

1010-35-118

**Jianzhong Wang\*** (mth\_jxw@shsu.edu), 1901 Ave. J, Dept. of Math & Stat., P.O. Box 2206, Sam Houston State University, Huntsville, TX 77341. *Diffusion Distance and Anisotropic Diffusions.*

Diffusion processing occurs in many areas of physics, where a dynamical system gradually achieves a steady state as time develops. Currently, diffusion processing is applied to other fields, such as, data regression, Markov processing, noise reduction, dimensionality reduction, etc. To describe an anisotropic diffusion processing, one can assign it as a solution of a diffusion equation, or can define a certain diffusion maps on the data, in which the flux of the diffusion is determined by the diffusion distance on the data space. The paper discusses a certain type of anisotropic diffusions and reveals the relation among the diffusion kernel, diffusion equation, and the diffusion distance. The results show that in many applications, describing a diffusion processing by its diffusion distance is an effective way. (Received August 23, 2005)