2021 年 10 月 31 日

2021 IEEE International Conference on ASIC 参加記

逍遥遊： 先端の集積回路技術を学ぶ

群馬大学　小林春夫

International Conference on ASIC (ASICON) http://www.asicon.org/ は中国で開催される集積回路分野での最大の国際会議である。 International Conference on Solid-State and Integrated Circuit Technology (ICSICT) と交互にそれぞれ隔年で開催されてきている。どちらかといえば ASICON は回路・システム寄り、ICSICT はデバイス・プロセス寄りの印象である。

ASICON はアナログ/RF/パワー系回路/センサ、デジタル・メモリ・SoC, AI 用プロセッサ・回路, 通信用信号処理、EDA, 信頼性・安全性、テスト容易化設計, デバイス・プロセス、 モデリングまで幅広く カバーしている。キーノート、チュートリアル、招待講演、一般講演のオンライン発表を視聴していると思わず時が過ぎてしまっている。世界の様々な先端研究・プロジェクトや中国の大学/研究機関でどのようなことをやっているのかの情報に触れることができる。

客員教授　松田順一先生、研究協力員　小堀康功先生のご協力を得て、小林・桑名研究室から論文発表 5 件（招待 1 件、口頭発表 3 件、ポスター発表 1 件）を行った。
その中から 1 件　Excellent Student Paper Award を受ける。

群馬大学からはさらに尹 友（イン ユウ）先生が 1 件招待講演をされている。

筆者をプログラム委員に名を連ねてくれる等、群馬大学を歓迎してくれ　感謝している。

ASICON 2021
Session D3: Novel Device II 5, 0246
Thursday, October 28,（11:15-11:30）

Analysis of Switching Characteristics of Wide SOA and High Reliability 100 V N-LDMOS Transistor with Dual RESURF and Grounded Field Plate Structure

Anna Kuwana, Jun-ichi Matsuda and Haruo Kobayashi
(Gunma Univ., Japan)

Gunma University Kobayashi Lab

2021 IEEE 14th International Conference on ASICON

Oct. 27, 2021

Divide and Conquer: Floating-Point Exponential Calculation Arithmetic Based on Taylor-Series Expansion

Jianglin Wei, A. Kuwana, H. Kobayashi
K. Kubo
Division of Electronics and Informatics, Gunma University
Oyama National College of Technology
Japan

Gunma University Kobayashi Lab

2021/11/3

Multi-Output SEPIC Multiplied Boost Converter with Exclusive Control

Yuki Sekine, S. Katayama, Y. Kobori,
A. Kuwana, H. Kobayashi

Gunma University

Kobayashi Lab. Gunma University

2021 IEEE 14th International Conference on ASIC
Kunming, China 26-29, 2021,

Adaptive Convergence Method of Notch Frequency in Noise Spread Spectrum for Pulse Coding Switching DC-DC Converter

GuiYi Dong, S . Katayama ,Y . Sun, Y . Kobori,
A . Kuwana, H . Kobayashi

Gunma University

Kobayashi Lab. Gunma University

2021 IEEE 14th International Conference on ASIC

C1: Analog & Mixed-Signal
13:30-14:00 Oct. 27, 2021 (Wed)

Invited Paper

Classical Mathematics and Analog / Mixed-Signal IC Design

Haruo Kobayashi, X. Bai, Y. Zhao, S. Yamamoto, D. Yao
M. Hirai, J. Wei, S. Katayama, A. Kuwana

Division of Electronics and Informatics
Gunma University

Kobayashi Lab. Gunma University

Conclusion

6/96

Analog / mixed-signal IC designers can obtain
new circuit design hints from classical mathematics.

Circuit design and mathematics are fun !

陳 景潤 Chen Jingrun
Chinese Mathematician
(Integer theory)
1933-1996

厦門大学 Sept. 2013

Wednesday, October 27, 13: 30 – 15: 30

Session A1 : Digital Unit & Module

	Title
1	**0053: Divide and Conquer: Floating-Point Exponential Calculation Based on Taylor-Series Expansion**
	Jianglin Wei, Anna Kuwana, Haruo Kobayashi and Kazuyoshi Kubo *(Gunma University, Japan; Oyama National College of Technology, Japan)*
2	**0074: Design and Implementation of Full Adder in One-Transistor-One-Resistor RRAM Array**
	Xiangyu Zhang, Feng Wei, Xiaoyan Liu and Xiaole Cui *(Peking University Shenzhen Graduate School; Peking University)*
3	**0133: Energy-Efficient Approximate Floating-Point Multiplier Based on Ra-dix-8 Booth Encoding**
	Rongyu Ding, Yi Guo, Heming Sun and Shinji Kimura *(Waseda University, Japan; Waseda Research Institute for Science and Engineering, Japan)*

Wednesday, October 27, 13: 30 – 15: 30

Session C1 : Analog & Mixed-Signal

	Title
1	**0186: Classical Mathematics and Analog/Mixed-Signal IC Design (invited paper)**
	Haruo Kobayashi, Xueyan Bai, Yujie Zhao, Shuhei Yamamoto, Dan Yao，Manato Hirai, Jianglin Wei, Shogo Katayama and Anna Kuwana *(Gunma University, Japan)*
2	**0057: A Three-Stage Comparator with High Speed and Low Power**

Wednesday, October 27, 17: 45 – 18: 45

Poster Session I

	Title
P1-1	**0081: A Heterogeneous HEVC Video Encoder System Based on Two-Level CPU-FPGA Computing Architecture**
	Yudi Qiu, Jie Jiao, Yuxin Tang, Yanwei Liu, Jianyu Ren, Xiaoyang Zeng and Yibo Fan *(Fudan University)*
P1-2	**0132: Adaptive Convergence Method of Notch Frequency in Noise Spread Spectrum for Pulse Coding Switching DC-DC Converter**
	Gui-Yi Dong, Shogo Katayama, Yifei Sun, Yasunori Kobori, Anna Kuwana and Haruo Kobayashi *(Gunma University, Japan)*
P1-3	**0134: A Multiplier-less Transform Architecture with the Diagonal Data Mapping Transpose Memory for The AVS3 Standard**
	Zhijian Hao, Fa Xu, Guoqing Xiang, Peng Zhang, Xiaoyang Zeng and Yibo Fan *(Fudan University; Peking University)*

Thursday, October 28, 10: 15 – 12: 15 **Session D3 : Novel Device I**

	Title
1	**0051: A split-gate SiC trench MOSFET with embedded unipolar diode for improved performances**
	Zheng Wu, Chao Xia, Bo Yi, Junji Cheng, HaiMeng Huang, MouFu Kong, HongQiang Yang and WenKun Shi *(University of Electronic Science and Technology of China)*
2	**0106: Impact of Evaporated AuNP Thickness on Pseudo-MOS and Its Application in Direct MicroRNA-375 Detection**
	Haihua Wang, Song He, Kai Xiao, Yu-Long Jiang and Jing Wan *(Fudan University)*
3	**0155: A Vertical Thin Layer pLDMOS with Linear doping realizing ultra-low Ron,sp**
	Bo Yi, Zheng Wu, Junji Cheng, HaiMeng Huang, MouFu Kong and HongQiang Yang *(University of Electronic Science and Technology of China)*
4	**0175: The Impact of Incident Wavelength and Incident Intensity on Light-modulated Subthreshold Swing Effect**
	YX. Chen, K. Xiao, HH. Wang and J. Wan *(Fudan University)*
5	**0246: Analysis of Switching Characteristics of Wide SOA and High Reliability 100 V N-LDMOS Transistor with Dual RESURF and Grounded Field Plate Structure**
	Anna Kuwana, Jun-ichi Matsuda and Haruo Kobayashi *(Gunma University, Japan)*

Thursday, October 28, 13: 30 – 15: 30 **Session B4 : Memory Device & Circuit I**

	Title
1	**0260:Chalcogenides for Their Application to Phase-Change-Memory-Based Synaptic Devices (invited paper)**
	You Yin *(Gunma University, Japan)*

Friday, October 29, 10: 15 – 12: 15 **Session C6 : Power Management**

	Title
1	**0114: A Cold-Start SECE and BUCK-SECE Hybrid Rectifier for Piezoelectric Energy Harvester**
	Hongyu Lu, Yinshui Xia *(Ningbo University)*
2	**0210: A High-Sensitivity， Low-Power Dual-Band RF Energy Harvesting and Managing System for Bio-Potential Acquisition**
	Yuyuan Tian, Lianxi Liu *(Xidian University)*
3	**0267: Multi-Output SEIPC Multiplied Boost Converter with Exclusive Control**
	Yuki Sekine, Shogo Katayama, Yasunori Kobori, Anna Kuwana and Haruo Kobayashi *(Gunma University, Japan)*

Excellent Student Paper Award 受賞

2021 IEEE 14th International Conference on ASIC

ASICON 2021 IEEE IET

荣誉证书

HONORARY CREDENTIAL

Oct.26-29, 2021

Kunming , China

Excellent Student Paper Honorary Certificate

Paper Title: Multi-Output SEIPC Multiplied Boost Converter with Exclusive Control

Authors: Yuki Sekine, Shogo Katayama, Yasunori Kobori, Anna Kuwana and Haruo Kobayashi

Affiliation: *Gunma University, Japan*

ASICON 2021
Organizing Committee
Technical Program Committee