A SPECIAL TRIBUTE TO THE REVOLUTIONARY PAPER WRITTEN BY DR. ALBERT RUEHLI

In 1974, in the March issue of the IEEE Transactions on Microwave Theory and Techniques, Dr. Albert Ruehli described with mathematical rigor how to derive "Equivalent Circuit Models for Three-Dimensional Multiconductor Systems".

Albert writes in the introduction section, "The purpose of this paper is to present a theory for an approximate computer modeling approach for three dimensional geometries that is appropriately called **partial element equivalent circuit (PEEC)** analysis."

With this – rather short – statement an innovative method for generating equivalent circuit-based models for general multiconductor systems, e.g. interconnects, was introduced to the IEEE community. At the time of publication Albert had been working for several years on solving electromagnetic issues of interconnects in IBM's computing systems. In this seminal publication however he showed how all relevant effects – resistive, inductive, capacitive and radiative (full-wave) – can be modeled using PEEC and how the resulting model can be used in a SPICE simulation to generate insight into the behavior of signal and power/ground interconnects.

Albert's approach was in many ways original and quite complementary to other numerical approaches at the time that were based on finite elements, finite differences, or boundary elements. His work inspired and continues to inspire researchers and engineers active in modeling and simulation for SI and PI.

We are privileged to have such an eminent speaker at the first **Global SIPI University** and would like to recognize this outstanding achievement.

Christian Schuster & Francesco de Paulis
Co-Chairs
IEEE EMC+SIPI 2024 Global Signal Integrity and Power Integrity (SIPI) University