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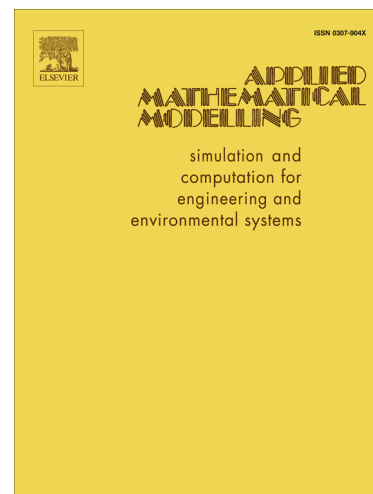
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**Analytical approximate solutions for a general nonlinear resistor-nonlinear capacitor circuit model**

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**Abstract-** In this paper, the analytical approximate solutions of a general RC circuit comprised of a nonlinear resistor in series with a nonlinear capacitor are addressed. In the studied circuit, the capacitor is characterized by a quintic polynomial voltage-charge dependence and the resistor obeys a cubic polynomial voltage-current relation. An efficient and easy-to-implement algorithm based on a hybrid analytical-numerical mathematical technique, namely the multistage Adomian decomposition method (MADM) is applied for solving the nonlinear differential equation governing the circuit performance. It is shown that the classic Adomian decomposition method fails to provide accurate convergent solutions for the posed problem over the whole semi-infinite time domain; however, the MADM can easily achieve convenient solutions with any desired

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