## Graduate Studies Seminar

#### Jeff H. Chang

#### Milestone

• EE B.A.Sc., joined a-SiDIC group, 2002 • EE M.A.Sc., 2003 Thesis: 2D a-Si:H Sensor Array EE Ph.D., ongoing Area: Systems Biology Contact Info jeffie@venus.uwaterloo.ca DC3717, ×3819

#### My Research

 OLED (Organic Light-emitting Diode)
 Large area electronic imagers using Hydrogenated Amorphous Silicon (a-Si:H)
 Systems Biology

 X-ray imaging
 DNA microarrays



X-ray Photodetectors and Readout Electronics

### Why I chose graduate studies?

- The deadly 4B term, the more you learn, the less you know
- Necessity in today technological market (for my field of study)
- New job position possibilities
- Broadened knowledge area for innovations and ideas
- Connections

### What is Device Physics?

The study of electronic devices at the fundamental level
 Modeling electronics devices using available tools
 Invention of new electronic devices

## Why I chose Device Physics?

#### Process of elimination

- Device Physics wasn't the first choice, until the Superheterodyne project
- Lowest possible EE field without digging into other disciplines (chem, phys, math, art)
- A balance of theories and experiments
  - Communications and Controls are too math intensive
- Advantage in analog and digital circuits

How do I like graduate study so far
to like: you're your own boss, flex hours, travel around the world, meet experts in the field.
to dislike: constantly begging for money, have to deal with the government, credit goes to somebody else.

Would I choose the same area or doing graduate studies at all and why?
Absolutely
It would still be the same area

### **Job Prospect**

- How does graduate studies help with finding a job?
  - Your supervisor have connections
  - Your classmates will help you
  - Higher degree makes you more marketable, more choices (\*\*\* depending on degree)
  - You know what you look for
  - Open your own company
  - The issue about initial salary \*\*\*

#### Job Prospect

What is the difference between a BASc job and a MASc job? not that much get paid more get more opportunities to expand What is the difference between a MASc job and a PhD job? more administrative control

### **Job Prospect**

Jobs in Device Physics Due to the nature of the field, the job possibilities are vast Analog and Digital Circuit design VLSI and IC fabrication Sensors and Displays Interdisciplinary jobs such as materials engineering and physical modeling

# What are the requirements?Interest

~75% minimum, ~85% nominal

\*\*\*specific to EE Devices: need solid understanding of MATH211/212, ECE209, ECE231, ECE241, ECE370, ECE332

- three references, at least two should be a professor
  GRE
- found on department website

How much does it cost? Tuition ~\$7,000/year and increasing Scholarships (decrease in difficulty) NSERC OGS RA Parental Additional Funding TA

- How early should you consider grad study and what you should consider?
  - You should start considering in 4A the latest, 3B ideal
  - URA with a professor in the research field you are interested in, try before buying
  - Compare schools and area of specialization
  - Know the professor

How do you approach professors?
 Keep in mind that they are people too like you and me, most of them at least
 Email them to setup an appointment
 Call them if they don't have email

