

Managing temperature effects in nanoscale adaptive systems

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Abstrak

This book discusses new techniques for detecting, controlling, and exploiting the impacts of temperature variations on nanoscale circuits and systems. A new sensor system is described that can determine the temperature dependence as well as the operating temperature to improve system reliability. A new method is presented to control a circuit's temperature dependence by individually tuning pull-up and pull-down networks to their temperature-insensitive operating points. This method extends the range of supply voltages that can be made temperature-insensitive, achieving insensitivity at nominal voltage for the first time.