

## CHAPTER 61

### TECHNOLOGY ELECTRONICS & COMMUNICATION ENGINEERING

#### Doctoral Theses

628. MAJUMDAR (Sudipta)  
**Wavelet Based Parameter Estimation of a Class of Linear and Nonlinear Systems.**  
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#### *Abstract*

Studies the wavelet based parameter estimation of a class of linear and nonlinear systems. Studies the identification of second order linear differential equation using wavelets and compared the results with the least squares method. Derives volterra relation between input and output of a common emitter amplifier circuit using Ebers-Moll model and perturbation theory. Estimates the transistor parameter  $V_T$ , the thermal voltage of the common emitter amplifier circuit using the wavelet method and compared the results with the least squares method; also estimates the transistor parameter  $V_T$  of the Common emitter amplifier circuit using the closed form Volterra expression by wavelet method and compared the results with the least squared method.

#### *Contents*

1. Introduction. 2. Wavelet transform. 3. Identification of second order linear system. 4. Volterra representation using perturbation technique. 5. Parameter estimation using linear time invariant model. 6. Parameter estimation using volterra model. 7. Conclusions. Bibliography.