

1009-42-60

Jonathan Kaplan* (jkaplan@math.stanford.edu), Stanford University, Mathematics Bldg.
380, 450 Serra Mall, Stanford, CA 94305-2125. *Morphlets: A Multiscale Transform for
Diffeomorphisms.*

Diffeomorphisms are a classical tool and object of study in theoretical mathematics. Recently, there has been an increase in the use and study of diffeomorphisms in applied mathematics. In particular, diffeomorphisms have appeared as a new and potent tool in image analysis. There is a growing interest in understanding computationally efficient mechanisms for representing and manipulating diffeomorphisms. Inspired by the success of wavelets in signal processing, we describe a multiscale transform acting on diffeomorphisms. This transform is defined on dyadic samples and is nonlinear. Its design draws from the theory of interpolative wavelet transforms. We call this transform the morphlet transform.

This talk will sketch some motivation for the computational examination of diffeomorphisms and the benefits of a multiscale philosophy in such an examination. (Received August 02, 2005)