



Summary of SCEE 2020 Conference Held in Eindhoven from February 16-20, 2020

Background/Introduction

The SCEE Foundation aims to bring together scientists – mathematicians and electrical engineers, from universities and industry – with the goal of intensive discussions on Computational Science and Engineering, and to stimulate young researchers to actively participate in SCEE conferences and related events.

After a rich history of 12 conferences, the SCEE series is firmly established. During SCEE 2018 it was decided to set up a central website www.scee-conferences.org that will offer from now on all information on all past and future SCEE conferences, as well as future SCEE events such as trainings and summer schools.

The actions and offers of support by the SCEE Foundation are in synergy with the actions of the Special Interest Group “Modelling, Simulation and Optimization in Electrical Engineering” within the European Consortium of Mathematics for Industry (ECMI).

The SCEE conferences take place every two years, in the even years. The papers are published in the Springer/ECMI book series “Mathematics in Industry”. Excellent publications are invited to be further extended and published in the Springer/ECMI “Journal of Mathematics in Industry”

Thanks to sponsors, each conference can specifically stimulate the participation of young researchers by offering awards and grants. If you or your company would like to support and encourage young researchers by becoming a sponsor, do not hesitate to contact us at treasurer@scee-conferences.org.

SCEE 2020

Eindhoven was already the venue for SCEE 2002, and now, in 2020, for the second time Eindhoven hosted the conference. Due to the pressure on conference rooms at the university, a location outside the TU/e was selected: the “Academisch Genootschap”, located Parklaan 93 and very close to the city centre, the central railway station and hotels. Extremely good utilities, and the catering was excellent.



In total, 85 participants from 14 different countries, as far away as South Korea and Taiwan, registered. Most participants came from Germany (where the conference series started in 1997, and where the ECMI Special Interest Group MSOEE is based), with a second place for The Netherlands with 25% of participants. All participants received a book of abstracts, and a folder with material from the sponsoring organisations (also mentioned in the book of abstracts, on the website and in the opening presentation). Also, for the first time, an app had been prepared for the conference by WebInverse: by typing "SCEE2020 or SCEE 2020" in the android app store or the Apple app store, the app can be downloaded.

The conference started already on Sunday evening with registration, a reception and buffet dinner, and a historical lecture by Prof. Albert Ruehli, who talked about 50 years of progress in this important research area. Especially for the young researchers, this was eye-opening, and they all appreciated this lecture very much.

Monday morning, the conference started officially, with opening by the chair of the conference, Wil Schilders, and by Joerg Ostrowski, industrial member of the Standing Committee for SCEE conferences. Jasmin Smajic was the first invited speaker, and he spoke about "Numerical Analysis of Electromagnetic Transients in Power Devices". Then the conference continued with contributed talks, organised in 4 different types of sessions (electromagnetics, circuit simulation, device simulation and mathematics), but keeping the tradition of having no parallel sessions. This concept is appreciated a lot by participants. The lecture theatre was always quite full, so people from various disciplines did attend sessions which are not their main expertise. At the end of the first day, a special session for the EID project ROMSOC was held.

Tuesday started with the invited talk by Romanus Dyczij-Edlinger, entitled "Reduced-order finite-element modeling and optimization of antennas", followed by contributed talks until lunch (also being served in the AG). The afternoon was devoted to the traditional conference outings, in this case participants could choose between a visit to the Philips museum or the DAF museum, and an optional visit (for free on Tuesday afternoon) to the Van Abbe museum of modern art. At 6 PM, the conference dinner started in the AG, and this was again very well organised with good food, good wine and many interesting conversations.

Wednesday morning marked the so-called "Industry morning" with talks from NXP Semiconductors, ASML and Bosch. It was good for participants to see what the challenges in industry are about, and how the work of mathematicians is needed. Again, the session was greatly appreciated by participants. During lunch time, the official group photo was made:



The day continued with contributed papers, and at 4 PM it was time for the “poster blitz”, i.e. 1 minute presentations/pitches by the poster presenters. There were 32 posters, and these were subsequently presented in the poster session, which led to many discussions between participants. The day ended with the invited talk by Liniana Borcea on “Reduced order model approach for inverse scattering”. In the evening, there was a meeting of the Standing Committee and the Program Committee, followed by a dinner in the “Karpendonkse Hoeve” for the SC/PC committees and the invited speakers.

Thursday morning started with an invited talk by Slawomier Koziel, entitled “Forward and Inverse Surrogate Modeling for Accelerated Design Optimization of High-Frequency Structures”. This was followed by contributed talks. During the closing session, just before lunch, the Young Scientist Award was announced, the winner being Idoia Cortes Garcia of the Computational Electromagnetics Group at the Technische Universität Darmstadt, Germany, with her paper “Generalised Elements for the Analysis of Refined Models in Circuits”.

In the afternoon, a special session was organised for the ECMI Special Interest Group MSOEE. It is good to combine SCEE conferences with related activities, such as the ROMSOC EID project and the ECMI SIG MSOEE.

Concluding remarks

The SCEE 2020 was a lively and very interesting event, showing that the concept of meetings between electrical/electronic engineers and mathematicians leads to very fruitful results. There was a lot of attention for model order reduction, but also new concepts coming from the AI area are starting to be researched in the SCEE field. In 2 years, the 25th anniversary of the SCEE series of conferences will be celebrated at SCEE 2022 in Darmstadt, where also the first SCEE conference (then a national event) was held.