

# A Current-Mode Circuit For Analogue Synthesis Of Some Special Functions

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## Summary

A new circuit approach for realizing analogue synthesizers of a wide range of special functions is proposed. The proposed technique is based on approximating a special function using exponential approximations. The circuit is flexible and can be programmed to produce a wide range of special functions with reasonable accuracy. The proposed circuit uses transistors, resistors, switches and current sources and is suitable for integration. Simulation results obtained from the synthesis of the error function  $\text{erf}(x)$ , the sine integral  $\text{Si}(x)$ , the sinh integral  $\text{Shi}(x)$ , the integrals of the Struve function  $\int_0^x H_0(t) dt$  and  $\int_0^x H_1(t) dt$ , and the modified Struve function  $\int_0^x L_0(t) dt$ , are presented.

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