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New Topics in Simulation and Modeling of RF Circuits

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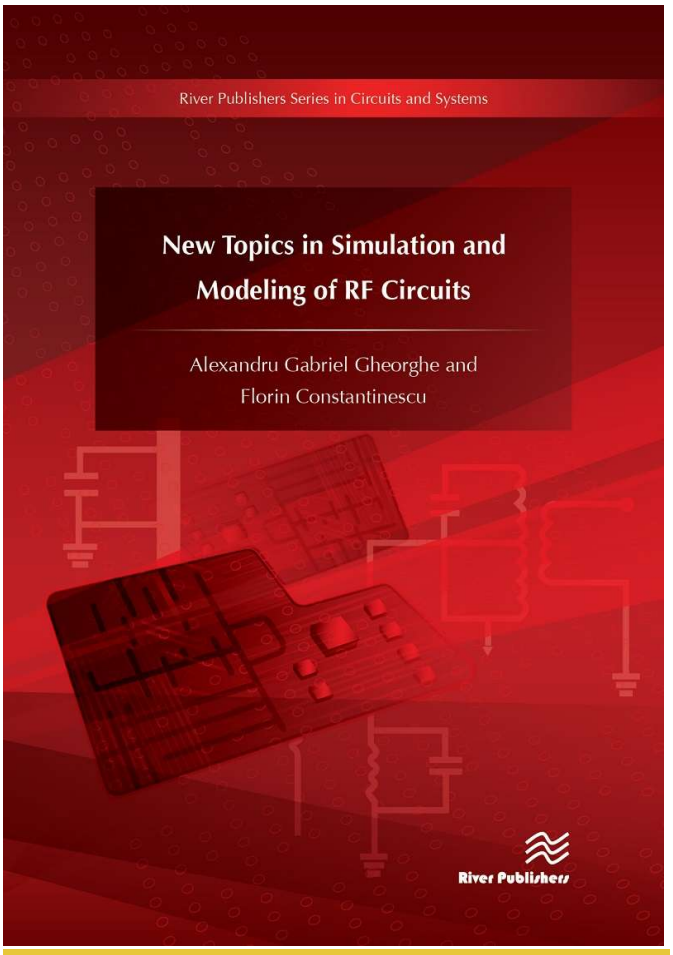
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New Topics in Simulation and Modeling of RF Circuits addresses two main topics: simulation of RF circuits and new models of nonlinear power BAW resonators and filters.

Since RF circuits have several unique features, and all analysis methods are based on the circuit essential properties, the book begins by describing the properties of RF circuits, characterization of circuits with customary and uncustomary behavior and some theorems of solutions existence and uniqueness for dynamic nonlinear circuits.

Thereafter, the main time domain and frequency domain analysis methods for RF circuits are presented. The advantages and disadvantages of each method have been highlighted, and an algorithm for the time step choice in transient analysis based on energy balance errors is also presented.

Lastly, the final part contains some nonlinear circuit models of power BAW resonators. The behavioral models for the time domain analysis are simple circuits containing weakly nonlinear elements. The behavioral models for frequency domain analysis are based on the measured values of the frequency dependent S parameters for a set of incident powers. S parameters corresponding to certain intermodulation products of practical interest are also considered. The physical models contain artificial transmission lines with nonlinear circuit elements corresponding to mechanical and electrical nonlinearities.



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