Nonlinear Optics: Materials, Fundamentals and Applications

>> Topical Meeting and Tabletop Exhibit

July 29 - August 2, 2002

Wailea, Maui, Hawaii
Outrigger Wailea Resort

It's not too late! Submit a Postdeadline Paper.

The organizers of the Nonlinear Optics Topical Meeting gratefully acknowledge the financial support from the following:

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About Nonlinear Optics

July 29 - August 2, 2002
The purpose of this meeting is to provide an international forum for discussion of all aspects of nonlinear optics, including new phenomena, novel devices, advanced materials and applications.

Meeting Scope

>> Topics to be Covered

The topics to be considered in the main program will include, but not be limited to:

**Fundamental studies and new concepts**

- Quantum optics, computation and communication
- Solitons and nonlinear propagation
- Ultrafast phenomena and techniques
- Surface, interface and nanostructure nonlinearities
- Microcavity and microstructure phenomena
- High intensity & relativistic nonlinear optics
- Slow light
- Coherent control
- Novel lasers and frequency converters

**Nonlinear materials**

- Atoms, molecules and condensates
- Semiconductors
- Nanostructures
- Organics
- Photonic bandgap structures
- Fibers and waveguides
- Photorefractives

**Applications**

- Lasers and amplifiers
- Frequency converters
- Optical communications
- Photonic switching
- Ultrafast measurement
- Frequency combs and optical clocks
• THz generation, spectroscopy and imaging
• Materials processing
• Optical storage
NLO Speakers

Invited Speakers
The preliminary list of invited speakers for the NLO program includes:

- **Physics and material challenges of quantum dots for optoelectronics applications**
  Yasuhiko Arakawa, Univ. of Tokyo, Japan

- **Biomedical applications of nonlinear optical spectroscopy**
  Paul Campagnola, Univ. of Connecticut, USA

- **Nonlinear phenomena in micromechanical structures based on Casimir forces**
  Federico Capasso, Lucent Tech., USA

- **Higher order correlations and semiconductor optical nonlinearities**
  Hyatt Gibbs, Univ. of Arizona, USA

- **Tunable compact THz sources and their application**
  Hiromasa Ito, Tohoku Univ., Japan

- **Nonlinear photonic crystals: waveguides, all-optical switching and solitons**
  Yuri Kivshar, Australian Natl. Univ., Australia

- **Breaking the 1-femtosecond barrier: the advent of attosecond metrology**
  Ferenc Krausz, Tech. Univ. of Vienna, Austria

- **Advances in ultra-long-haul dense-WDM terrestrial transmission**
  Linn Mollenauer, Lucent Tech., USA
• Light in a tight space: Enhancing matter-light interactions using photonic crystals
  
  Philip St. Russell, Bath Univ., UK

• Generation and applications of femtosecond X-rays from the Advanced Light Source
  
  Robert Schoenlein, Lawrence Berkeley Natl. Lab, USA

• Nonlinear optics in chiral media
  
  Y.R. Shen, Univ. of California-Berkeley, USA

• Quantum dots: artificial atoms for quantum computing
  
  Duncan Steel, Univ. of Michigan, USA

• Nonlinear optics with two photons (or less)
  
  Aephraim M. Steinberg, Univ. of Toronto, Canada

• Bio-photonic crystal effects in multiphoton microscopy
  
  Chi-Kuang Sun, Natl. Taiwan Univ., Taiwan

• High harmonic generation by relativistic Thomson scattering
  
  D. Umstadter, Univ. of Michigan, USA

• Measuring short pulses using nonlinear optics and measuring nonlinear materials using short pulses
  
  Ian Walmsley, Univ. of Oxford, UK

• All-optical signal processing using nonlinear fibers
  
  Shigeki Watanabe, Fujitsu Ltd., Japan

• Single photons and entangled photon-pairs from a single quantum dot
Yoshi Yamamoto, Stanford Univ., USA

- Ultrafast all-optical switching using intersubband transitions in InGaAs/AlAsSb quantum well structures
  

- Steering molecules by light: from NLO as a goal to NLO as a tool
  
  Joseph Zyss, LPQM-ENS Cachan, France

- Few optical cycle pulses in strong-field ionization and non-linear optics
  
  Sandro De Silvestri, INFM-Unita di Ricerca di Milano-Politcnico, Italy

- Ultrafast coherent electron transport in quantum cascade laser structures
  
  Thomas Elsaesser, Max Born Inst., Germany

- Quasi-Periodic Functions and Femtosecond Pulses
  
  Steve Harris, Stanford Univ., USA

- The quest for single-cycle optical pulses
  
  Franz Kaertner, MIT, USA

- Coherent control of atoms and molecules, for applications in nonlinear optics
  
  Henry Kapteyn, Univ. of Colorado, Boulder, USA

- Nonlinear atom optics of bosons and fermions
  
  Pierre Meystre, Univ. of Arizona, USA

- Ultrafast Optical TDM Transmission with the use of Femtosecond Pulses
Masataka Nakazawa, Tohoku Univ., Japan

- **Dynamics of Spectral Hole Burning in Self Organized Quantum Dot Amplifiers**

  Ted Norris, Univ. of Michigan, USA

- **Pattern formation and clustering of solitons in nonlinear weakly-correlated wave systems**

  Moti Segev, Technion Israel Inst. of Tech., Israel

- **Spatial Solitons in Periodically Poled KTP (PPLTP)**

  George Stegeman, Univ. of Central Florida, USA

- **Carrier-wave Rabi flopping in GaAs and its dependence on the absolute optical phase**

  Martin Wegener, Univ. of Karlsruhe, Germany

- **Free space quantum key distribution over 10km in daylight and at night**

  Richard Hughes, Los Alamos National Laboratory

- **Quantum logic operations using linear optical elements**

  James Franson, Johns Hopkins Univ.
Publications

>> Technical Digests

The NLO Technical Digest will be comprised of the camera-ready summaries of papers being presented during the NLO meeting. At the meeting, each registrant will receive a copy of the Technical Digest. Extra copies can be purchased at the meeting for a special price of $60.
Exhibitor List

As of June 19, 2002

>> NLO Exhibitors

- Davis Marketing
- Photonics Spectra
- Thorlabs, Inc.
## Agenda of Sessions

### Sunday, July 28, 2002

<table>
<thead>
<tr>
<th>Time</th>
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### Monday, July 29, 2002

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<tr>
<td>7:30PM - 9:30PM</td>
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<tr>
<td>Mauna Loa</td>
<td>Ilima</td>
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<tr>
<td>8:30AM - 10:00AM</td>
<td>MA, High Field Nonlinear Optics</td>
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<tr>
<td>10:00AM-10:30AM</td>
<td>Coffee Break</td>
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<tr>
<td>10:30AM - 12:30PM</td>
<td>MB, THZ Generation and Material Probing</td>
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<tr>
<td>10:30AM - 12:30PM</td>
<td>MC, Optical Communications</td>
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<tr>
<td>12:30PM - 7:30PM</td>
<td>Break, On Your Own</td>
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### Tuesday, July 30, 2002

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<td>Mauna Loa</td>
<td>Ilima</td>
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<tr>
<td>8:00AM - 10:00AM</td>
<td>TuA Transmission, Generation and Processing</td>
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<tr>
<td>10:00AM-10:30AM</td>
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<tr>
<td>10:30AM - 12:30PM</td>
<td>TuB, Wavelength Conversion</td>
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<tr>
<td>10:30AM - 12:30PM</td>
<td>TuC, Solitons and Pulse Shaping</td>
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<tr>
<td>12:30PM - 7:30PM</td>
<td>Break, On Your Own</td>
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<tr>
<td>10:00AM - 10:30AM</td>
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<tr>
<td>10:30AM - 12:30PM</td>
<td>WB, Optical Pulses: Generation and Diagnostics</td>
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<td>12:30PM - 2:00PM</td>
<td>Lunch Break, On Your Own</td>
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<td>2:00PM - 3:30PM</td>
<td>WD, Semiconductor Optics 2</td>
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<td>3:30PM - 5:00PM</td>
<td>WE, Poster Session</td>
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**Thursday, August 1, 2002**

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<td>7:30PM - 9:30PM</td>
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<tr>
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<td>Ilima</td>
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<tr>
<td>8:00AM - 10:00AM</td>
<td>ThA, Bio-Chemical Nonlinear Optics</td>
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<td>10:00AM - 10:30AM</td>
<td>Coffee Break</td>
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<tr>
<td>10:30AM - 12:30PM</td>
<td>ThB, Semiconductors</td>
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<tr>
<td>7:30PM - 9:30PM</td>
<td>ThD, Photonic Crystals and Solitons</td>
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**Friday, August 2, 2002**

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<tr>
<td>8:00AM - 10:00AM</td>
<td>FA, Quantum Computing and Entanglement</td>
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<tr>
<td>10:00AM - 10:30AM</td>
<td>Coffee Break</td>
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<tr>
<td>10:30AM - 12:30PM</td>
<td>FB, Photonic Crystals and Waveguides</td>
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<tr>
<td>10:30AM - 12:30PM</td>
<td>FC, Raman and Parametric Processes</td>
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