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Jacek Turski* (turskij@uhd.edu), University of Houston-Downtown, Computer and Mathematical Sciences, One Main Street, Houston, TX 77002. *Geometric Fourier analysis for cognitive visual neuroscience.*

This paper studies the relevance of the conformal camera to computational vision with a particular focus on stereopsis. First we review projective Fourier analysis of the conformal camera developed by the author and point to its unique attributes for modeling physiological aspects of perception. Then we design, based on discrete projective Fourier transform and Lie group kinematics, the head-eye-visual cortex integrated system with each eye modeled by the conformal camera. It provides a new biologically realistic computational approach to the process of stereoscopic depth perception. (Received September 28, 2005)