

# Learning transport operators for image manifolds

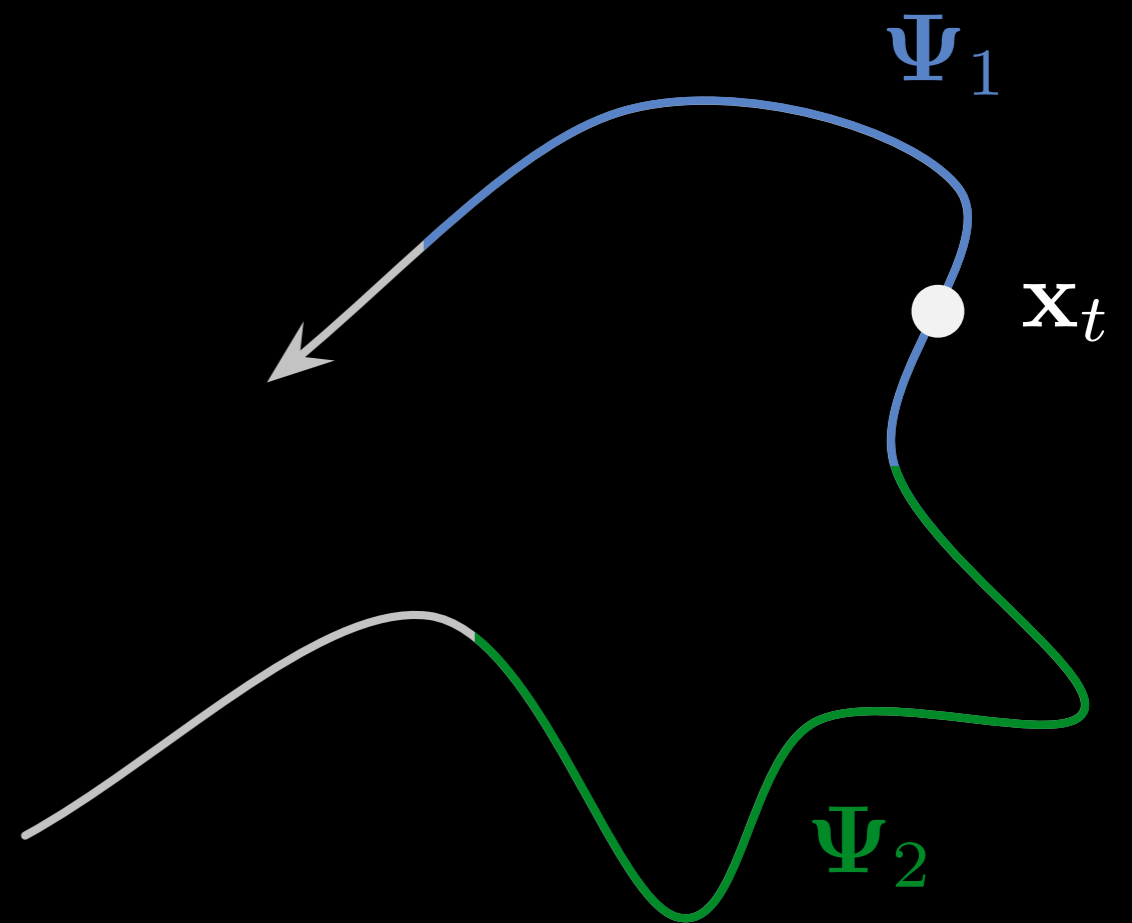
Benjamin J. Culpepper  
bjc@cs.berkeley.edu

Bruno A. Olshausen  
baolshausen@berkeley.edu

We learn exponential models of very high dimensional data.  
Complex curves are modeled piecewise as linear ODEs.

$$\mathbf{x} \in \mathcal{R}^N \quad \mathbf{A} = \sum_{m=1}^M \Psi_m \mathbf{c}_m$$

$$\dot{\mathbf{x}} = \mathbf{A} \mathbf{x} \quad \rightarrow \quad \mathbf{x}_t = \exp(\mathbf{A} t) \mathbf{x}_0$$



Learning  $\Psi$  is made tractable in high dimensions using a spectral decomposition.