Optimizing an Amplifier by a Many-Objective Algorithm Based on R2 Indicator

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Abstract

It is well known that Pareto based algorithms do not scale when the number of objectives is greater than three. That way, it is an open problem in integrated circuit design because optimizing amplifiers by multi-objective evolutionary algorithms requires evaluating many objectives with many constraints. In this manner, we show the usefulness of MOMBI, an algorithm based on R2 indicator, for improving the optimal sizing of amplifiers designed with MOSFETs. It is highlighted that such kind of algorithms could lead to solve problems in analog integrated circuit optimization when considering many objectives. In addition, a handling constraint scheme is incorporated to MOMBI. The optimization algorithm based on R2 indicator is applied herein to an amplifier that is used to implement a universal active filter showing good SPICE simulations results.

1. Introduction

2. Conclusions