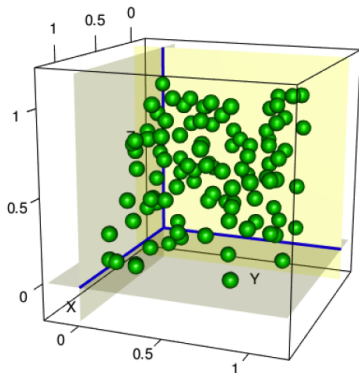


Nested Cone Analysis Methods

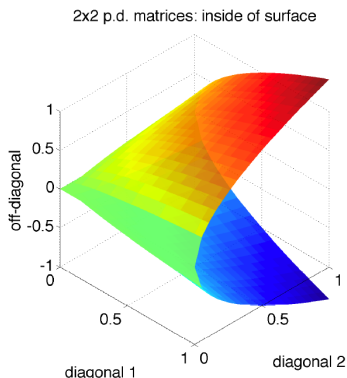
- ▶ Collaborators:
 - ▶ This presentation, **Nested Nonnegative Cone Analysis**: [J. S. Marron \(UNC\)](#) and [Shu Lu \(UNC\)](#)
 - ▶ Nested Semi-Definite Cone analysis: Sungkyu Jung (U of Pittsburgh)
- ▶ Examples of cone-type data
 - ▶ Nonnegative Cone: data lies in the first orthant
 - ▶ Branch length representation of tree data
 - ▶ Mass spectrum data
 - ▶ Derivatives of monotonic curves.
 - ▶ Semi-definite cone: population of semi-definite matrices
 - ▶ Diffusion tensors
 - ▶ Population of networks

Study population of data that lies in cones

(a) Nonnegative Cone



(b) Semidefinite Cone



- 1 Identify major modes of variations within a sample of such data
- 2 Use these data to predict other features (disease type, other important variables)

Focus on **Nonnegative Cone** today. more results: future conferences.