijuan Wang, Delft Univ. of Technology, The Netherlands**

16:10-16:30 **Epidemic Mitigation via Awareness Propagation in Communications Network: Role of Time Scale**

Huijuan Wang[1], Chuyi Chen[1], Bo Qu[1], Daqing Li[2], and Shlomo Havlin[3]

[1]Delft Univ. of Technology, The Netherlands, [2]Beihang Univ., China, [3]Bar-Ilan Univ., Israel

16:30-16:50 **Epidemic Counter-Measures and Complex Social Dynamics**

Enys Mones[1], Arkadiusz Stopczynski[2], Alex 'Sandy' Pentland[2], and Sune Lehmann[1,3]

[1]Technical Univ. of Denmark, Denmark, [2]MIT, USA, [3]Univ. of Copenhagen, Denmark

16:50-17:10 **Heterogeneous Vaccination Coverage and Measles Transmission Dynamics**

Benjamin M. Althouse[1,2,3], Marcel Salathé[4], Marc Lipsitch[5], Carl T. Bergstrom[6], and Jevin D. West[6]

[1]Institute for Disease Modeling, USA, [2]Santa Fe Institute, USA, [3]New Mexico State Univ., USA, [4]EPFL, Switzerland, [5]Harvard School of Public Health, USA, [6]Univ. of Washington, USA

17:10-17:30 **Quantifying Social Contacts in a Household Setting of Rural Kenya using Wearable Proximity Sensors**

Moses C. Kiti[1], Michele Tizzoni[2], Timothy M. Kinyanjui[1,3], Dorothy C. Koech[1], Patrick K. Munywoki[1], Milosch Meriac[5], Luca Cappa[2], Andr Panisson[2], Alain Barrat[2,6], Ciro Cattuto[2], and D. James Nokes[1,4]

[1]KEMRI-Wellcome Trust Research Programme, Kenya, [2]ISI Foundation, Italy, [3]The Univ. of Manchester, UK, [4]Univ. of Warwick, UK, [5]Bitmanufaktory Ltd, UK, [6]CNRS, France

[Lightning Session]

Date and Time	**Friday, June 3, 2016 / 14:00-15:40**
Room	**Crystal Ballroom, Convention Center 3F**
Session Chair	**Petter Holme, Sungkyunkwan Univ., Korea**

14:00 **Exploring Truss Structure in Directed Networks**
Taro Takaguchi[1,2] and Yuichi Yoshida[1,3]
[1]Nat'l Institute of Informatics, Japan, [2]Japan Science and Technology Agency, Japan, [3]Preferred Infrastructure, Inc., Japan

14:05 **Sequential Seeding in Social Networks with the Dynamic Recomputation of Network Measures**
Jarosław Jankowski[1], Piotr Bródka[1], Tomasz Kajdanowicz[1], Przemysław Kazienko[1], Bolesław Szymański[1,2], and Radosław Michalski[1]
[1]Wrocław Univ. of Technology, Poland, [2]Rensselaer Polytechnic Institute, USA

14:10 **Finite Size Analysis of the Detectability Limit of the Stochastic Block Model**
Jean-Gabriel Young[1], Laurent Hébert-Dufresne[2], Edward Laurence[1], Patrick Desrosiers[1], and Louis J. Dubé[1]
[1]Université Laval, Canada, [2]Santa Fe Institute, USA

14:15 **Powerful by Presence: the Role of Core Nodes in the Social Influence Process**
Radoslaw Michalski, Przemyslaw Kazienko, and Marcin Kulisiewicz
Wroclaw Univ. of Technology, Poland

14:20 **Charting Cultural Exchange (Now in Color)**
Maximilian Schich and Mauro Martino
[1]The Univ. of Texas at Dallas, USA, [2]ETHZ Zurich, Switzerland, [3]IBM Watson Group, USA

14:25 **Measuring Creativity in Music via a Network Analysis of Codeword Transitions**
Doheum Park and Juyong Park
KAIST, Korea

14:30 **Understanding the Dynamics of Crowd Gathering in Urban Areas**
Pu Wang and Zhiren Huang
Central South Univ., China

14:35 **User-based Representation of Time-Resolved Multimodal Public Transportation Networks**
Laura Alessandretti[1,2,3], Márton Karsai[1], and Laetitia Gauvin[2]
[1]Laboratoire de l'Informatique du Parall elisme, France, [2] ISI Foundation, Italy, [3]City Univ. London, UK

14:40 **Structural Diversity and Homophily: A Study Across More than One Hundred Large-Scale Networks**
Yuxiao Dong, Reid A. Johnson, Jian Xu, and Nitesh V. Chawla
Univ. of Notre Dame, USA

14:45 **Rumor Source Detection: Power of Querying**
Sangwoo Moon, Jaeyeong Choi, Jinwoo Shin, and Yung Yi
KAIST, Korea

14:50 **Generalized Epidemic Process on Complex Networks**
Kihong Chung[1], Yongjoo Baek[2], Daniel Kim[1,3], Meesoon Ha[4], and Hawoong Jeong[1]
[1]KAIST, Korea, [2]Technion, Israel, [4]Santa Fe Institute, USA, [5]Chosun Univ., Korea

14:55 **Spreading to Localized Targets in Complex Networks**
Ye Sun, Long Ma, An Zeng, and Wen-Xu Wang
Beijing Normal Univ., China

15:00 **Understanding PageRank as a Biplex Random Walker**
Francisco Pedroche[1], Miguel Romance[2,3], and Regino Criado[2,3]
[1]Universitat Politécnica de Valencia, Spain, [2]Rey Juan Carlos Univ., Spain, [3]Technical Univ. of Madrid, Spain

15:05 **Network based Disease Classification by using Multilayer Networks of Phenomic and Molecular Profiles**
Xuezhong Zhou[3], Lei Lei[2], Jun Liu[2], Joesph Loscalzo[4], Bing Li[2], Yingying Zhang[2], Guangmin Liu[3], Zhong Wang[2], and Amitabh Sharma[1]
[1]Brigham and Women's Hospital, USA, [2]China Academy of Chinese Medical Sciences, China, [3]Beijing Jiaotong Univ., China, [4]Harvard Medical School, USA

15:10 **Use of Network Theory to Predict Hormone Response in Plant Organs**
George Bassel
Univ. of Birmingham, UK

15:15 **Hetherogeneous Dynamics of Economic Complexity**
Andrea Tacchella[1], Matthieu Cristelli[1], Andrea Zaccaria[1], and Luciano Pietronero[1,2]
[1]Italian Nat'l Research Council, Italy, [2]La Sapienza Univ., Italy

15:20 **Voter Dynamics in an Adaptive Stochastic Block Model and the Impact of Extreme Political Strategies**
Antoine Allard[1], Laurent Hébert-Dufresne[2], Eric Libby[2], Pierre-André No□el[3], and Jean-Gabriel Young[4]
[1]Universitat de Barcelona, Spain, [2]Santa Fe Institute, USA, [3]Univ. of California, USA, [4]Université Laval, Canada

15:25 **"Moviegalaxies"- A Social Network Visualization Engine and Teaching Tool**
Jermain Kaminski[1,2], Michael Schober[3], Raymond Albaladejo[3], Oleksandr Zastupailo[1], and Cesar Hidalgo[2]
[1]RWTH Aachen Univ., Germany, [2]MIT Media Lab, USA, [3]Google Inc., USA

Poster Session

*All posters will be displayed for 2 days from Wednesday, June 1 to Thursday, June 2.

P1 **Contagion of Cooperation in a Donation Game Played on Chain Networks**
Yutaka Horita[1,2], Masanori Takezawa[3], Takuji Kinjo[3], Yo Nakawake[3], and Naoki Masuda[4]
[1]Nat'l Institute of Informatics, Japan, [2]JST, ERATO, Japan, [3]Hokkaido Univ., Japan, [4]Univ. of Bristol, UK

P2 **Impacts of Climate Change and Human Activity on Nestedness and Modularity of Food Webs and Mutualistic Networks**
Kazuhiro Takemoto and Kosuke Kajihara
Kyushu Institute of Technology, Japan

P3 **The Time-Varying Relation between Social Networks and Bank Loyalty**
Sümeyra Atmaca[1], Koen Schoors[1], and Marijn Verschelde[3]
[1]Ghent Univ., Belgium, [2]IÉSEG School of Management, France

P4 **Rendezvous of Heterogeneous Multi-Agent Networks via Event-Driven Control**
Bin Hu[1], Zhi-Hong Guan[1], Ming Chi[1], Ding-Xin He[1] and Xiao-Hui Li[2]
[1]Huazhong Univ. of Science and Technology, China, [2]Wuhan Univ. of Science and Technology, China

P5 **Predicting Plant Cell Divisions using 3D Cell Interaction Networks**
Matthew D. B. Jackson[1], Soeren Strauss[2], Alexander T. Topham[1], Daniel Kierzkowski[2], Thomas Montenegro-Johnson[3], Richard S. Smith[2], and George W. Bassel[1]
[1]Univ. of Birmingham, UK, [2]Max Planck Institute for Plant Breeding Research, Germany, [3]Univ. of Cambridge, UK

P6 **Finding Communities by their Centers**
Yan Chen[1], Pei Zhao[1], Ping Li[1], Kai Zhang[2], and Jie Zhang[3]
[1]Southwest Petroleum Univ., China, [2]NEC Laboratories America, Inc., USA, [3]Fudan Univ., China

P7 **Network of Air Quality Monitoring Stations in Malaysia**
Fatimah Abdul Razak, Sakhinah Abu Bakar, Muhammad Nazirul Aiman Abu Supian, and Norsuhaili Mahamed Rasidi
Universiti Kebangsaan Malaysia, Malaysia

P8 **Risk Propagation of venture Capital Market: Dynamic Network Approach**
Xin Zhang[1,3], Ning Hu[1]. Yonatan. Berman[2], and H. E. Stanley[3]
[1]Shanghai Maritime Univ., China, [2]Tel-Aviv Univ., Israel, [3]Center for Polymer Studies, USA

P9 **Transformation within Eurozone's Investment Network**
Muhammad Mohsin Hakeem and Ken-ichi Suzuki
Tohoku Univ., Japan

P10 **A General Algorithm of Generating Multiplex Networks based on Shared Links**
Yinzuo Zhou[1] and Jie Zhou[2]
[1]Hangzhou Normal Univ., China, [2]East China Normal Univ., China

P11 **Transformations within G8 and GCC Trade Networks**
Muhammad Mohsin Hakeem
Tohoku Univ., Japan

P12 **Scaling Properties of Dynamical Fluctuations in Temporal Networks**
Liping Chi and Chunbin Yang
Central China Normal Univ., China

P13 **Efficient Network Disintegration under Incomplete Information: the Comic Effect of Link Prediction**
Suo-Yi Tan[1], Jun Wu[1,2], Linyuan Lu[3,4], Meng-Jun Li[1], and Xin Lu[1,5]
[1]Nat'l Univ. of Defense Technology, China, [2]Univ. of California Davis, USA, [3]Hangzhou Normal Univ., China, [4]Univ. of Electronic Science and Technology of China, China, [5]Karolinska Institutet, Sweden

P14 **Looking Far Into the Social Groups' Future**
Stanislaw Saganowski, Piotr Bródka, Tomasz Kajdanowicz, and Tomasz Kajdanowicz
Wrocław Univ. of Technology, Poland

P15 **A Comparative Analysis of Community Detection Algorithms on Artificial Networks**
Zhao Yang, René Algesheimer, and Claudio J. Tessone
Univ. of Zürich, Zürich, Switzerland

P16 **The Transition Point in the Analysis of Chinese Multilayer Air Transport Networks**
Jian Jiang[1], J. H Han[2], R. Zhang[1], and W Li[2]
[1]Wuhan Textile Univ., China, [2]Central China Normal Univ., China

P17 **Optimal Inter-Connections for Spectral Radius of Interdependent Complex Networks: a Perturbation Approach**
Huashan Chen[1], Shouhuai Xu[2], and Wenlian Lu[3]
[1]Chinese Academy of Sciences, China, [2]Texas Univ. at San Antonio, USA, [3]Fudan Univ., China

P18 **Measuring the Robustness of Link Prediction Algorithms under Noisy Environment**
Peng Zhang[1], Xiang Wang[1], Futian Wang[1], An Zeng[2], and Jinghua Xiao[1]
[1]Beijing Univ. of Posts and Telecommunications, China, [2]Beijing Normal Univ., China

P19 **The Reconstruction of Complex Networks with Community Structure**
Peng Zhang[1], Futian Wang[1],
Xiang Wang[1], An Zeng[2], and Jinghua Xiao[1]
[1]Beijing Univ. of Posts and Telecommunications, China, [2]Beijing Normal Univ., China

P20 **Systemic Risk in Dynamic Economic Systems**
Qingmin Hao[1] and Jinlu Li[2]
[1]Tianjin Univ., China, [2]Shawnee State Univ., USA

P21 **Consensus Speed Optimisation with Finite Leadership Selection in Weighted k-Outdegree Networks**
Ruaridh Clark, Giuliano Punzo, Kristaps Baumanis, and Malcolm Macdonald
Univ. of Strathclyde, UK

P22 **Effect of Network Structure on Social Information Spread**
Ho June Cha, Nam June Cha, Ji Young Kim, and Junseok Hwang
Seoul Nat'l Univ., Korea

P23 **Decentralized Fixed Modes of Networked MIMO Systems**
Yuqing Hao and Zhisheng Duan
Peking Univ., China

P24 **Effect of the Initially Infected Node on the Spreading Time in SIS Epidemics**
Zhidong He and Piet Van Mieghem
Delft Univ. of Technology, The Netherlands

P25 **Narratives as Unfolding Dynamical Networks and Mapping of the Interaction Dynamics via Topical States**
Semi Min and Juyong Park
KAIST, Korea

P26 **A New Weighted Degree Centrality Measure: the Application in an Animal Disease Epidemics.**
Candeloro Luca, Savini Lara, and Conte Annamaria
Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise ''G. Caporale'', Italy

P27 **SIS Epidemic Spreading with Heterogeneous Infection Rates**
Bo Qu and Huijuan Wang
Delft Univ. of Technology, The Netherlands

P28 **Network of Popular Aongs based on Non-Musical Extrinsic Properties: Its Wffect on the Songs' Success**
Seungkyu Shin and Juyong Park
KAIST, Korea

P29 **A Network Model of Honey Bee Colony Population Dynamics**
Weibing Deng
Central China Normal Univ., China

P30 **Influence Maximization via a Generalized Degree Discount Heuristics**
Xiaojie Wang, Chengli Zhao, Xue Zhang, Xiaojun Duan, and Dongyun Yi
Nat'l Univ. of Defense Technology, China

P31 **Application of Complex Networks to the Management Domain: the Case of Organizational Activity**
Christos Ellinas[1,2], Neil Allan[2], and Anders Johansson[1]
[1]Univ. of Bristol, UK, [2]Bradford-on-Avon, UK

P32 **Genealogical Trees of Scientific Papers**
Micha□el Waumans and Hugues Bersini
Ecole Polytechnique de Bruxelles - ULB, Belgium

P33 **Interaction Patterns in Diabetes Mellitus II network: An RMT relation**
Aparna Rai, Alok Yadav, Sanjiv K. Dwivedi, and Sarika Jalan
Indian Institute of Technology, India

P34 **Exploring Truss Structure in Directed Networks**
Taro Takaguchi[1,2] and Yuichi Yoshida[1,3]
[1]Nat'l Institute of Informatics, Japan, [2]Japan Science and Technology Agency, Japan, [3]Preferred Infrastructure, Inc., Japan

P35 **Jamming Transition of the Traffic Model with Heterogeneous Node Capacity on the Scale-Free Network**
Woosik Choi, Yup Kim, and Soon-Hyung Yook
Kyung Hee Univ., Korea

P36 **Understanding the Origin of Criticality in Meme Popularity Distribution using Position Eependent Biased Random Walk**
Seokjong Park, Soon-Hyung Yook, and Yup Kim
Kyung Hee Univ., Korea

P37 **Configuration Network Constructed from Two-Dimensional Ising Model**
Hye Jin Park and Beom Jun Kim
Sungkyunkwan Univ., Korea

P38 **Navigation by Anomalous Random Walks on Complex Networks**
Tongfeng Weng and Pan Hui
Hong Kong Univ. of Science and Technology, China

P39 **Inferring Parent-Child Links in Online Social Networks**
Xiao-Ke Xu
Dalian Minzu Univ., China

P40 **Network Effects in Team Assembly and Crime Ideation in Criminal Co-Offender Networks**
Petter Holme[1] and Yukie Sano[2]
[1]Sungkyunkwan Univ., Korea, [2]Univ. of Tsukuba, Japan

P41 **Identifying Causal Networks from Time-Series Data of Noise-Driven Dynamics**
Masato S. Abe[1,2] and Shin-ichiro Nakayama[3]
[1]Nat'l Institute of Informatics, Japan, [2]Japan Science and Technology Agency, Japan, [3]Nat'l Research Institute of Fisheries Science, Japan

P42 **Withdrawn**

P43 **Analysis and Improvement of Vehicle Information Sharing Networks**
Hang Gong, Zhiren Huang, and Chengcheng Wang
Central South Univ., China

P44 **Withdrawn**

P45 **Locating Traffic Information Sources in Transportation Networks**
Chengcheng Wang, Hang Gong, and Zhiren Huang
Central South Univ., China

P46 **Canary in a Coal Mine - Analysis of Systemic Risk**
Gabjin Oh[1], Hyeongsop Shim[2], and Yong-Cheol Kim[3]
[1]Chosun Univ., Korea, [2]UNIST, Korea. [3]Univ. of Wisconsin-Milwaukee, USA

P47 **Spatial-Temporal Networks in Epidemics: Comparing Network Clustering Patterns of Transmission and Common-Origin Structures**
Fei-Ying Kuo and Tzai-Hung Wen
Nat'l Taiwan Univ., Taiwan

P48 **Locating Multi Source of Large-Scale Social Networks based on Sub-Graph Extraction**
Xizhe Zhang[1], Yubo Zhang[1], Tianyang Lv[2,3], and Bin Zhang[1]
[1]Northeastern Univ., China, [2]Harbin Engineering Univ., China, [3]Nat'l Audit Office, China

P49 **Discovering Important People in Facebook using Rule Learning**
Fredrik Erlandsson[1], Piotr Bródka[2], Anton Borg[1], and Henric Johnson[1]
[1]Blekinge Institute of Technology, Sweden, [2]Wrocław Univ. of Technology, Poland

P50 **Chimera Revisited : Impact of Multiplexing**
Saptarshi Ghosh, Aradhana Singh, and Sarika Jalan
Indian Institute of Technology Indore, India

P51 **Do Community Detections Methods Yield Better Label Space Division than Random Partitioning for Multi-Label Classification?**
Piotr Szymański [1,2] and Tomasz Kajdanowicz[1]
[1]Wrocaw Univ. of Technology, Poland, [2]Illimites Foundation, Poland

P52 **Scikit-Multilearn: Python environment for Multi-Label Classification with Community Detection based Label Space Division**
Piotr Szymański[1,2]
[1]Wroclaw Univ. of Technology, Poland, [2]Illimites Foundation, Poland

P53 **Co-Evolution of Growth and Dynamics on Network**
Guillaume St-Onge, Edward Laurence, Charles Murphy, Jean-Gabriel Young, and Louis J. Dubé
Université Laval, Canada

P54 **The Computational Hardness of dK-Series**
William E. Devanny, David Eppstein, and Bálint Tillman
Univ. of California, Irvine, USA

P55 **Usefulness of the Fama and French Three-Factor Model in Shanghai A-Share Market**
Gabjin Oh, Jie Deng, and Ayoung Park
Chosun Univ., Korea

P56 **Simulated Graph for Benchmarking Community Detection in Bipartite Networks**
Jun Jin Choong and Tsuyoshi Murata
Tokyo Institute of Technology, Japan

P57 **The Source of Systemic Risk in International Equity Market**
Gabjin Oh, Ayoung Park, and Jie Deng
Chosun Univ., Korea

P58 **Leveraging Layers Aggregation for Community Detection in Multiplex Networks**
Ralucca M. Gera[1], Ryan E. Miller[1], and Akrati Saxena[2]
[1]Naval Postgraduate School, USA, [2]Indian Institute of Technology, India

P59 **Node Centrality in Networks with both Cooperative and Conflict Link**
Dongfeng Tan, Jiayi Sun, Yaohong Zhang, and Baohong Liu
Nat'l Univ. of Defense Technology, China

P60 **Pricing Effects on Usability: Examining the Network Structure of Bike Sharing Program Before and After Introducing a New Pricing Policy**
Chen-Shuo Hong and Chieh-Ting Tsai
Nat'l Taiwan Univ., Taiwan

P61 **A Knowledge-based Methodto Detect Essential Proteins by Integrating DIP with STRING**
Yuanyuan Sun, Yawen Guan, Jundong Yan, Zhihao Yang, Jian Wang, Hongfei Lin, and Shaowu Zhang
Dalian Univ. of Technology, China

P62 **Generalizing Relatedness Measures Derived from Language Networks using Small World Walks**
Simon De Deyne[1], Dan Navarro[2], Amy Perfors[1], and Gert Storms[3]
[1]Univ. of Adelaide, Australia, [2]UNSW, Australia, [3]Univ. of Leuven, Belgium

P63 **Analyzing the Urban Street Networks of Korea**
Byoung-Hwa Lee and Woo-Sung Jung
POSTECH, Korea

P64 **Portfolio Investment Network and Economy: The case of EU**
Muhammad Mohsin Hakeem and Ken-ichi Suzuki
Tohoku Univ., Japan

P65 **Spectrum of Controlling and Observing Complex Networks**
Gang Yan[1], Georgios Tsekenis[1], Baruch Barzel[2], Jean-Jacques Slotine[3], Yang-Yu Liu[4], and Albert-László Barabási[1]
[1]Northeastern Univ., USA, [2]Bar-Ilan Univ., Israel, [3]MIT, USA, [4]Harvard Medical School, USA

P66 **Quantifying Uncertainty in Network Regressions**
Bailey K. Fosdick[1], Tyler H. McCormick[2], and Frank W. Marrs[1]
[1]Colorado State Univ., USA, [2]Univ. of Washington, USA

P67 **Distributed Control of Complex Networked Systems with Directed Communication Topology**
Yuezu Lv, Zhongkui Li, and Zhisheng Duan
Peking Univ., China

P68 **Similarity Distribution Approach for Link Prediction under Random Deletion Process**
Min-Woo Ahn and Woo-Sung Jung
POSTECH, Korea

P69 **Information Propagation in Clustered Multilayer Networks**
Yong Zhuang and Osman Yağan
Carnegie Mellon Univ., USA

P70 **Large Scale Network Measures Computation using Distributed Computational Model in Comparison to Centralized Methods**
Roman Bartusiak and Tomasz Kajdanowicz
Wroclaw Univ. of Technology, Poland

P71 **Extended Totally Asymmetric Simple Exclusion Process with Langmuir Kinetics on a Network**
Daichi Yanagisawa and Shingo Ichiki
The Univ. of Tokyo, Japan

P72 **Structural Patterns in World Mythology and Folklore**
Hyunuk Kim[1], Marcus J. Hamilton[2,3], Woo-Sung Jung[1], and Hyejin Youn[2,4,5]
[1]POSTECH, Korea, [2]Santa Fe Institute, USA, [3]Arizona State Univ., USA, [4]Oxford Martin School, UK, [5]Univ. of Oxford, UK

P73 **Effect of Activity and Memory on Temporal Networks**
Hyewon Kim[1], Meesoon Ha[2], and Hawoong Jeong[1]
[1]KAIST, Korea, [2]Chosun Univ., Korea

P74 **Navigating Adversarial Knowledge Networks: The Effects of Player Skill on Team Assembly Strategies in Multiplayer Online Battle Arena Games**
Brian C. Keegan[1], Jooyeon Kim[2], and Alice Oh[2]
[1]Harvard Univ., USA, [2]KAIST, Korea

P75 **Quantifying Failure Dependencies in Multi-Layer Mobile Broadband Networks**
Dong Zhou, Džiugas Baltrūnas, and Ahmed Elmokashfi
Simula Research Laboratory, Norway

P76 **Bridging the Gap – a Unifying Approach to Proximity on Networks**
Kenneth S. Berenhaut, Peter S. Barr, and Alyssa M. Kogel
Wake Forest Univ., USA

P77 **Graphlet Analysis of Global City Street Networks**
Garvin Haslett[1], Seth Bullock[2], and Markus Brede[1]
[1]Univ. of Southampton, UK, [2]Univ. of Bristol, UK

P78 **Formation of Network and Group Intimacy**
Kibum Kim, Woo Seong Jo, and Beom Jun Kim
Sungkyunkwan Univ., Korea

P79 **Unraveling the Network Structures of Neocortical Microcircuitry: Hubs, Motifs, Small World and E/I Ratios**
Eyal Gal[1], Amir Globerson[2], Mickey London[1], Eilif Muller[3], Michael Reimann[3], Henry Markram[3], and Idan Segev[1]
[1]The Hebrew Univ., Israel, [2]Tel Aviv Univ, Isarel, [3]École Polytechnique Fédérale de Lausanne, Switzerland

P80 **Extracting Hierarchical Organization of Communities in Networks by Series of Phase Transitions Induced by Quasi-Static Increase in Resolution**
Qiu Xu-le[1] and Hiroshi Okamoto[1,2]
[1]Fuji Xerox, Co., Ltd., Japan, [2]RIKEN Brain Science Institute, Japan

P81 **Withdrawn**

P82 **A Sociosemantic Account of Artistic Communities: Structural Position and Involvement in Meaning Making**
Ju-Sung Lee[1], Nikita Basov[2], and Artem Antoniuk[2]
[1]Erasmus Univ. Rotterdam, The Netherlands, [2]St. Petersburg State Univ. - Bielefeld Univ., St., Russia

P83 **A new Network Generation Model based on Multilayer Network**
Chao Fan and Fujio Toriumi
The Univ. of Tokyo, Japan

P84 **Research on Geo-Relationship Network and the Competing (or Mutually Beneficial) Relationship Network of Textile Enterprises in China**
Jie Liu, Jian Jiang, Qunjiao Zhang, and Hui Zhou
Wuhan Textile Univ., China

P85 **Dynamics of Uncertain and Conflicting Opinions in Social Networks**
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P86 **Cyber War Game in Temporal Networks**
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P87 **Cooperation Prediction based on Github Developers Network**
Roman Bartusiak and Tomasz Kajdanowicz
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P88 **Community Detection by using Laser Network**
Hiromasa Sakaguchi[1,2], Shuhei Tamate[2], Yoshihisa Yamamoto[3], and Shoko Utsunomiya[2]
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P89 **Cooperative Spreading Diseases with Mobile Agents**
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P90 **Superhero Social Networks**
Pédraig Mac Carron and James Carney
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P91 **Nucleation Theory Meets Network Science**
Jan Kulveit and Pavel Demo
Academy of Sciences of the Czech Republic, Czech Republic

P92 **Musical Collaboration Networks**
Pádraig MacCarron
Univ. of Oxford, UK

P93 **Research and Application of Algorithm for Isomorphism Determination of Graphs based on Circuit Simulation Method**
Huiliang Shang
Fudan Univ., China

P94 **Network Structure of Fission-Fusion of African Rebel Groups**
Koji Oishi
The Univ. of Tokyo, Japan

P95 **How to Control a Firm's Reputation in a Globalized Economy**
Yan Zhang, Antonios Garas, and Frank Schweitzer
ETH Zurich, Switzerland

P96 **Network based Quality Prediction on Wikipedia**
Rajmund Kleminski[1], Tomasz Kajdanowicz[1], Roman Bartusiak[1], Radosaw Nielek[2], and Adam Wierzbicki[2]
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P97 **Modeling Common-Interest Social Networks through Composite Graphs**
Rashad Eletreby and Osman Yağan
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P98 **Withdrawn**

P99 **Recovering the Einstein-Hilbert Action from Lorentzian Random Geometric Graphs**
Will Cunningham
Northeastern Univ., USA

P100 **Knowledge Spillovers through Patent Inventor Sharing in Regional Biopharma Research**
Greg Morrison and Fabio Pammolli
IMT Lucca School for Advanced Studies, Italy

P101 **Sentiment Analysis using Community Detection in Big Unlabeled Corpora**
Lukasz Augustyniak and Tomasz Kajdanowicz
Wroclaw Univ. of Technology, Poland

P102 **Lexicon-based Ensemble Classification for Sentiment Analysis**
Lukasz Augustyniak, Piotr Szymański, Tomasz Kajdanowicz, and Roman Bartusiak
Wroclaw Univ. of Technology, Poland

P103 **Multiplex Network Growth with Finite Budgets**
Kevin Chan and Ananthram Swami
US Army Research Laboratory, USA

P104 **Representing Higher-Order Dependencies in Networks**
Jian Xu, Thanuka Wickramarathne, and Nitesh Chawla
Univ. of Notre Dame, USA

P105 **Steady State Phenomena and Percolation in Sandpile Diffusion Processes**
Prithwish Basu and Feng Yu
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P106 **Targeting a Dark Network in a Multiplex Social Network**
Ralucca M. Gera and Scott Warnke
Naval Postgraduate School, USA

P107 **Ever Expressed Genes and Topology of Gene Regulatory Networks**
Chenping Zhu[1,2], Jing Zhao[3], Chuanyang Yin[4], Xiliang Peng[1], and Huijie Yang[5], Wen-Hsiung Li[6], and Chin-Kun Hu[5,6,7]
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P108 **Network Dimensions in the Dallas Museum of Art**
Maximilian Schich
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P109 **Location-based Network Model**
Kosuke Shinoda
The Univ. of Electro-Communications, Japan

P110 **Grand-Canonical Validation of Bipartite Networks**
Fabio Saracco[1], Riccardo Di Clemente[2], Andrea Gabrielli[1,3], and Tiziano Squartini[1]
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P111 **A Disease Centrality Identifies Multi-System Proteinopathy Disease Genes**
Marc Santolini[1,2,3,] Brett Winborn[4], Shikang Liu[1], Hong Joo Kim[4], J Paul Taylor[4], and Amitabh Sharma[1,3]
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P112 **Dynamical Analyses in Four Financial Stock Markets**
Kyungsik Kim[1] and Seungsik Min[2]
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P113 **Quantifying Wikipedia: Massive History of Online Open-Editing Encyclopedia**
Jinhyuk Yun[1], Sang Hoon Lee[2], and Hawoong Jeong[1,3]
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P114 **Privacy and Social Capital in Online Social Networks**
Jin-Hee Cho[1], Izzat Alsmadi[2], and Dianxiang Xu[3]
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P115 **Political Inclination and Opinion Spread in Presidential Elections**
Woo Seong Jo and Beom Jun Kim
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P116 **Homophily and Legislative Co-Authorship: New Evidence from Ukraine**
Tymofii Brik[1] and Ostapchuk Dmytro[2]
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P117 **Molecular Network of Obesity and Its Induced Diseases**
Jaisri Jagannadham, Hitesh Kumar Jaiswal, Stuti Agrawal, and Kamal Rawal
Jaypee Institute of Information Technology, India

P118 **Combination of Tit-for-Tat and Anti-Tit-for-Tat Remedies Problems of Tit-for-Tat**
Su Do Yi[1], Seung Ki Baek[1], and Jung-Kyoo Choi[2]
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P119 **Vulnerability of Structural Brain Network for Simulation of Neurodegeneration in Sleep Deprivation**
Min-Hee Lee[1], Youngjin Lee[2], Yoon Ho Hwang[1], Areum Min[1], Bong Soo Han[2], and Dong Youn Kim[1]
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P120 **Power Difference in Power-Grid System**
Mi Jin Lee and Beom Jun Kim
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P121 **A Traffic Reliability Index based on Percolation Theory**
Limiao Zhang[1,2], Guanwen Zeng[1,2], and Daqing Li[1,2]
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P122 **Competition Between Layers in Multiplex Complex Networks based on Local Optimization**
Jiuhua Zhao[1,2] and Xiaofan Wang[1,2]
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P123 **Cascading Failures by Fluctuating Loads in Scale-Free Networks**
Kousuke Yakubo[1] and Shogo Mizutaka[2]
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P124 **Network Evolution and Understanding Human Gene-Phenotype Relationship**
Seong Kyu Han, Donghyo Kim, and Sanguk Kim
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P125 **Robustness of the Metabolic Networks: The Impact of Enzymatic Gene Expression**
Gyeong-Gyun Ha[1] and Deok-Sun Lee[2]
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P126 **Measuring Systemic Risk with the Revealed Correlation Network using Markov-Switching Multifractal Model**
Jisang Lee and Duk Hee Lee
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P127 **Q-Coloring and Generalized Conserved-Lattice Gas on Random Networks**
Wooseop Kwak, Sojeong Park, and Meesoon Ha
Chosun Univ., Korea

P128 **Withdrawn**

P129 **Effect of Network Architecture on Sparsely Synchronized Brain Rhythms in A Scale-Free Neural Network**
Sang-Yoon Kim[1] and Woochang Lim[2]
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P130 **Rapid Improvement of Robustness to Existing Networks without Optimal Algorithms**
Genki Ichinose[1], Yoshiki Satotani[2], and Toshihiro Tanizawa[3]
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P131 **A Novel Approach to Evaluate Community Detection Algorithms on Ground Truth**
Giulio Rossetti[1,2], Luca Pappalardo[1,2], Salvatore Rinzivillo[2], and Fosca Giannotti[2]
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P132 **Structural Transition of Financial Network Around Global Financial Crisis**
Ashadun Nobi[1,2], Nam Jung[1], Tae Ho Lee[1], Le Anh Quang[1], and Jae Woo Lee[1]
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P133 **Effects of Dimensionality and Heterogeneity on the Fluctuation in Complex Networks**
Hyung-Ha Yoo and Deok-Sun Lee
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P134 **Hierarchy and Modularity, the Two Organizing Mechanisms of Protests in SNS: the Case study of Rainbow Occupy Seoul City Hall and Smokestack Protest of Ssangyong Motor's Dismissed Workers**
Donghyun Kang
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P135 **Exploitation Competition in Plant-Pollinator Mutualistic Networks**
Seong Eun Maeng, Jae Woo Lee, and Deok-Sun Lee
Inha Univ., Korea

P136 **Percolation Transition on Multiplex Lattices**
Jeehye Choi[1], Byungjoon Min[2], and K. -I. Goh[1]
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P137 **The Influence of Heterogeneous Threshold in Opinion Dynamics**
Eun Lee and Petter Holme
Sungkyunkwan Univ., Korea

P138 **Network Structures of Users in a University Library**
Tae Ho Lee, Le Anh Quang, Nam Jung, Seung Eun Maeng, and Jae Woo Lee
Inha Univ., Korea

P139 **Effect of Complex Networks on Self-Organizing Criticality of a Neural Model**
Nam Jung, Le Anh Quang, TaeHo Lee, Seung Eun Maeng, and Jae Woo Lee
Inha Univ., Korea

P140 **Popularity and Similarity in Network Evolution Explain the Architecture of Core/Attachment in Protein Complexes**
Inhae Kim and Sanguk Kim
POSTECH, Korea

P141 **Estimation of Inter-Modular Connectivity from the Mesoscopic Modular Activities**
Xue-Mei Cui[1,2], Won Sup Kim[2], Dong-Uk Hwang[3], and Seung Kee Han[2]
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P142 **Non Autonomous Complex Network Architecture with Gamma Distribution**
Ayan Chatterjee[1], Abhijit Bhattacharya[2], Saptarshi Pal[2], Amitava Mukherjee[3], Amitava Chakraborty[3], and Debayan Das[4]
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P143 **Alternative Classification of Industries by Activity in Massive Newspaper Data**
Hyungjoon Soh[1], Jong Hwan Suh[1], Hyeokseong Lee[1], Sukwoong Choi[1], Namil Kim[1], Wonjoon Kim[1], and Hawoong Jeong[1,2]
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P144 **Active/Passive Dilemma: How Does Listenings Spread over the Last.fm Network?**
Letizia Milli[1,2], Giulio Rossetti[1,2], Anna Monreale[1,2], Dino Pedreschi[1], and Fosca Giannotti[2]
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P145 **Fit Friends: The Importance of a Supportive Social Network for Persistent Fitness Sharing**
Kunwoo Park[1], Ingmar Weber[2], Meeyoung Cha[1], and Chul Lee[3]
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P146 **Structure of Player-Interaction Networks on Iterated Prisoners Dilemma Game with Mobility**
Young Jin Kim, Seon-Young Jeong, Young-Jai Park, and Seung-Woo Son
Hanyang Univ., Korea

P147 **Re-Wiring the Historical Contact Structure of Animal Transports to Predict the Contact Structure of the Future**
Tapani Lyytikäinen[1] and Jarkko Niemi[2]
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P148 **The Valuation of Artwork and Social Networks**
Jonghoon Bae, Jaeseob Lim, Jungwon Ryu, and Sang-Hun Lee
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P149 **Topological Analysis of Earthquake Networks**
Krishanu Deyasi[1], Abhijit Chakraborty[2], and Anirban Banerjee[1]
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P150 **Analyzing Earthquakes using Spatial Network**
Jennylynn Almerol[1], Kahlil Fredrick Cui[1], Anthony Val Camposano[2], and Marissa Pastor[1]
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P151 **Empirical Analysis of Developer-Project Bipartite Networks**
Dengcheng Yan and Binghong Wang
Univ. of Science and Technology of China, China

P152 **Revealing Genetic Variants Associated with Bisphosphonate-Related Osteonecrosis of Jaw (BRONJ) using Differential Network Analysis**
Jihye Hwang[1], Jae-Hoon Lee[2], and Sanguk Kim[1]
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P153 **Korean Public Perception on Fukushima Nuclear Accident**
Seung-Hoi Kim[1], Yu-I Ha[1], Meeyoung Cha[1], Jiyoun Lee[2], Byung-Jik Kim[2], and Dong-Myoung Lee[2]
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P154 **Network Analysis Reveals Climate Phenomena**
Juan Carlos A. Graciosa , Jacqueline Mae V. Virtudes, and Marissa G. Pastor
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P155 **Chronological Changes in the Spoken Word Networks of Korean Presidents**
Young-Jai Park, Young-Bin Kim, Seon-Young Jeong, Young Jin Kim, and Seung-Woo Son
Hanyang Univ., Korea

P156 **A Hierarchical Stochastic Growth Model for Simplicial Complexes**
Jean-Gabriel Young[1], Alice Patania[2,3], and Giovanni Petri[3]
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P157 **Nowcasting Commodity Prices using Social Media**
Jaewoo Kim[1], Meeyoung Cha[1], and Jonggun Lee[2]
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P158 **Phenotypic Role of Domain Mediated Interactions through Community Detection on the Structural Interaction Network**
Heetak Lee, Inhae Kim, and Sanguk Kim
POSTECH, Korea

P159 **Stability of Bi-Connected Elementary Reaction Loop (bc-ERL) Involving Positive Feed-Back Loop**
Jiyoung Kang and Masaru Tateno
Univ. of Hyogo, Japan

P160 **Prominent Features of Rumor Propagation in Online Social Media**
Sejeong Kwon[1], Meeyoung Cha[1], Kyomin Jung[2], Wei Chen[3], and Yajun Wang[3]
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P161 **Multiplex Line Graphs: Models and Real Applications**
Regino Criado[1,2], Julio Flores[1,2], Alejandro Garcia del Amo[1,2], Miguel Romance[1,2], Eva Barrena[3], and Juan A. Mesa[4]
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P162 **Uncovering Road Network Characteristics from Driving Routes in Cities**
Minjin Lee, Hugo Serrano Barbosa, Gourab Ghoshal, and Petter Holme
[1]Sungkyunkwan Univ., Korea, [2]Florida Institute of Technology, USA, [3]Univ. of Rochester, USA

P163 **Twitterbot Networks in Political Campaigns: Identifying Automated Users in Online Social Network Communities**
Greg Allen, Ralucca Gera, Karoline Hood, Thomas Knuth, and Miguel Miranda López
Naval Postgraduate School, USA

P164 **Case Study of Fashion Brand's Instagram Hashtag Co-Occurrence Analysis**
Heechul Kim and Meeyoung Cha
KAIST, Korea

P165 **MNET2.0 for Big Graphical Mining of Multimodal Brain Networks**
Jinseok Ur, Chongwon Pae Kisung You, and Hae-Jeong Park
Yonsei Univ. College of Medicine, Korea

P166 **Reusability of Deep Neural Networks for Human Functional Networks**
Hyunwook Kim, Chongwon Pae, Kisung You, and Hae-Jeong Park
Yonsei Univ. College of Medicine, Korea

P167 **How Network Topological Models Influence Drug-Target Prediction**
Simone Daminelli[1], Josephine Thomas[1], V. Joachim Haupt[1], Claudio Durán[1,2], Michael Schroeder[1], and Carlo Vittorio Cannistraci[1]
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P168 **Anatomy of the Global Football Player Transfer Network: Club Functionalities Versus Network Properties**
Xiao Fan Liu[1,2], Yu-Liang Liu[1], Xin-Hang Lu[1], Qi-Xuan Wang[1], and Tong-Xing Wang[1]
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P169 **Rumor Source Detection: Power of Protector**
Jaeyoung Choi, Sangwoo Moon, Jinwoo Shin, and Yung Yi
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P170 **Cortical Network Analysis from Retrograde Tracing Experiments**
Daniel Barabasi, Melinda Varga, and Zoltan Toroczkai
Univ. of Notre Dame, USA

P171 **Technological Novelty Profile and Invention's Future Impact**
Daniel Kim[1,2,3], Daniel Burkhardt Cerigo[3], Hawoong Jeong[4,5,6,] and Hyejin Youn[1,3,7]
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P172 **Withdrawn**

P173 **Low-Dimensional Representation of Human Brain Networks with Modularity-based Proximity of Large-Scale Functional Graphs**
Chongwon Pae, Kisung You, and Hae-Jeong Park
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P174 **Spatiotemporal Pattern of the Seasonal Extreme Rainfall over Japan using Complex Networks**
Ugur Ozturk[1,2], Ankit Agarwal[1,2], Norbert Marwan[1], Jürgen Kurths[1,3], and Oliver Korup[2]
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P175 **The First Social Customer Relationship Management System to Analyze Large On-line Social Networks**
Tzu-Chi Yen, Xiaodong Liu, and Wuyang (Tony) Zhao
Sensoro Technology Co., Ltd., China

P176 **Estimation of Relaxation Times in Coupled Finite Size Oscillatory Networks**
Nicolas Deschle, Bastian Pietras, and Andreas Daffertshofer.
Vrije Universiteit Amsterdam,The Netherlands

P177 **How Science Fights an Outbreak of a New Disease: the Zika Network of Scientific Publicationsk of Scientific Publications**
Sabrina Camargo[1], Angelo Mondaini[2], Elisa Mussumeci[1], Margaret Armstrong[1,3], and Flavio C. Coelho[1]
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