

# Microwave Education in the U.S. and Several Other Countries

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THIS ISSUE contains a special section on microwave education in Australia, Belgium, Canada, Italy, and the U.S. The intention is to summarize the approaches in several countries and provide some insight for providing better planning and improved teaching techniques for the future. In that vein, there are two papers dealing with the subject in the U.S. One of these, by Drs. Henning and Dunleavy, contains an overview and the results of a survey describing curricula, laboratory facilities, and specialized programs at many institutions. The second U.S. article, by Dr. M. Iskander, takes a different approach and describes a computer-assisted method for teaching electromagnetics in general, and microwaves in particular. This program, called the center for Computer Applications in Electromagnetic Education (CAEEME) is an activity funded by the U.S. National Science Foundation and the IEEE to focus on stimulating and accelerating the use of computers, software tools, and graphics in electromagnetic education.

Against the discussions in the two U.S. papers, the articles from the other countries are an interesting contrast because they indicate that on the whole there is considerable central planning and coordination of programs, whereas in the U.S. the growth of a microwave program at an educational institution is often the result of an interest on the part of one or more faculty members. Of course, the historical changes since World War II have had a large impact on the trends in microwave education. The effects of these changes on government control and expenditures are particularly pertinent in Australia, Belgium, Canada, and Italy, and the respective authors review some of the evolution of microwave education due to political changes. It is interesting to see the degree programs and curricula that have developed in each situation.

This special treatment of microwave education was initiated by Dr. Ferdo Ivanek when he was President of the Administrative Committee of the Microwave Society. He felt that more attention ought to be focused on microwave education, that it ought to be better planned, coordinated, and funded. Furthermore, I believe that he felt that in some countries other than the U.S. there was a more organized and well-thought-out scheme of things. In any event he was eager to have some different examples and approaches described. At the time I was the co-chairman of the MTT-S ADCOM education committee, along with Dr. Barry Perlman, and it fell to me to coordinate the effort.

We had a number of discussions with other ADCOM members about how to focus the issue, and in particular, with Dr. Fred Rosenbaum, who had just served as the guest editor

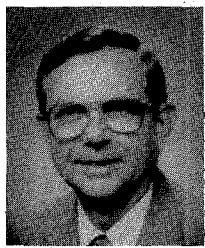
and co-author for a special issue of the IEEE TRANSACTIONS ON EDUCATION dealing with the teaching of electromagnetics [1]. At the time, Dr. Rosenbaum agreed to write the tutorial overview article which would discuss microwave education in the U.S. I quickly found out, however, from Dr. Steve Maas, then editor of the MTT TRANSACTIONS that the pipeline of papers and scheduled special issues was so long that we probably could not enter the cycle until early 1993. So we began preparations slowly, and I contacted a few potential authors about preparing an article. Then, as we were about to get serious, Dr. Rosenbaum suddenly died, in February 1992. That produced a big transient, and I spent a considerable amount of time discussing other possible U.S. authors with several people. It was a task that few relished. I am very indebted to Dr. Rudy Henning for stepping forth and agreeing to tackle the job, which he did in excellent fashion with Dr. Dunleavy. By then we were way behind in the schedule for the issue, but I proceeded to contact a number of possible authors, explaining that we had a very short time scale. It was extremely pleasant to have Drs. Fourikis (Australia), Hoefer (Canada), Sorrentino and Stracca (Italy), and Vander Vorst (Belgium) respond so quickly, on a scale of weeks to a couple of months. They all made an extremely fine effort to provide the present information, and they have my thanks.

While on the subject of education, Dr. Reinhard Knerr has asked me to mention the Distinguished Educator Award, which was inspired by the untimely death of Dr. Fred Rosenbaum. This award will be considered annually, but may be presented less frequently, and consists of a plaque, an honorarium of \$1000.00, and a feature publication in the MTT-S TRANSACTIONS. The award will be made to an individual who must be a distinguished educator with an outstanding record of research contributions and a record of many years of service to MTT-S. Nominations should go to Dr. Knerr.

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*Guest Editor*

## REFERENCES

[1] R. E. McIntosh and F. J. Rosenbaum, "Special Issue on teaching electromagnetics," *IEEE Trans. Education*, vol. 33, Feb. 1990.



**James C. Wiltse** (S'48-SM'59-F'74-LF'92) received the B.E.E. and M.E.E. degrees from Rensselaer Polytechnic Institute and the doctorate from Johns Hopkins University. He has been at the Georgia Tech Research Institute since 1978, serving as a Principal Research Engineer. From 1979 to 1990 he was also an Associate Director of GTRI. Prior to coming to Georgia Tech, Dr. Wiltse spent 14 years with Martin Marietta Corporation, Orlando, FL, where for 4-1/2 years he was Director of Research and Technology, and also served as Director of Electronics Engineering, Director of Research and Engineering Operations, and Principal Research Scientist. Earlier, he was employed at Electronic Communications, Inc. (now E-Systems) for five years, where he was Director of Advanced Technology. His areas of interest include microwaves and millimeter waves, lasers, and infrared devices with applications to radar, radiometry, electronic countermeasures, guidance, and communications. He has been the author or co-author of over 100 articles, seven books, and several patent disclosures, and has made numerous presentations at technical meetings and symposia in the U.S. and overseas. Active in the IEEE, Dr. Wiltse has been a member of the National Administrative Committee for the Microwave Society, the Editorial Board of the *Proceedings*, the Editorial Review Boards of the TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES, and on TRANSACTIONS ON ANTENNAS AND PROPAGATION; Chairman and Vice Chairman of the Orlando and the Atlanta Sections, Chairman of Area 3 (Georgia), member of the steering committee for the 1993 I.M.S. and Chairman of the 1984 National Radar Conference. Dr. Wiltse was the MTT-S National Lecturer in 1980 and a member of the IEEE Delegation to the Soviet Popov Society Meeting in 1979. A member of the Boards of Directors of Southcon and of the Association of Old Crows (Electronic Defense Association), he has served on numerous technical program committees and chaired many sessions at symposia, been an Associate Editor for *Microwave Journal*, and acted as a reviewer for *Microwave and Optical Technology Letters*, and the *Journal of Infrared and Millimeter Waves*. Dr. Wiltse is a member of Sigma Xi, Tau Beta Pi, and Eta Kappa Nu, and has been given the IEEE awards for Outstanding Engineer of the Year (1975) and Outstanding Service (1989) in Region 3 (Southeastern U.S.). He is listed in several biographical references.