



UNC  
GILLINGS SCHOOL OF  
GLOBAL PUBLIC HEALTH

## **BIostatistics Seminar**



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### **The Energy of Data**

The energy of data ( $E$ ) is the value of a function of distances/dissimilarities between data. The name energy derives from Newton's gravitational potential energy which is also a function of distances between physical objects. One of the advantages of working with energy functions is that even if the observations/data are complex objects, like graphs or patterns, we can use their real valued distances for inference. The direct connection between energy and mind/observations/data is a counterpart of Einstein's  $E=mc^2$ . Quantifying knowledge, mapping the mind (via computational neuroscience) is the road to immortality (kind of: knowledge can be mapped, soul cannot). We can introduce a metric (a distance)  $D$  between data such that for the energy ( $E$ ) in our mind  $E = FD^2$  where  $F$  is a force. My formula for  $D$  can be considered a formula for knowledge. In fact a huge part of our knowledge can be translated to data distance (face recognition, voice recognition, pattern recognition). We'll see many further examples in the talk, e.g. independence. Applications: Brain research; Alzheimer, ADHD.

**Thursday, April 20, 2017**

**3:30 pm - 4:30 pm**

**Blue Cross Blue Shield Auditorium**