Preface to the 2nd edition

This second edition of "Analog and Hybrid Computer Programming" has been prepared in response to the vastly increased interest in analog computing during recent years. The errors and typos found in the first edition have been corrected and additional topics have been included in the book.

The author is especially indebted to Dr. Chris Giles for his invaluable support. He not only did a terrific job proofreading this 2nd edition and was always a great discussion partner when it came to the nitty-gritty details. Nicole Matje and Oliver Bach also did a great job proofreading. Stefan Wolfrum also spotted and corrected quite some errors.

The author is also indebted to Nick Baberuxki and Maikel Hajiabadi for the hybrid computing examples shown in chapters 7.6 and 7.7 and their valuable overall feedback.

Since the first edition was published, a new analog computer, *THE ANALOG THING* (*THAT*), has been brought to the market as an open hardware project. Consequently, many examples found in this book have been implemented on this small analog computer, which is also described in detail in the introductory chapters.

The following new topics and examples have been included in this second edition:

- Minimum/maximum circuits
- Stieltjes integral
- Transfer functions
- Exponentially mapped past
- SEIR model

- Bessel functions
- The SQ_M model
- Euler spiral
- The Hindmarsh-Rose model of neuronal bursting and spiking
- The simulation of the flight of a glider
- Elastic pendulum
- Making music with analog computers
- Neutron kinetics
- Analog sorting
- Solving systems of linear equations with a hybrid computer approach
- Solving partial differential equations with random walks
- A simple hybrid controller for THE ANALOG THING