

URSI Commission C in Japan

22th URSI-C-Japan Chairperson Masahiro MORIKURA

(10th scientific conferences)

Session title: "Electro-magnetic field simulation technologies for designing wireless communications equipment"

1. Convener: Takashi Yamagajo, Fujitsu Laboratories Ltd.
2. Date/time: 11:00 - 17:00, 7th March, 2013
3. Venue: Fujitsu Ltd., Kawasaki Research and Manufacturing Facilities, Kanagawa
4. Registration fee: Free
5. Listed attendees: 41 persons
6. Local arrangement: Takashi Yamagajo, Fujitsu Laboratories Ltd.
7. Session title: "Electro-magnetic field simulation technologies for designing wireless communications equipment"
8. Exhibition and presentation:
 - 11:00 - 12:00 Guided tour of Fujitsu Kawasaki technology hall
 - 13:30 - 13:40 Opening Remarks, Prof. Masahiro Morikura, Chair,
Commission C of URSI-JNC
 - 13:40 - 14:30 "Reflect array for improving wireless propagation channel and its application to MIMO",
Prof. Kunio Sawaya, Tohoku University
 - 14:30 - 15:20 "Effective application of the electromagnetic simulator to the contactless power transmission problem",
Mr. Takashi Yasunaga, AET, Inc.
 - 14:20 - 15:35 Coffee Break
 - 15:30 - 16:15 "SAR evaluation in medical ICT and application to the human body communication",
Mr. Kaoru Someno, PTT Co. Ltd.
 - 16:15 - 17:00 "Introduction of the EMC design examples at the upper process",
Mr. Toshiro Sato, Fujitsu Advanced Technologies Ltd.
9. Reception: Fujitsu Ltd., Kawasaki Research and Manufacturing Facilities, Kanagawa
10. The Steering committee meeting took place from 12:00 to 13:00 on 7th March, 2014.
11. Concluding Remarks

Using Super-computers and/or GPGPUs (General Purpose Graphic Processing Unit), acceleration technique of the electromagnetic simulation has been made a rapid progress. Owing to this background, electromagnetic simulation is widely used in developing IT products and services. This workshop was organized to study how the latest electromagnetic simulation is actually utilized in R & D field.

First, typical electromagnetic simulation methods were briefly summarized and pros and cons of each method were presented. Next, four case studies - (1) reflect array design to cover the blind area, (2) contactless power transmission, (3) communication including or adjacent to the human body and (4) EMC design at the upper phase of the development process - were presented. In each case, acceleration techniques such as GPGPU and engineering cloud are used. We realized that these techniques become indispensable for R & D field. We also discussed about the most suitable simulation method and modeling technique for some problems. This workshop was fruitful to have a deep understanding of the use of the electromagnetic simulation.

(International Activities)

None