

# ICDV2013

Masahiro Murakami, Shaiful Nizam Mohyar, Haruo Kobayashi, Tatsuji Matsuura, Osamu Kobayashi, Masanobu Tsuji, Sadayoshi Umeda, Ryoji Shiota, Noriaki Dobashi, Masafumi Watanabe, Isao Shimizu, Kiichi Niitsu, Nobukazu Takai and Takahiro J. Yamaguchi,  
“Study of Complex Multi-Bandpass  $\Delta\Sigma$  Modulator for I-Q Signal Generation,”  
The 4th IEICE International Conference on Integrated Circuits Design and Verification, Ho Chi Minh City, Vietnam (Nov. 15-16, 2013).

## 発表写真

小林研M1 村上正紘



The 2013 International Conference on Integrated Circuits, Design, and Verification (ICDV 2013)  
2013 / 11 / 16 @Ho Chi Minh City, Vietnam

# Study of Complex Multi-Bandpass $\Delta\Sigma$ Modulator for I-Q Signal Generation

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Circuits, Design, and Verification  
(ICDV)

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## Conclusion

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- ▶ I,Q signal generation with digital centric for testing communication IC.
  - ▶ Complex multi-BP  $\Delta\Sigma$  DAC
  - ▶ Multi-bit DAC
    - Relaxes the analog filter requirements
    - × Degrades system linearity
- ○ DWA algorithm

Low cost, high quality signal generation.

ĐOÀN KẾT, THỐNG NHẤT,  
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# The 4th International Integrated Circuits, (ICD)

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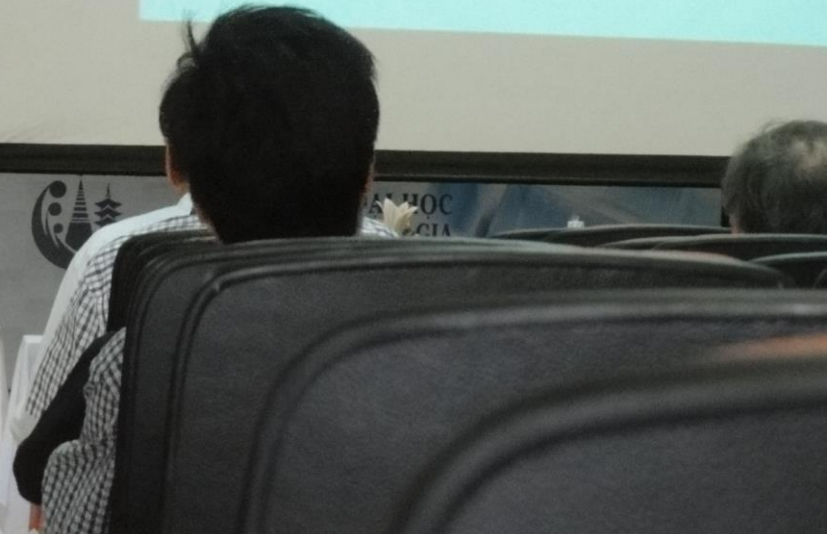


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## OUTLINE

- ▶ Research Background
- ▶ Complex Multi-BP  $\Delta\Sigma$  D/A M
- ▶ DWA Algorithm
  - Conventional Method
  - Proposed Method
- ▶ Conclusion





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## OUTLINE

- ▶ Research Background
- ▶ Complex Multi-BP 2D-2D Modulator
- ▶ DDA Algorithm
  - Convolutional Method
  - Phase Shift Method
- ▶ Conclusion

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THÀNH CÔNG NGHỊ QUYẾT  
ĐẠI NỘI V DẪNG BỘ  
TRƯỜNG ĐH KHTN





## Conclusion

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  - ▶ Complex multi-BP  $\Delta\Sigma$  DAC
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    - × Degrades system linearity
      - ○ DWA algorithm
- Low cost, high quality I,Q signal generati





