THESIS TITLE	INTERGRABLE ELECTRONICALLY TUNABLE VOLTAGE-TO-CURRENT TRANSDUCERS AND THEIR APPLICATIONS
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ABSTRACT

The goal of this thesis is to propose novel circuit design techniques for the synthesis of integrable electronically tunable voltage-to-current transducers (EVCTs). The new proposed EVCTs are composed of typical integrable analog circuit functions and require small number of transistors, which are attractive features for an VLSI implementation. Comparing with the existing VCT, the advantage feature of the EVCTs are that their conversion characteristics can be varied by electronic means, with highly linear and accurate, wide dynamic range and wide bandwidth, which will increase the usefulness of the VCT. Three new methods for the realization of the EVCT are proposed. The first method employs a class AB and current mirror circuits. The second method employs a differential amplifier and current mirrors, which is similar to the structure of an Operational Transconductance Amplifier (OTA). The third method employs a differential amplifier and a current amplifier is constructed in the form of an electronically tunable current conveyor. The characteristics of the EVCTs are demonstrated by experimental and simulation results. The results confirm that the performance of the proposed circuits, i.e. dynamic range, accuracy and frequency response, are in good agreement with the theoretical predictions. Finally, some application examples are also given.