

# **Abstract**

**Moustafa Hussein Aly**

## **Performance of Near-Ballistic Limit Carbon Nano Transistor (CNT) Circuits**

In this paper, we present a performance comparison between circuits implemented using short channel MOSFETs and those using carbon nanotransistors (CNT) operating near the limit of the ballistic transport circuits. The circuits included digital applications, such as an inverter, NAND and NOR gates, and analog circuit of a folded cascode amplifier. The carbon nanotube can be used in both device fabrication and circuit interconnects as a carbon nanowire (CNW). Analysis and simulation results show that the CNT is superior from the points of view of power dissipation, frequency range and noise margins.