

NANO2002 Workshop I: Alternative Computing

Monday September 30, 2002

- 8:30–9:00 *Check-In/Light Breakfast (Hosted by IPAM)*
- 9:00–10:00 **John Reif** (Duke University)
Programmable Molecular Self-Assembly: Theory and Experimental Demonstrations
- 10:00–10:30 *Break*
- 10:30–11:30 **Supriyo Bandyopadhyay** (Virginia Commonwealth University)
Qubit readers and writers: spin polarizers and analyzers for writing and reading single electron spins in quantum dot systems
- 11:30–12:30 **Supriyo Datta** (Purdue University)
Molecular Devices and Circuits
- 12:30–2:00 *Lunch (on your own)*
- 2:00–3:00 **Hideo Mabuchi** (California Institute of Technology)
Experimental and theoretical foundations for quantum and biochemical
- 3:00–3:30 *Break*
- 3:30–4:30 **Richard Lipton** (Georgia Institute of Technology)
DNA Computing: What are the key problems?
- 4:30–5:30 **Erik Winfree** (California Institute of Technology)
Designing in-vitro biomolecular algorithms with DNA: self-assembly and transcriptional networks
- 5:30–7:00 *Wine/Cheese Reception (Hosted by IPAM)*

Tuesday October 1, 2002

- 8:30–9:30 *Continental Breakfast*
- 9:30–10:30 **Tal Mor** (Technion, Isreal)
Algorithmic Cooling and Scalable NMR Quantum Computers
- 10:30–11:00 *Break*

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- 11:00–12:00 **James Heath** (UCLA)
A Systems Approach to Molecular Electronics
- 12:00–2:00 *Lunch (on your own)*
- 2:00–3:00 **Vwani Roychowdhury** (UCLA)
The Scope and Promise of Alternative Computing Paradigms
- 3:00–3:30 *Break*
- 3:30–4:30 **Jeff Hasty** (Boston University)
Engineered gene circuits for biocomputing applications

Wednesday October 2, 2002

- 8:30–9:30 *Continental Breakfast*
- 9:30–10:30 **Jianbo Gao** (University of Florida)
Synchronized Oscillations and Chaos in Coupled Genetic Repressilators
- 10:30–11:00 *Break*
- 11:00–12:00 **Phil Kuekes** (Hewlett Packard Laboratories)
Defect-Tolerant Molecular Electronics: Combining top-down and bottom-up assembly
- 12:00–2:00 *Lunch (on your own)*
- 2:00–3:00 **Chris Husband** (Rice University)
Training the Nanocell Through Neuro-Dynamic Programming
- 3:00–3:30 *Break*
- 3:30–4:30 **Thomas Schneider** (National Cancer Institute)
Molecular Information Theory: Molecular Efficiency and Flip-Flops
- 4:30–5:30 **Roger Brockett** (Harvard University)
Topological Representations of Bits and Topological
- 5:30–7:00 *Dinner (Hosted by IPAM)*

Thursday October 3, 2002

- 8:30–9:30 *Continental Breakfast*
- 9:30–10:30 **Tad Hogg** (Hewlett Packard Laboratories)
Exploiting Problem Structure with Quantum Computers
- 10:30–11:00 *Break*

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- 11:00–12:00 **Eli Yablonovitch** (UCLA)
Physical Realizations of Information Processing Systems
- 12:00–2:00 *Lunch (on your own)*
- 2:00–3:00 **Michael Samoilov** (Lawrence Berkeley National Laboratory)
Design Characteristics of Biomolecular Systems
- 3:00–3:30 *Break*
- 3:30–4:30 **Nancy Woolf** (UCLA)
Quantum Computing and Neural Networks
- 4:30–12:00 *Conclusion*

