TRANSLINEAR CIRCUITS

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Introduction

It was Barrie Gilbert who coined the name "Translinear Circuits" (TC) and proposed a classification in 1975. The function of TC's depended on the connection of the input terminals of exponential devices in loops. Later, in 1991, Evert Seevinck and Remco Wiegerink proposed a broader definition also including loops of Quadratic devices.

In this classification a distinction has been made between Gilbert's translinear loops with (TL) devices having a transconductance proportional to the signal current and voltage translinear loops (VTL) with devices having a transconductance proportional to the driving voltage. The families of translinear circuits became extremely useful in building analog linear functions with variable parameters. In the following six papers these principles will be elaborated.

In the first paper Barrie Gilbert presents us classic and new aspects of translinear amplifier design in bipolar technology.

In the second paper Max Hauser particularly elaborates on variable-gain techniques for high-frequency applications in bipolar and CMOS technology.

In the third paper Evert Seevinck shows the family CMOS translinear circuits.
In the fourth paper Remco Wiegerink shows a systematic approach to the design CMOS translinear circuits.

In the fifth paper Klaas-Jan de Langen applies translinear principles to the input and output stages of low-voltage operational amplifiers.

Finally in the sixth paper Rinaldo Castello applies translinear principles to the design of low-voltage continuous-time filters.