

# Design and Optimization of LC Oscillators

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*M. Hershenson, A. Hajimiri, S. Mohan, S. Boyd, and T. Lee*

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We present a method for optimizing and automating component and transistor sizing for CMOS LC oscillators. We observe that the performance measures can be formulated as posynomial functions of the design variables. As a result, the LC oscillator design problems can be posed as a geometric program, a special type of optimization problem for which very efficient global optimization methods have recently been developed. The synthesis method is therefore fast, and determines the globally optimal design; in particular the final solution is completely independent of the starting point (which can even be infeasible), and infeasible specifications are unambiguously detected. We can rapidly compute globally optimal trade-off curves between competing objectives such as phase noise and power.

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P. Boyd

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