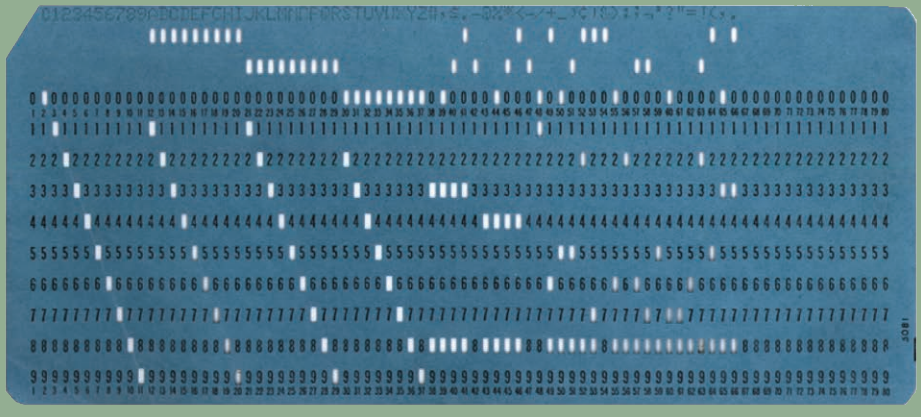
Microwave**Journal's**

STEM Works

Simulation [sim-y*uh*-**ley**-sh*uh*n]

Simulation uses mathematical models and various numerical techniques to replicate the behavior of an actual electronic device, electrical structure, system or circuit. Simulation software allows for modeling of circuit operation and is an invaluable analysis tool. Simulating a circuit's behavior before actually building it can greatly improve design efficiency by identifying faulty designs early and providing insight into the behavior of electronics' circuits and physical designs. Almost all IC design relies heavily on simulation.

1969
UC of Berkeley grad student, Laurence Nagel begins development of a public domain general purpose circuit simulator called SPICE.



1971
Texas Instruments' file patent on use of automated data processing machine to generate a continuous analytical objective function on a coded circuit representation. A program known as CAIN.

1973 Les Besser commercializes a program he authored called Computerized Optimization of Microwave Passive CircuiTs (COMPACT) and establishes the first microwave CAD company, Compact Software.

1983 Chuck Abronson and Bill Childs start EEsof, releasing Touchstone, the first design software to operate on the rapidly growing personal computer platform.

1987 HP releases the first version of its in-house developed linear circuit simulator with integrated schematic capture and graphical layout, HP Microwave Design System (MDS) the pre-cursor to ADS.

Compact Software introduces Microwave Harmonica, the first commercialized nonlinear RF circuit simulator using harmonic balance techniques developed by Rizzoli.

1989 Jim Rautio releases the first version of Sonnet software, a planar electromagnetic simulator for solving and analyzing 2 and 2.5 dimensional structures.

1990
Microwave Journal's cover feature introduces HP's high frequency structure simulator (HFSS) co-developed with Ansoft Corp., introducing 3D finite element methods to RF/mW design.

1998 AWR first demonstrates Microwave Office, an object-oriented EDA Environment that includes EM, Circuit simulation and schematic capture at the IMS in Baltimore.