

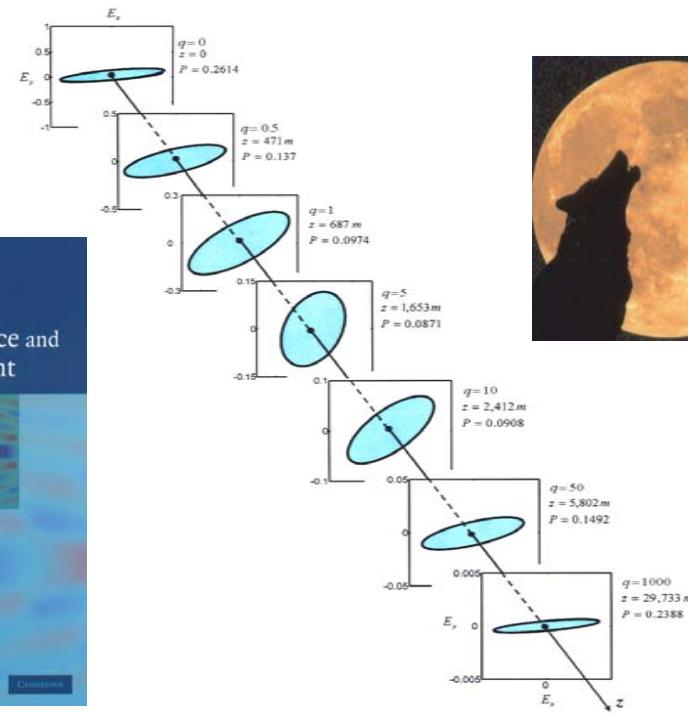
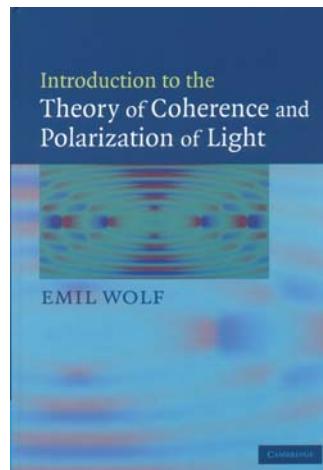
## Unified Theory of Coherence and Polarization of Light and Some of Its Applications



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Review of recent developments in the theories of coherence and polarization of light and application showing previously unknown aspects of the Hanbury Brown-Twiss effect.



**Special Time**  
**2:30 pm, Monday, March 2, 2009**  
Sloan Auditorium, Goergen Building  
Refreshments provided

**Jointly sponsored by**  
**Department of Physics and Astronomy**

# **Unified Theory of Coherence and Polarization of Light and Some of Its Applications**

**Emil Wolf**

**Department of Physics and Astronomy  
and The Institute of Optics  
University of Rochester**

## **Abstract**

After a brief review of the developments of the theories of coherence and polarization of light, an account will be given of a recently formulated unified theory of these two subjects. Examples of applications of the theory will then be given which elucidates changes of the state of polarization of a light beam propagating in free space, in fibers and in the turbulent atmosphere. It will also be shown that the unified theory reveals previously unknown aspects of the so-called Hanbury Brown-Twiss effect, originally introduced for measurements of stellar diameters and, more recently, applied to problems in high energy physics, nuclear physics and condensed matter physics.

## **Biography**

Emil Wolf is Wilson Professor of Optical Physics at the University of Rochester, and is reknowned for his work in physical optics. He has received many awards, including the Ives Medal of the Optical Society of America, the Albert A. Michelson Medal of the Franklin Institute, and the Marconi Medal of the Italian Research Council. He is the recipient of seven honorary degrees from universities around the world. He co-authored the well-known text *Principles of Optics* (with Max Born, seventh edition, Cambridge University Press, 1999) and *Optical Coherence and Quantum Optics* (with Leonard Mandel, Cambridge University Press, 1995). He has also been editor of a well-known series *Progress in Optics* since its inception. Fifty volumes of *Progress in Optics* have been published to date. This year marks the fiftieth anniversary of his joining the faculty of the Institute of Optics.