

## PERSONAL INFORMATION

Kai Ni  
 RM 6526 Stevenson Center Vanderbilt University  
 Nashville, 37235, TN, US

Mobile: (615)512-2740  
 Email: kai.ni@vanderbilt.edu  
 Homepage: <http://home.ustc.edu.cn/~nkxb>

## ACADEMIC EXPERIENCE

➤ **Sep. 2007-Jun. 2011** University of Science and Technology of China (USTC)

- B.S. in Dept. of Electronic Engineering and Information Science (EEIS)
- **Overall GPA\***:           **3.84/4.30**       **Weighted Score: 90.1**
- **Major GPA:**           **4.13/4.30**       **Weighted Score: 94.83**
- **Math related GPA:**   **4.01/4.30**       **Weighted Score: 92.17**
- **Rank:**                 **4/153**

(\*GPA calculation Standard: A, 4.3, 100~95; B, 4.0, 94~90; C, 3.7, 89~85; D, 3.3, 84~82; E, 3.0, 81~78; etc)

➤ **Aug. 2011~present** Vanderbilt University

- M.S. in Dept. of Electrical Engineering and Computer Science (EECS)
- **Overall GPA: 4.0/4.0**

## RESEARCH INTEREST

- RF/Microwave and millimeter-wave circuit; Electromagnetics; Antenna
- Semiconductor devices and physics; Nanoelectronics, VLSI

## RESEARCH EXPERIENCE

➤ **Aug.2011~present** **Research Assistant in Radiation Effect & Reliability Group Vanderbilt University**

- Built an embedded on-chip monitor for dose level of **Total Ionizing Dose (TID)** effect based on the **PMOS leakage current** in **SOI** technology, gonna test it for TID effect and verify its functionality
- Involved in the research of carbon-based nanoelectronics, such as **diamond** and **Carbon Nanotube**, worked on the vacuum device field emission theory and the **nanodiamond field emission diode** data analysis, wrote a paper and ready to submit it
- Reviewed the radiation effect in **SOI** technology and the hardening technique for the corresponding radiation effect
- Reviewed semiconductor **superlattice** theory and application, especially the **Bloch Oscillator** as THz source and **Quantum Cascade Laser**

➤ **Nov.2009~Jun.2011** **Research Assistant in Applied Electromagnetics Laboratory USTC**

- Developed a **Moment of Method (MoM)** program incorporating the RWG basis to calculate the current flowing on the **fractal antennas (Koch and Sierpinski)**, analyzed the intrinsic fractal characteristics in the current distribution
- Applied the fractal geometry into Yagi-Uda antenna to achieve the small size without degrading the antenna performance, and wrote **MoM** programs to analyze the current distribution
- Investigated the **holographic antenna** and **ground penetrating radar** for mining application, came up with possible solutions for ground penetrating communication
- Designed several microwave circuits, such as **bandpass filter** based on the coupled microstrip lines, **power divider**, and **power amplifier**
- Wrote **MoM** programs to calculate the **impedance matrix** of Koch antenna, and optimized them. Found several principles illustrating the fractal characteristics by analyzing the impedance matrix.

- **May.2011**      **Campus Contest for Data Mining**
  - Developed an algorithm for data classification and parameter mining from huge training set and modified it
- **Sep.2010**      **China Undergraduate Mathematical Contest in Modeling(CUMCM)**
  - Developed three more and more complicated models of calculus and wrote programs to analyze the displacement parameters of oil tank and calibration of capacity table.
- **Jul.2009~Nov.2009**      **Robogame in USTC**
  - Built a human like robot and small car from scratch, finished the circuit design, developed the code for the small car running along the white line on the ground and the wireless communication between the car and the remote controller.

## **ENGLISH TEST**

---

GRE: Verbal 162/89%;      Quantitative 168/97%;      Analytical Writing: 3.5/30%

## **AWARDS**

---

- |   |      |
|---|------|
| ➤ 2011 Excellent Graduated Students     | USTC |
| ➤ 2010 Outstanding Students Scholarship | USTC |
| ➤ 2009 Microsystems Scholarship         | USTC |
| ➤ 2008 Outstanding Students Scholarship | USTC |
| ➤ 2007 Outstanding Students Scholarship | USTC |

## **PUBLICATIONS**

---

“Fabrication and Characterization of Multi-finger Sub-micron Gap Nanodiamond Lateral Vacuum Diode” submitted to Journal of Applied Physics