

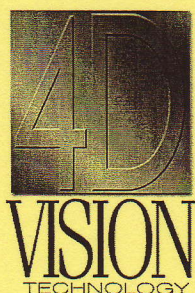
John
Tim

Physics Department Seminar

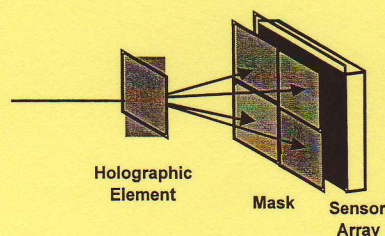
Friday March 15th, 2002

11:00am in PhSc 105

“A New Type of Optical Interferometer”



Dr. James Millerd
4D Vision Technology



Abstract:

Optical interferometers can be used to make measurements of surface profiles and deformations with sub-nanometer accuracy; however, their high sensitivity also makes them very susceptible to relative motion or vibrations. Vibration can cause significant measurement errors or, in some cases, prohibit measurement altogether. Traditional interferometers have required massive vibration isolation tables to achieve accurate results, however for many applications isolation is not practical.

We have developed a type of interferometer that can acquire high-precision whole-field interferometric data in nanoseconds, effectively freezing out vibration. This opens the possibility of performing high-resolution measurements in environments where conventional instruments do not work, as well as enabling whole new types of optical measurements.

This presentation will: introduce the fundamentals of the measurement technique; highlight current applications (such as the measurement of Next Generation Space Telescopes at NASA and aircraft turbine blades for the Air Force); and, present a roadmap of diverse future applications (such as micro-electromechanical systems [MEMS] manufacturing and phasing of very large segmented telescope arrays).

Dr. James Millard graduated from Chico in 1987 with degrees in Physics and Electrical Engineering. He later earned MS and Ph.D. degrees from the University of Southern California. Dr. Millerd is a Founder and currently the Chief Technical Officer at 4D Vision Technology, Inc with offices in Irvine, CA and Tucson, AZ.