Schedule of 2003 Joint Workshop of Hayashibara Foundation and SMAPIP
(July 11 – 15, 2003, Okayama, Japan)

July 11: Okayama Convention Center (Mamakari Forum Okayama) Fourth Floor, Meeting Room C
(Address: 14-1 Ekimoto-machi, Okayama 700-0024, Japan)

*Hayashibara Forum 2003 ---Physics and Information---*

13:15 - 13:30 Opening
13:30 - 15:00 Session 1 (Learning & Inference I)
15:00 - 15:15 Break
15:15 - 16:45 Session 2 (Coding)

July 12: Okayama Convention Center (Mamakari Forum Okayama) Fourth Floor, Meeting Room C
(Address: 14-1 Ekimoto-machi, Okayama 700-0024, Japan)

*Hayashibara Forum 2003 ---Physics and Information---*

9:30 - 11:45 Session 3 (Learning & Inference II)
11:45 - 13:30 Lunch
13:30 - 15:00 Session 4 (CDMA)
15:00-15:15 Break
15:15-16:45 Session 5 (New Paradigms of Information Processing)

July 13, 13:00-: Okayama International Center (Address: 2-2-1 Hokancho, Okayama 700-0026, Japan)

*Hayashibara Forum 2003 Plenary Talks (M. Keane, S. Amari, H. E. Stanley)*

July 14: Dai-ichi Inn Okayama, Second Floor, Room "Kou-raku"
(Address: 16-17 Ekimoto-machi, Okayama-city, Okayama 700-0024, Japan)

2003 Workshop on Statistical-Mechanical Approach to Probabilistic Information Processing

9:30-11:45 Session 6 (Analysis of Disordered Systems)
11:45 - 13:30 Lunch
13:30-15:00 Session 7 (Analysis of Randomized Algorithms)
15:00-15:15 Break
15:15-16:45 Session 8 (Stochastic Optimizations)

July 15: Okayama Convention Center (Mamakari Forum Okayama) Fourth Floor, Meeting Room C
(Address: 14-1 Ekimoto-machi, Okayama 700-0024, Japan)

2003 Workshop on Statistical-Mechanical Approach to Probabilistic Information Processing

9:30 - 11:45 Session 9 (Learning & Inference III)
11:45 - 12:00 Closing
Technical Program of 2003 Joint Workshop of Hayashibara Foundation and SMAPIP (1)

Sponsored by Hayashibara Foundation
Co-Sponsored by Grant-in Aid for Scientific Research on Priority Areas:
Statistical Mechanical Approach to Probabilistic Information Processing (SMAPIP)

July 11
(Okayama Convention Center (Mamakari Forum Okayama) Fourth Floor, Meeting Room C)

13:15 - 13:30 Opening

13:30 - 15:00 Session 1 (Learning & Inference I, Chairperson: Y. Kabashima)
K. Tanaka (Graduate School of Information Sciences, Tohoku University, Japan)
Title: Statistical-mechanical approach to probabilistic image processing ---Loopy belief
 propagation and advanced mean-field method---
J. Inoue (Graduate School of Engineering, Hokkaido University, Japan)
Title: An average case performance of the deterministic annealing EM algorithm

15:00 - 15:15 Break

15:15 - 16:45 Session 2 (Coding, Chairperson: M. Okada)
I. Kanter (Dept. of Physics, Bar-Ilan University, Israel)
Title: Statistical mechanical aspects of joint source-channel coding
D. Saad (Neural Computing Research Group, Aston University, UK)
Title: Error exponents, weight and magnetization enumerators in LDPC error correcting codes
Technical Program of 2003 Joint Workshop of Hayashibara Foundation and SMAPiP (2)

*Hayashibara Forum 2003 ---Physics and Information---:  July 11-13, 2003*
Sponsored by Hayashibara Foundation  
Co-Sponsored by Grant-in Aid for Scientific Research on Priority Areas:  
Statistical Mechanical Approach to Probabilistic Information Processing (SMAPiP)

**July 12**

( Okayama Convention Center (Mamakari Forum Okayama) Fourth Floor, Meeting Room C )

9:30 - 11:45  **Session 3 (Learning & Inference II, Chairperson: J. Inoue)**
- T. Aida (Faculty of Engineering, Okayama University, Japan)
  Title: Modified Bayesian statistical inference and renormalization group
- M. Opper (Neural Computing Research Group, Aston University, UK)
  Title: Tractable inference for probabilistic data models
- N. Murata (School of Science and Engineering, Waseda University, Japan)
  Title: Geometry of $U$-Boost algorithms

11:45 - 13:30  **Lunch**

13:30 - 15:00  **Session 4 (CDMA, Chairperson: H. Kita)**
- T. Tanaka (Graduate School of Engineering, Tokyo Metropolitan University, Japan)
  Title: Analytical results on CDMA multiuser detection problem based on statistical mechanics
- M. Okada (RIKEN Brain Science Institute, Japan)
  Title: Density evolution and statistical neurodynamics for multiuser detection of code-division multiple-access systems

15:00-15:15  **Break**

15:15-16:45  **Session 5 (New Paradigms of Information Processing, Chairperson: T. Tanaka)**
- H. Nishimori (Dept. of Physics, Tokyo Institute of Technology, Japan)
  Title: Multicritical point of the two-dimensional spin glass ---Quantum memory and analytical results---
- M. Hagiya (Graduate School of Information Science and Technology, University of Tokyo, Japan)
  Title: Molecular computing and molecular programming
July 13

**Hayashibara Forum 2003 Plenary Talks**

Sponsored by Hayashibara Foundation

13:00-16:30  Okayama International Center

Speakers:

M. Keane (Universiteit van Amsterdam, Netherlands)

S. Amari (RIKEN Brain Science Institute, Japan)

H. E. Stanley (Dept. of Physics, Boston University, USA)
Technical Program of 2003 Joint Workshop of Hayashibara Foundation and SMAPIP (4)

Sponsored by Grant-in Aid for Scientific Research on Priority Areas: Statistical Mechanical Approach to Probabilistic Information Processing (SMAPIP)

July 14
(Dai-ichi Inn Okayama, Second Floor, Room “Kou-raku”)
9:30-11:45  Session 6 (Analysis of Disordered Systems, Chairperson: T. Horiguchi)
N. Sourlas (CNRS, Laboratoire de Physique Théorique de l'Ecole Normale Supérieure, France)
Title: Scale invariance in disordered systems
K. Hukushima (Graduate School of Arts and Sciences, University of Tokyo, Japan)
Title: Equilibrium study of spin glass models: Monte Carlo simulation and multivariate analysis
F. Liers (Institut für Informatik, Universität zu Köln, Germany)
Title: Ground state of the Bethe-lattice spin glass and running time of an exact optimization algorithm
11:45-13:30  Lunch
13:30-15:00  Session 7 (Analysis of Randomized Algorithms, Chairperson: K. Hukushima)
O. Watanabe (Dept. of Mathematical and Computing Science, Tokyo Institute of Technology, Japan)
Title: Analysis of a randomized local search algorithm for LDPCC decoding problem
R. Monasson (CNRS-Laboratoire de Physique Théorique de l'ENS, France)
Title: Towards an average-case analysis of backtrack procedures for random decision problems?
15:00-15:15  Break
15:15-16:45  Session 8 (Stochastic Optimizations, Chairperson: O. Watanabe)
Y. Iba (Institute of Statistical Mathematics, Japan)
Title: Population annealing: An approach to finite-temperature calculation
H. Kita (Academic Center for Computing and Media Studies, Kyoto University, Japan)
Title: Genetic algorithms for optimization of noisy fitness functions and adaptation to changing environments
Technical Program of 2003 Joint Workshop of Hayashibara Foundation and SMAPIP (5)

Sponsored by Grant-in Aid for Scientific Research on Priority Areas: Statistical Mechanical Approach to Probabilistic Information Processing (SMAPIP)

July 15
(Okayama Convention Center (Mamakari Forum Okayama) Fourth Floor, Meeting Room C)

9:30 - 11:00  Session 9 (Learning & Inference III, Chairperson: N. Murata)
T. Horiguchi (Graduate School of Information Sciences, Tohoku University, Japan)
Title: Ising model for priority routing control of packet flow
P. Sollich (Department of Mathematics, King's College, University of London, UK)
Title: Can Gaussian process regression be made robust against model mismatch?

11:15 - 12:45  Session 10 (Learning & Inference IV, Chairperson: K. Tanaka)
Y. Kabashima (Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology, Japan)
Title: Propagating beliefs in spin-glass models
K. Y. M. Wong (Department of Physics, Hong Kong University of Science and Technology, Hong Kong)
Title: Diversity and adaptation in large populations of information processors

12:45 - 13:00  Closing
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