1146-51-449   **Xiaofeng Ma** (`kirby@math.colostate.edu`), Department of Mathematics, Fort Collins, CO 80523, **Michael Kirby*** (`kirby@math.colostate.edu`), Department of Mathematics, Campus Delivery 1874, Fort Collins, CO 80523, and **Chris Peterson**. *Topology Preserving Mappings on Matrix Manifolds.*

We explore the adaptation of Kohonen's self-organizing mapping (SOM) to the setting of matrix manifolds. This allows one to map points, e.g., on a Grassmannian in high dimensions, to a low-dimensional lattice while preserving neighborhood properties. From an algorithmic perspective, it is necessary to be able to compute pairwise distances between points on a given abstract manifold, as well as move one point towards another along a geodesic. Hyperspectral imagery is an excellent source of data to demonstrate the effectiveness of this procedure. (Received January 28, 2019)