

Boulder Fluid and Thermal Sciences Seminar Series



Tuesday, January 24, 2017

3:30pm-4:30pm (refreshments at 3:15pm)

Bechtel Collaboratory in the Discovery Learning Center (DLC)

University of Colorado, Boulder

Optical turbulence in the atmospheric boundary layer

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Turbulent temperature fluctuations in the atmosphere cause turbulent fluctuations of the phase, the propagation direction, and the amplitude of an optical wave propagating through the atmosphere. These fluctuations, collectively referred to as “optical turbulence,” are the reason for the twinkling and quivering of stars, and they limit the resolution of large astronomical telescopes as well as the performance of free-space optical communication systems and directed-energy systems. On the other hand, optical turbulence is the basis for some atmospheric remote sensors, such as optical scintillometers.

In this talk, we briefly review the basic physics of optical turbulence, and we present and discuss field observations and computer simulations of optical turbulence in the atmospheric boundary layer.

Biography: Andreas Muschinski has 25 years of post-doctoral research experience in theoretical, observational, and computational aspects of atmospheric turbulence. He received his PhD (1992) and habilitation (1998) degrees in Meteorology from the University of Hanover, Germany. He was a visiting scientist at NCAR’s Atmospheric Technology Division (1996/97) and worked as a CIRES Research Scientist at the NOAA Environmental Technology Laboratory (1998-2004). He was a Professor of Electrical Engineering at the University of Massachusetts Amherst (2004-2011), where he was named the Jerome M. Paros Endowed Professor in Measurement Sciences. In 2011, Andreas joined the Boulder office of NorthWest Research Associates, Inc. (NWRA) as a Senior Research Scientist.

