

URSI Commission C in Japan

22th URSI-C-Japan Chairperson Masahiro MORIKURA

(7th scientific conferences)

1. Convener: Dr. Nobuyuki Itoh, Okayama Prefectural University
2. Date/time: 12:30 - 16:30, 5 July 2013
3. Venue: Toshiba Science Museum, Kawasaki, Japan
4. Registration fee: Free
5. Listed attendees: 38 persons
6. Local arrangement: Dr. Nobuyuki Itoh, Okayama Prefectural University
7. Session title: "Simulation technique for design of radio-frequency integrated circuits"
8. Exhibition and presentation:
60 min. exhibition and 40 min. presentation including Q & for each speaker, respectively
12:30 - 13:30 Guided tour at Toshiba Science Museum
13:30 - 13:40 Opening Talk, Prof. Masahiro Morikura URSI-C-Japan, Chair
13:40 - 14:20 "RF modeling of MOSFETs including process variation", Dr. Sadayuki Yoshitomi, Toshiba Corporation
14:20 - 15:00 "Challenges and Solutions for RFIC Realization", Mr. Hideyoshi Sugaya, Cadence Design Systems, Japan
15:00 - 15:10 Coffee break
15:10 - 15:50 "Methodology for substrate coupling analysis with high frequency accuracy", Dr. Sotiris Bantas, Helic Inc.
15:50 - 16:30 "Behavior Model of RF transceivers", Takahiro Kikuchi, Agilent Technologies
9. Reception: Restaurant Maturiboshi (Kawasaki)
10. The steering committee meeting took place from 11:00 to 11:50 on 5 July, 2013.
11. Concluding Remarks

It is remarkable, in these twenty years, personal telecommunications, especially mobile phone, have been widely popular. In these evolutions, mainstream of electronics parts was radio-frequency integrated circuits, particularly silicon based radio-frequency integrated circuits. However, silicon based semiconductor devices have involved some of difficulty on their electrical characteristics such as high frequency characteristics, conductive substrate, etc. with compare than compound semiconductor. Moreover, radio-frequency integrated circuits faced more difficulty due to highly integration and coexistence with digital circuits, and they have been overcome. In above story, modeling and simulation techniques have supported the realization of radio-frequency integrated circuits, and also they will be more advanced in future.

In this workshop, entitled "Simulation technique for design of radio-frequency integrated circuits", there were presentation of almost all steps of radio-frequency integrated circuits design, through from device modeling to system design, and were active discussions. In concretely, they were "RF modeling of MOSFETs including process variation", "Challenges and Solutions for RFIC Realization", "Methodology for substrate coupling analysis with high frequency accuracy", and "Behavior Model of RF transceivers".

Many attendees had a time of active discussion, and knew importance of simulation techniques, and deeply understood them, in this workshop.

(8th scientific conferences)

1. Convener: Prof. Takuji Arima, Tokyo University of Agriculture and Technology
2. Date/time: 13:20 - 16:55, 27th September 2013
3. Venue: Okinawa Jichi-kaikan, Japan
4. Registration fee: Free
5. Listed attendees: 23 persons
6. Local arrangement: Dr. Ryo Yamaguchi, Softbank Mobile
7. Session title: "Huge scale simulation technology for the next generation"
8. Exhibition and presentation:
 - 13:20 - 13:30 Opening Talk, Prof. Masahiro Morikura URSI-C-Japan, Chair
 - 13:30 - 14:10 Invited Talk, "Operation of the super computer system on Tohoku university and research of next Peta-scaled vector computers", Prof. Hiroaki Kobayashi (Tohoku University)
 - 14:10 - 14:50 Invited Talk, "TSUBAME 2.0/2.5 super computer and issues for the post Peta-scale generation", Prof. Toshiaki Endo (Tokyo Institute of Technology)
 - 14:50 - 15:30 Invited Talk, "Numerical analysis technique of electromagnetic problems by using GPU computing and its application for visualization", Prof. Kan Ohkubo, (Tokyo Metropolitan University)
 - 15:30 - 15:40 Coffee break
 - 15:40 - 16:20 Invited Talk, "Reduction of the computational resources using specialized analytical method in a problem", Prof. Takuichi Hirano (Tokyo Institute of Technology)
 - 16:20 - 16:55 "Introduction of calculation resource reduction techniques in FDTD method", Prof. Takuji Arima (Tokyo university of agriculture and technology)
9. Reception: Southern Plaza Kaiho (Okinawa)
10. The steering committee meeting took place from 09:00 to 09:40 on 29th September, 2013.
11. Concluding Remarks

It is considered that the simulations are very important scheme in the fabrication of hardware. It is fact that the simulations are supported by computer technology and software technology. An important thing is both of computer and software are made by human beings. In recent years, huge scale models can be simulated due to development of computer and software technology and these synergy effects.

There were five presentations in this session. Three presentations were "Vector super computer technology", "Cluster computer technology", "GPGPU technology" as computer technology. Two presentations were "Frequency domain analysis technology" and "Time domain analysis technology" as electromagnetic analysis technology.

All presenters mentioned about view of bright future in these technology. Therefore, unpredictable huge scale simulation will be realized in ten years by development of computer and software technology and these synergy effects.

(International Activities)

None