

AKIKO MANADA

The University of Electro-Communications
1-5-1, Chofugaoka, Chofu, Tokyo, 182-8585, JAPAN
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WORK EXPERIENCE

- **Assistant Professor:** February 2012–Present
The University of Electro-Communications, Japan
Mentors: Prof. Hiroyoshi Morita, Associate Prof. Hiroyuki Kasai
- **Post-doctoral Fellow:** October 2009–August 2011
Claude Shannon Institute at University College Dublin, Ireland
Advisor: Dr. Eimear Byrne

EDUCATION

- **Ph.D. in Mathematics:** September 2004–July 2009
Queen's University, Kingston, ON, Canada
Thesis Advisor: Professor Navin Kashyap
Thesis Title: *Minimal Presentations of Sofic Shifts and Properties of Periodic-Finite-Type Shifts*
- **M.Sc. in Mathematics:** April 2002–March 2004
Tsuda College, Kodaira-shi, Tokyo, Japan
Thesis Advisors: Professor Shigeru Tanaka and Jun-ichi Tamura
Thesis Title: *Characteristics of Fixed Points under Substitutions in Some Class*
 - **Visiting graduate student at Queen's University,** Kingston, ON, Canada: September 2002–April 2003
- **B.Sc. in Mathematics and Computer Science:** April 1998–March 2002
Tsuda College, Kodaira-shi, Tokyo, Japan
Graduate Thesis Advisor: Professor Shigeru Tanaka
- Ube Senior High School, Yamaguchi, Japan: April 1995–March 1998

RESEARCH INTERESTS

Discrete Mathematics (Graph Theory and Combinatorics), Coding Theory, Symbolic Dynamics.

RESEARCH AND DEVELOPMENT

- **Assistant Professor** : February 2012–Present, *The University of Electro-Communications*
Working on coding theory (mainly on LDPC codes and constrained codes) and their applications and network topologies for Peer-to-Peer networks based on graph theory.
- **Post-doctoral Fellow** : October 2009–August 2011, *Claude Shannon Institute at University College Dublin*
Working on network coding, mainly on the size of the finite field required for a linear network coding for a given multicast network.
- **Graduate Student Research Assistant**: September 2004–July 2009, *Queen's University*
Working on characteristics of sofic shifts, mainly on Shannon covers of sofic shifts, influences of periods on periodic-finite-type shifts (PFT's) and their zeta functions.

MEMBERSHIP

- IEEE
- The Institute of Electronics, Information and Communication Engineers (IEICE)

RESEARCH ACHIEVEMENT

Akiko MANADA

The University of Electro-Communications

A. JOURNALS

1. A. Manada, K. Yoshida, H. Morita and R. Tatsukawa, “*A Grouping Based on Local Girths for the Group Shuffled Belief Propagation Decoding*,” IEEE Communications Letters, Vol. 20, No. 11, pp. 2133-2136, November 2016.
2. T. Kobayashi, A. Manada, T. Ota and H. Morita, “*On the Irreducibility of Certain Shifts of Finite Type*,” IEICE Trans. Fundamentals, Vol. E96-A, No. 12, pp. 2415-2421, December 2013.
3. A. Manada and N. Kashyap, “*On the Zeta Function of a Periodic-Finite-Type Shift*,” IEICE Trans. Fundamentals, Vol. E96-A, No. 6, pp. 1024-1031, June 2013.
4. A. Manada and N. Kashyap, “*A Comparative Study of Periods in a Periodic-Finite-Type Shift*,” SIAM Journal on Discrete Mathematics, Vol. 23, Issue 3, pp. 1507-1524, October 2009.

B. CONFERENCE PROCEEDINGS (peer-reviewed)

1. A. Manada and H. Morita, “*On the Capacities of Balanced Codes with Run-Length Constraints*,” to appear in Proc. 2017 IEEE International Symposium on Information Theory (ISIT 2017).
2. T. Ota, A. Manada and H. Morita, “*A Finite Graph Representation for Two-Dimensional Finite Type Constrained Systems*,” Proc. of 2016 International Symposium on Information Theory and Its Applications (ISITA 2016), pp. 51-55, October 2016.
3. T. Ota, A. Manada and H. Morita, “*Two-Dimensional Antidictionary Automaton for a Toric Surface*,” Proc. of 2016 International Symposium on Information Theory and Its Applications (ISITA 2016), pp. 71-75, October 2016.
4. T. Kobayashi, H. Morita and A. Manada, “*On Rate Tradeoffs for Erasable Write-Once Memory Codes*,” Proc. of 2015 IEEE International Symposium on Information Theory (ISIT 2015), pp. 1312-1316, June 2015.
5. T. Kobayashi, H. Morita and A. Manada, “*Position Modulation Code for Non-Binary Write-Once Memories*,” Proc. of 2014 International Symposium on Information Theory and Its Applications (ISITA 2014), pp. 600-604, October 2014.
6. A. Manada and H. Morita, “*On Some Properties of Distributed Line Graphs*,” Proc. of 2014 International Symposium on Information Theory and Its Applications (ISITA 2014), pp. 373-377, October 2014.
7. R. Tatsukawa, A. Manada and H. Morita, “*Irregular Repeat Accumulate Codes Based on Max-Flow Algorithm for Energy-Saving Networks*,” Proc. of 9th International Conference on Body Area Networks (BODYNETS 2014), pp. 326-330, September 2014.
8. T. Kobayashi, H. Morita and A. Manada, “*On the Capacity of Write-Constrained Memories*,” Proc. of 2014 IEEE International Symposium on Information Theory (ISIT 2014), pp. 2252-2256, June 2014.
9. J. Feihu, H. Morita and A. Manada, “*Semantic Analysis of Structured High-definition MPEG-2 Soccer Video Using Bayesian Network*,” Proc. of Information Systems International Conference (ISICO) 2013, pp. 483-490, December 2013.

10. K. Yokota, A. Manada and H. Morita, “*An XOR Encoding for Wireless Body Area Networks*,” Proc. of 8th International Conference on Body Area Networks (BODYNETS 2013), pp. 240-243, October 2013.
11. A. Manada, “*On a Shannon Cover of Certain Reducible Shift of Finite Type*,” Proc. 2012 International Symposium on Information Theory and Its Applications (ISITA 2012), pp. 606-610, October 2012.
12. E. Byrne and A. Manada, “*On Coding Schemes for Wireless Body Area Networks*,” Proc. of 2012 International Symposium on Communications and Information Technologies (ISCIT 2012), pp. 149-154, October 2012.
13. E. Byrne, A. Manada, S. Marinkovic and E. Popovici, “*A Graph Theoretical Approach for Network Coding in Wireless Body Area Networks*,” Proc. 2011 IEEE International Symposium on Information Theory (ISIT 2011), pp. 405-409, August 2011.
14. A. Manada and N. Kashyap, “*The Zeta Function of a Periodic-Finite-Type Shift*,” Proc. 2009 IEEE International Symposium on Information Theory (ISIT 2009), pp. 1569-1573, July 2009.
15. A. Manada and N. Kashyap, “*On the Period of a Periodic-Finite-Type Shift*,” Proc. 2008 IEEE International Symposium on Information Theory (ISIT 2008), pp. 1453-1457, July 2008.
16. A. Manada and N. Kashyap, “*On the Shannon Covers of Certain Irreducible Constrained Systems of Finite Type*,” Proc. 2006 IEEE International Symposium on Information Theory (ISIT 2006), pp. 1477-1481, July 2006.

C. CONFERENCE/WORKSHOP TALKS

1. K. Yoshida, H. Morita, A. Manada and R. Tatsukawa, “*Group Shuffled BP decoding based on Local Girth*,” Workshop on Information Theory (情報理論研究会 in Japanese), January 2016.
2. A. Manada, “*Comparison of Various Trajectory Codes for Flash Memories*,” The 38th Symposium on Information Theory and its Applications (SITA2015), November 2015.
3. T. Ota, A. Manada and H. Morita, “*On a Two-Dimensional Antidictionary Automaton for a Toric Surface*,” The 38th Symposium on Information Theory and its Applications (SITA2015), November 2015.
4. H. Sakai, Tau Chin, H. Morita and A. Manada, “*Detection of Abnormal Behaviours in Security Camera based on Anti-Dictionary Probabilistic Model (反辞書確率モデルを用いた監視カメラの人物異常行動の検出 in Japanese)*,” 14th Forum on Information Technology (FIT 2015), September 2015.
5. T. Nawa, T. Yamamoto, H. Morita and A. Manada, “*Topic Extraction from News Compressed with HEVC/H.265 Standard (HEVC/H.265 規格で圧縮されたニュース番組からのトピック抽出法 in Japanese)*,” 14th Forum on Information Technology (FIT 2015), September 2015.
6. R. Tatsukawa, A. Manada and H. Morita, “*Performance evaluation of Irregular Repeat Accumulate codes characterized by Tanner graphs with various degrees*,” Workshop on Information Theory (情報理論研究会 in Japanese), July 2015.
7. A. Manada, “*Extended Trajectory Codes for Flash Memories with Constraints*,” The 9th Asian-European Workshop on Information Theory (AEW9), May 2015.
8. A. Manada and H. Morita, “*On the Diameters of Distributed Line Plus Graphs*,” The 37th Symposium on Information Theory and its Applications (SITA 2014), December 2014.
9. T. Kobayashi, H. Morita and A. Manada, “*An Application of WOM Codes to Flash Memories*,” The 37th Symposium on Information Theory and its Applications (SITA 2014), December 2014.

10. A. Manada, S. Kaneko and H. Morita, “*On the properties of distributed-line graphs*,” 2014 Information Theory and Applications Workshop (ITA 2014), February 2014.
11. T. Kobayashi, H. Morita and A. Manada, “*On the Capacity of Write-Once Memory with a Certain Cost Function*,” The 36th Symposium on Information Theory and its Applications (SITA 2013), November 2013.
12. S. Kaneko, H. Morita and A. Manada, “*An Evaluation of in-degrees on DL Graphs*,” The 36th Symposium on Information Theory and its Applications (SITA 2013), November 2013.
13. A. Manada, “*Finite Type Constrained Systems for Flash Memories*,” Workshop on Information Theory (情報理論研究会 in Japanese), September 2013.
14. A. Manada, “*On Some Properties of Good Sets for Labelled Directed Graphs*,” The 8th Asian-European Workshop on Information Theory (AEW8), May 2013.
15. A. Manada, “*Shannon covers for reducible sofic shifts*,” 2013 Information Theory and Applications Workshop (ITA 2013), February 2013.
16. T. Kobayashi, A. Manada, T. Ota and H. Morita, “*On the Irreducibility of Certain Shifts of Finite Type*,” The 35th Symposium on Information Theory and its Applications (SITA 2012), December 2012.
17. A. Manada, “*A Graph Theoretical Approach for Network Coding in Wireless Body Area Networks*,” The 10th Claude Shannon Institute Workshop on Coding and Cryptography, May 2011.
18. A. Manada, “*Introduction on Sofic Shifts and Their Shannon Covers*,” The 9th Claude Shannon Institute Workshop on Coding and Cryptography, May 2010.
19. A. Manada, “*On Some Matrices Related to Substitutions*,” Workshop at l’Institut de Mathématiques de Luminy, France, March 2004.
20. A. Manada, “*Characteristics of Fixed Points under Some Substitutions*,” Workshop on Number Theory and Ergodic Theory, November 2003.
21. A. Manada, “*On the Complexities of Fixed Points under Substitutions*,” Workshop on Number Theory and Ergodic Theory, August 2003.

D. INVITED TALKS

1. *Introduction on coding theory and its applications for data storage media*, The 18th Interdisciplinary Seminar for Optical Science, Osaka Prefecture University, March 2017.
2. *Constrained coding and its applications for data storage media*, 4th Workshop on Error-Correcting Codes, September 2015.
3. *Introduction to Constrained Systems and Their Shannon Covers*, Ganita Seminar, University of Toronto at Mississauga, January 2007.