

## AIMaP 研究集会等実施報告書

(Part 1/4) 名称・重点テーマ・キーワード等

項目	内容
名称	Pioneering Workshop on Extreme Value and Distribution Theories
採択番号	2018A010
重点テーマ	想定外事象・時空間データ・データの秘匿と開示におけるモデリング
キーワード	極値, 分布論, 災害, 環境, 公共データ
主催機関	金沢大学, 統計数理研究所
運営責任者	星野伸明
開催日時(開始)	2019/3/21 13:00
開催日時(終了)	2019/3/23 12:50
開催場所	統計数理研究所

(Part 2/4) 最終プログラム・参加者数

項目	内容
最終 プログラム	<p>21 March</p> <p>Session 1 (13:00–14:00) Chaired by Akimichi Takemura (Shiga University, Japan)</p> <p>Masaaki Sibuya (Keio University, Japan) Gibbs Base Random Partitions</p> <p>Session 2 (14:10–15:00) Chaired by Akimichi Takemura (Shiga University, Japan)</p> <p>14:10–14:35 Yasuko Chikuse (Kagawa University, Japan) Properties of General Systems of Orthogonal Polynomials with Symmetric Matrix Argument</p> <p>14:35–15:00 Toshinari Kamakura (Chuo University, Japan) Fast Calculations and Bias-Reduction of MLE's for Generalized Gamma Family Distributions</p> <p>Session 3 (15:15–16:30) Chaired by Yoshinori Kawasaki (ISM, Japan)</p>

15:15–15:40

Satoshi Kuriki (The Institute of Statistical Mathematics, Japan)

Dependence Properties of B–Spline Copulas

Joint work with Xiaoling Dou (Waseda University, Japan), Gwo Dong Lin (Academia Sinica, Taiwan), and Donald Richards (Penn State University, USA)

15:40–16:05

Hideatsu Tsukahara (Seijo University, Japan)

On Some Resampling Procedures with the Empirical Beta Copula

Joint work with Anna Kiriliouk (University of Namur, Belgium) and Johan Segers (Université Catholique Louvain, Belgium)

16:05–16:30

Shogo Kato (The Institute of Statistical Mathematics, Japan)

A Measure for Comparing Upper and Lower Tail Probabilities of Bivariate Distributions

Joint work with Toshinao Yoshida (Bank of Japan, Japan) and Shinto Eguchi (The Institute of Statistical Mathematics, Japan)

22 March

Session 4 (9:30–10:30) Chaired by Nobuaki Hoshino (Kanazawa University, Japan)

Seng–Huat Ong (University of Malaya; UCSI University, Malaysia)

A Family of Distributions Formed by Convolution of Binomial Variables, Related Distributions and Generalizations

Joint work with Shin–Zhu Sim (Universiti Tunku Abdul Rahman, Malaysia)

Session 5 (10:40–11:30) Chaired by Nobuaki Hoshino (Kanazawa University, Japan)

10:40–11:05

Kunio Shimizu (The Institute of Statistical Mathematics, Japan)

A Bivariate Circular Distribution and its Discretization

11:05–11:30

Tomoaki Imoto (University of Shizuoka, Japan)

Construction of Circular Distributions from Closed Curves in the Plane

11:30–13:00 Lunch Break

Session 6 (13:00–14:00) Chaired by Ryozi Miura (Hitotsubashi University, Japan)

James C. Fu (University of Manitoba, Canada)

Distribution of Number of Levels in  $[s]$ -specified Random Permutation

Session 7 (14:10–15:00) Chaired by Ryozi Miura (Hitotsubashi University, Japan)

14:10–14:35

Koji Tsukuda (University of Tokyo, Japan)

An Error Bound for the Normal Approximation to the Length of a Ewens Partition

14:35–15:00

Hajime Yamato (Kagoshima University, Japan)

Asymptotic and Approximate Discrete Distributions for Length of Ewens Sampling Formula

Session 8 (15:15–16:30) Chaired by Shinto Eguchi (ISM, Japan)

15:15–15:40

Tomonari Sei (University of Tokyo, Japan)

Regression Analysis for Imbalanced Binary Data: an Answer to Prof. Sibuya's Questions

15:40–16:05

Mihoko Minami (Keio University, Japan)

Clustering Methods for Distributions

Joint work with Cleridy E. Lennert-Cody (Inter-American Tropical Tuna Commission)

16:05–16:30

Takemi Yanagimoto (The Institute of Statistical Mathematics, Japan)

Conjugate Analysis under Jeffreys' Prior with its Implications to Likelihood Inference

Joint work with Toshio Ohnishi (Kyushu University, Japan)

23 March

Session 9 (9:30–10:30) Chaired by Rinya Takahashi (Kobe University, Japan)

Tomasz J. Kozubowski (University of Nevada, USA)

The Sibuya Distribution and its Extension: Fundamental Properties and Connections to Stochastic Models for Extremes

Joint work with Krzysztof Podgorski (Lund University, Sweden)

Session 10 (10:40–12:50) Chaired by Rinya Takahashi (Kobe University, Japan)

10:40–11:05

Toshikazu Kitano (Nagoya Institute of Technology, Japan)

Correlation of Bivariate Extremes Exceeding over the Thresholds – Mathematical Definition and the Graphical Displays –

11:05–11:30

Akichika Ozeki (Eli Lilly Japan K.K., Japan)

An Analysis of Extremes: Semiparametric Efficiency in Regression

Joint work with Kjell Doksum (University of Wisconsin–Madison, USA)

11:30–11:55

Shigenobu Tanaka (Disaster Prevention Research Institute, Kyoto University, Japan)

Future Change in Relationships among Extreme Precipitation Statistics Using “d4PDF”

	11:55-12:20 Kaoru Takara (Disaster Prevention Research Institute, Kyoto University, Japan) History and Perspectives of Hydrological Frequency Analysis in Japan
	12:20-12:50 General Discussion
参加者数	数学・数理科学:52人, 諸科学:6人, 産業界:4人, その他:1人

## (Part 3/4) 論点・現状・今後の展開

項目	内容
当日の論点	<p>以下の論点について議論した</p> <ul style="list-style-type: none"> <li>・ランダム分割:検定, 分割の長さの分布に関する正規・離散近似</li> <li>・コピュラ:B スプラインコピュラ, 経験コピュラ, 二変量の裾</li> <li>・円周分布:二変量分布と離散化, 閉曲線による構成</li> <li>・極値:渋谷分布, 二変量極値の相関, 極値と回帰, 降水量の極値と予測, 水文学</li> <li>・様々な分布:対称行列値直交多項式, 一般化ガンマ分布, 二項変数の畳み込み, ランダム置換</li> <li>・方法論:偏りのある二値回帰, 分布のクラスタリング, 事前分布の共役性</li> </ul>
研究の現状と課題(既にできていること、できていないことの切り分け)	<p>数理的な研究分野と応用先はおおまかな対応が知られており, データの秘匿と開示に関してランダム分割, 多次元データの依存性に関してコピュラ, 方向データに関して円周分布, 想定外事象に関して極値が有用と考えられている. リスク評価という観点からこれらの分野は無関係ではないが, 互いの交流は限られている.</p>
新たに明らかになった課題	<p>水文学のリスク管理の考え方は, データ開示リスク評価の発想とかなり異なることが明らかになった. 交流を深めることでブレイクスルーの可能性はある.</p>
今後解決すべきこと、今後の展開・フォローアップ	<p>講演で示された考え方は, それぞれ多分野で有用と思われる. 従って特に有用な講演はより詳しくした内容を書籍にまとめ, 多様な読者に届けるため出版を目指す.</p>

(Part 4/4) 写真

項目	内容
添付写真 1	

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