Report from the 2nd International Workshop on Transmission-Line Matrix (TLM) Modeling

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More than two years after the successful first meeting at the University of Victoria in Canada, researchers involved with numerical modeling using the transmission-line matrix (TLM) method had another opportunity to meet, this time in Europe. The Second International Workshop on TLM took place from 29 to 31 October 1997 in Munich, Germany, hosted by the University of Technology, under the technical chairmanship of professor Peter Russer and in collaboration with the IEEE Microwave Theory and Techniques society.

The TLM method is a time-domain differential technique for numerical modeling of electromagnetic fields and dispersion phenomena. Thanks to the pioneering work of Peter Johns in the early seventies, and the many ingenious contributions by researches around the world who were inspired by his ideas, the TLM method has become a powerful and established modeling technique used in the wide range of applications, such as microwave circuit modeling, antenna design, electromagnetic compatibility, microwave heating, etc. The advantage of the TLM simulation lies in its capacity to model circuits of arbitrary geometry with inhomogeneous, lossy, dispersive and non-linear media as well as time-dependent parameters, with a versatility which allows straightforward calculations of complex structures. For several years now, sophisticated modeling software based on TLM has been commercially available which is a sure sign that TLM has become an invaluable practitioner's tool. The second international workshop on TLM brought together experts and interested parties in Munich to assess the state of the art, explore capabilities, applications and limitations, share the latest and indicate future developments of TLM and to evaluate its strengths and weaknesses with respect to other modeling techniques. The participants of the workshop were welcomed by the general chairman, professor Adalbert Beyer from University of Duisburg, and greeted by the director of the first workshop, professor Wolfgang Hoefer from University of Victoria, Canada. He quoted one of his former student's comments that for researchers in this area, the attendance to the TLM workshop was like going to a restaurant and having their favourite dish on the menu all the time but prepared by different cooks. Indeed, the workshop participants enjoyed three days of quality presentations from twelve invited keynote speakers and other contributing authors coming from nine countries: Germany, United Kingdom, France, Spain, Ireland, Switzerland, Yugoslavia, Canada and United States. The subjects discussed included fundamentals and extensions to the TLM method, boundary conditions, radiation problems, circuit modeling and modeling of anisotropic, lossy, dispersive and magnetic materials. There were also two open panel discussions in which a large majority of attendees took an active part. Both the theoretical and practical aspects of TLM were discussed, with much of the interest drawn by the perfectly matched layer (PML) boundary conditions, the implementation of new advanced TLM schemes and, almost inevitably, comparisons between the TLM and the finite-difference time-domain method (FD-TD).

Outside the conference theater, participants had an opportunity to enjoy many of the Bavarian attractions, in unusually cold, but clear and sunny Munich weather. The highlight of the social events was the conference dinner held in a traditional Bavarian restaurant, with waitresses dressed in the traditional costume and serving various mouth-watering Bavarian delicacies. Of course, the specially house brewed wheat-beer perfectly complemented the Bavarian food and everybody appeared to really enjoy it.

The international steering committee provisionally agreed that the next workshop would be held in Nice, France, in 1999, and we are all looking forward to an exciting meeting on the French Mediterranean coast. Until then, everybody will keep fond memories of Munich, thanks to the excellent organization by the workshop organizer, Dr. Stefan Lindenmeier, and the workshop technical chairman, professor Peter Russer.

John Paul (University of Nottingham), presenting his paper.