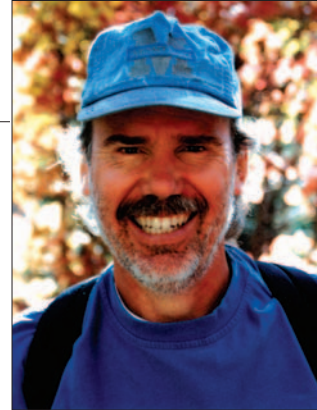


Keynote Address

The Human Visual System: How Is Its Design Related to the Physics of the Natural Environment?

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ABSTRACT

The human visual system is the result of evolution by natural selection and hence its design must incorporate detailed knowledge of the physical properties of the natural environment. This is an obvious statement, but the scientific community has been slow to take it seriously. Only recently has there been an increased effort to directly measure the statistical properties of natural scenes and compare them to the design and performance of the human visual system. I will describe some recent studies of the chromatic and geometrical properties of natural materials and natural images, as well as some perceptual and physiological studies designed to test how those physical properties are related to human perceptual mechanisms.

BIO

Wilson S. Geisler earned a BA in psychology from Stanford University in 1971 and a PhD in psychology from Indiana University in 1975. He joined the faculty of the psychology department at the University of Texas at Austin in 1975, where he is currently the director of the Center for Perceptual Systems and holder of the David Wechsler Regents Chair. Prof. Geisler received the Research Excellence Award from the University of Texas in 1997 and is a fellow of the Optical Society of America. He has served on several editorial boards including Vision Research, the Annual Review of Psychology and the Journal of Vision. His research has been funded continuously since 1978 by the National Eye Institute of National Institutes of Health, and sporadically by the Air Force Office of Scientific Research. Prof. Geisler's research interests span a wide range of topics in vision science including spatial vision, perceptual grouping, visual search, motion perception, adaptation, natural scene statistics, and the evolution of perceptual systems. The scientific approach in his lab involves a combination of mathematical/computational analysis, behavioral studies, and single-unit neurophysiology. Prof. Geisler is married and has two children and four grandchildren. He enjoys outdoor activities and playing guitar.