

The 40th Anniversary of SPICE: An IEEE Milestone

SPICE (Simulation Program with Integrated Circuit Emphasis) is ubiquitous in the electrical engineering profession. For 40 years now, engineering students have learned how to use SPICE as undergraduates, have employed SPICE in their graduate research, and have embarked upon careers in electrical engineering where they have relied upon SPICE in the design of electronic circuits. In recognition of the importance of SPICE to the electrical engineering profession, the IEEE installed a plaque in Cory Hall, the electrical engineering building at the University of California (UC), Berkeley, in February, 2011, that reads as follows:

SPICE (Simulation Program with Integrated Circuit Emphasis) was created at UC Berkeley as a class project in 1969–1970. It evolved to become the worldwide standard integrated circuit simulator. SPICE has been used to train many students in the intricacies of circuit simulation. SPICE and its descendants have become essential tools employed by virtually all integrated circuit designers.

In addition to the plaque unveiling ceremony at Berkeley, the Computer History Museum in Mountain View, California, hosted a 40th Anniversary SPICE Forum in February 2011 that was moderated by David Hodges and included panel-

SPICE RECOGNIZED

IEEE Milestones represent great achievements in technical innovation and impact, as their name suggests. I have been very interested in seeing SPICE recognized as a milestone because the vast electronics revolution that has taken place since the middle of the 20th century has, at its core, the transistor, the integrated circuit, as well as SPICE, the means by which the entire spectrum of complex computational, communication, and consumer products and systems has been designed efficiently and effectively for four decades.



SPICE very quickly became the universal tool for integrated circuit design, and it became ubiquitous because the developers made source code widely available, enabling the circuit design community to continually improve its performance and sophistication.

Key in the development of SPICE was the late UC Berkeley Prof. Donald Pederson, who received the 1998 IEEE Medal of Honor because of SPICE. He was a personal friend and was a very warm and brilliant man.

—Lew Terman

ists Kim Hailey, Ken Kundert, Ron Rohrer, and myself.

The third part of the SPICE Milestone celebration, proposed by David Hodges, is this magazine issue, published shortly after the SPICE Milestone events and featuring articles authored by many of the people who played influential roles in the development of SPICE.

Unfortunately, there were three people involved in SPICE who could not be present for the festivities: SPICE never would have happened without the tireless support of Donald Pederson, whose picture appears on the cover of this issue. Don would have loved the festivities at Cory Hall but sadly passed away in 2004. Bill

McCalla, who was one of Don Pederson's doctoral students, developed the SLIC program at UC Berkeley, in addition to playing many key roles in the emerging EDA industry. Bill's life was far too short. Finally, Richard Newton, another of Don Pederson's students, made enormous contributions in CAD, first as a graduate student, then as a UC Berkeley professor, and finally as the dean of engineering at UC Berkeley. Sadly, we also lost Richard far too early in his life.

Acknowledgments

The SPICE Milestone project was the idea of Lewis Terman, past president

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—Dick Jaeger
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of IEEE and a giant in the semiconductor industry. David Hodges, professor and former dean of Engineering at UC Berkeley, spearheaded the milestone effort as well as the Computer History Forum and this magazine issue. Dick Ahrons helped shepherd

the milestone proposal through the IEEE Milestone Committee. Costas Spanos, professor and chair, EECS, UC Berkeley, was enormously helpful in the milestone effort. The Computer History Museum Forum was successful due to the tireless efforts

of the Computer History Museum team of Douglas Fairbairn, Rosemary Remacle, Dick Ahrons, and David Hodges. This magazine issue would not have been possible without the efforts of all of the authors as well as Editor-in-Chief Mary Lanzerotti. **SSC**