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-define 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.