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**Hau-Tieng Wu\*** ([hauwu@math.duke.edu](mailto:hauwu@math.duke.edu)). *Exploring manifold learning theory to study non-stationary time series for clinical application.*

While manifold learning has been widely applied, however, there are several open problems on the way toward statistical inference and handling big dataset. We discuss some topics in this direction, like robustness to high dimensional noise, eigenvalue distribution, and Roseland to speed up computation. Its clinical application to analyzing modern long-term physiological signal will be demonstrated. (Received September 16, 2020)