Applied Physics & OSA

Optics Seminar

Coherent Optics and Hybrid Silicon – III-V Devices

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Abstract:

The field of Radio Frequency (RF) electronics is decades ahead of optics. The difference is mostly in the availability and control of highly coherent oscillators and the control and exploitation of the resulting phase coherence. I will discuss progress in our group in applying RF techniques, especially Phase-lock Loops, to optics and some of the new applications areas that are made possible as a result.

Electronic integrated circuits are based on Si active optical devices: lasers, modulators, electrons, of the optical communication field are based on the III-V family of semiconductors (GaAs, GaAlAs, GaInAsP). It is a near axiomatic doctrine that the next major advances in the technology of optical communication will bring these two seemingly very different material systems together. The considerable progress to date of a team comprising students from the groups of Professors Scherer, Atwater and Yariv, will be described.

Brief Biography:

Amnon Yariv is the Martin and Eileen Summerfield Professor of Applied Physics and Electrical Engineering at Caltech. He obtained the B.S. (1954), M.S. (1956) and Ph.D. (1958) in electrical engineering from the University of California at Berkeley. He worked at Bell Laboratories starting in 1959, joining the early stages of the laser effort. He came to the California Institute of Technology in 1964. On the technical and scientific side, he took part (with various co-workers) in the discovery of a number of early solid state laser systems, in proposing and demonstrating the field of semiconductor integrated optics, the suggestion and demonstration of the semiconductor distributed feedback laser and in co-pioneering the field of phase conjugate optics. His present research efforts are in the areas of nonlinear optics, semiconductor lasers and integrated optics with emphasis on communication and computation.

Wednesday, May 21st, 2008.

4:00pm-5:00pm.

Watson 104

Refreshments will be available in the Watson Lobby at 3:45pm