1056-47-1005 **Maxim J. Goldberg** (mgoldber@ramapo.edu), Ramapo College of NJ, TAS, 505 Ramapo Valley Road, Mahwah, NJ 07430, and **Seonja Kim*** (skim4@sunyrockland.edu), SUNY Rockland Community College, 145 College Road, Suffern, NY 10901. *An induced diffusion distance.* Preliminary report.

For M a manifold, let $\rho_t(x, y)$ denote a non-negative kernel on $M \times M$ satisfying the semi-group property in time t. Peter Jones has proposed the following natural measure of discrepancy between two points x and y in M: for a fixed paramter ω with $0 < \omega < 1$,

$$\tau(x, y) = \operatorname{argmin}_t \left\{ \int_M \min(\rho_t(u, x), \rho_t(u, y))\, du \geq \omega \right\},$$

i.e. $\tau(x, y)$ is the first time that the two "bump" functions centered at x and y, respectively, significantly overlap. In the case of heat flow on $\mathbb{R}^n$, $\tau(x, y)$ is a scaled square of the usual Euclidean distance; in particular, $\tau(\cdot, \cdot)$ does not satisfy the triangle inequality.

We propose a general construction which modifies $\tau(x, y)$ so that the result does satisfy the triangle inequality (with possible minor exceptions), and hence is (almost) a metric. In the case of heat flow on $\mathbb{R}^n$, our method recovers scaled Euclidean distance. (Received September 19, 2009)